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7. INTERNATIONAL

MOLECULAR BIOLOGY AND BIOTECHNOLOGY

CONGRESS

ABSTRACT

BOOK

7th INTERNATIONAL MOLECULAR BIOLOGY and BIOTECHNOLOGY CONGRESS

ABSTRACT BOOK

KONYA

NECMETTİN ERBAKAN
UNIVERSITY

NOBEL SCIENCE AND RESEARCH CENTER

25-27 April 2018
Necmettin Erbakan University
MOLBIOTECH 2018

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April 25-27, 2018 - Konya

MOLBIOTECH 2018

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Preface

Dear colleagues,

It is my pleasure to welcome you to the 7th International Molecular Biology and Biotechnology Congress held in Konya, Turkey, from April 25 to 27, 2018. This congress is an interdisciplinary platform for the presentation of new and recent advances in researches in the fields of Molecular Biology and Biotechnology. Over 500 contributions from 15 different countries have been submitted and accepted for oral/poster presentations after peer review process.

Global population growth in the 21st century and limited natural resources present major threats and challenges. Recent advances in Molecular Biology and Biotechnology enable scientists and researchers to cope with the problems and to find out the solutions without threatening the natural resources and environment. This congress aims to bring scientists from international communities to highlight the recent advances and developments in Molecular Biology and Biotechnology and their application in Agriculture, Microbiology, Plant, Animal, Aquatic, Environment, Medicine and Industry.

Dear colleagues, it is our mutual purpose to find ways and methods for everyone to get benefit from the applications of Molecular Biology and Biotechnology in worldwide. Throughout the next three days, scientists from 15 different countries will discuss the problems and their solutions through the applications of Molecular Biology and Biotechnology.

I would like to thank to all the authors, reviewers, scientific committee, organizing committee, secretariat, session moderators and colleagues for their help in organizing this scientific event in Konya, Turkey. There is also a great thank for Necmettin Erbakan University for their support and collaboration.

Sincerely,

Prof. Dr. Mehmet KARATAS
Chairman of Congress

Dean of Faculty of Science
Necmettin Erbakan University
Department of Biotechnology

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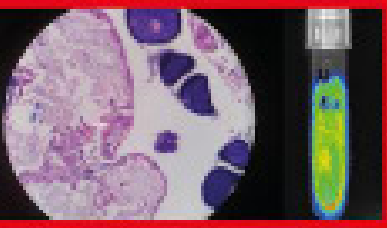


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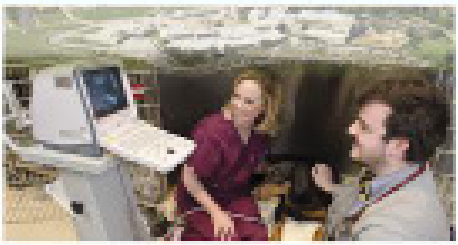


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Oral Presentation

Invited Speaker

Heavy metal induced gene expression in metal accumulator plants

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Abstract

Plants are sessile and are susceptible to biotic and abiotic stresses which occurs due to continuous change in climatic conditions. They respond to avoid these detrimental effects in a variety of different ways. In particular, heavy metal stress is one of the major problems in the developing countries which not only affects the plant health, but also severely disturb the whole ecosystem. Prolonged exposure to heavy metals such as cadmium, copper, chromium, lead, nickel, and zinc can cause deleterious health effects in humans. Molecular understanding of plant metal accumulation has numerous biotechnological implications also, the long term effects of which might not be yet known. The amount of heavy metal causing toxicity depends on the type of ion, ion concentration, plant species and stage of plant growth. Tolerance to metals is based on multiple mechanisms such as cell wall binding, active transport of ions into the vacuole and formation of complexes with organic acids or peptides. Here, one of the most important mechanisms for metal detoxification in plants appears to be chelation of metals by low molecular weight proteins such as metallothioneins and a family of peptide ligands, the phytochelatins. For example, glutathione (GSH), a precursor of phytochelatin synthesis, plays a key role not only in metal detoxification but also in protecting plant cells from other environmental stresses including oxidative stress. In the last decade, the tremendous developments in molecular biology and the success of genomics have highly encouraged studies in molecular genetics, mainly transcriptomics, for the identification of the functional genes implied in metal tolerance in plants. These studies have already succeeded in the identification of many genes that largely belong to the metal-homeostasis network. In this presentation I will describe recent advances in understanding the genetic and molecular basis of the metal induced gene expression in plants including the gene expression work which is being carried out in my laboratory on some metal accumulating plant species in *Brassicaceae* family.The heavy metal accumulating species *Brassica nigra, B. juncea* and an industrial crop plant *B. napus* have received attention due to its possible use for phytoremediation of heavy metal-polluted soils. I will discuss the strategies for exploring these immense and valuable genetic and biological resources for phytoremediation of heavy metal pollutants from the environment.

Keywords: Accumulator plants, transcriptomics, proteomics, metal transporters, phytoremediation

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Oral Presentation

Invited Speaker

Surface engineering with low-energy ion beams: from ultra-smooth surfaces to hierarchical nanostructures

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Abstract

Low-energy ion beam sputtering, i. e. the removal of atoms from a surface due to the impact of energetic ions or atoms, is an inherent part of numerous surface processing techniques. Beside the actual removal of material induced by atomic recoils and the sputtering of atoms from the surface this surface erosion process often results in a pronounced topography evolution, generally accomplished by a kinetic roughening of the surface. Typically, during ion sputtering, the surface of the solid is far from equilibrium and a variety of atomistic surface processes and mechanisms become effective. It is the complex interplay of these processes that either tends to roughen (e. g., by curvature dependent sputtering or incorporation of surface contaminations) or smoothen (e. g., by surface diffusion or viscous flow of surface atoms) the surface, which, finally, can result in a rich variety of surface topographies. Two prominent examples are the spontaneous formation of well-ordered ripple or dot pattern and the realization of experimental conditions where surface relaxation dominates and smooth surfaces are emerging. Both special cases are of high interest for many potential applications in nanotechnology. For instance, using broad beam ion sources with appropriate beam dimensions an alternative cost-efficient route exists to produce large-area nanostructured surfaces in a one-step process or for polishing of high quality optical surfaces, e. g., for smoothing of surfaces or interfaces of thin films. In this contribution the current status IOM related activities in the field of tailoring the topography of Si surfaces at the nanometer and micron scales by low-energy ion beams will be summarized. Starting from the diversity of pattern that can be formed, two special cases have been discussed (i) the formation of self-organized ripple and dot pattern and (ii) the smoothing of surfaces by using appropriate conditions of low-energy ion beam erosion. In this context, we briefly review potential processes believed to be responsible for pattern formation and smoothing in the low energy regime, especially for materials which are amorphous or become amorphous during the irradiation process. Concerning potential applications of ion beam, it will be demonstrated how ion beam smoothing (IBS) can be used for the finishing of high end optical surfaces with topography and roughness control down to the atomic scale. Finally, a short outlook will be given, especially for future work that is aimed to the combination of patterning by self-organization and conventional lithographic techniques in order to realize a better control of the self-organization process itself together with hierarchical structuring at different length and height scales.

Keywords: nanotechnology, ion beams, surface engineering, self-organization, polishing

Oral Presentation

Investigation of apoptotic effect of *Achillea ketenoglui* extract on colorectal cancer cells

İlknur Çınar, Canan Eroğlu, Sümeyra Çetınkaya, Seda Şirin, Ercan Kurar, H. Gül Dursun

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Abstract

Induction of tumor cell death by the use of some phytochemicals that consumed through diet, and derived from medicinal plants opens up new horizons for cancer treatment researches. Our aim in this study is to assess apoptotic changes by way of implementing methanolic extract of the *Achillea ketenoglui* to the colorectal cancer cell line. In our previous study, we demonsrated the cytotoxic on HCT-116 and HT-29 cell lines. IC50 value is determined as 350 uM(48h) and 300 uM (24h) on HCT-116 and HT-29 cell lines, respectively. To examine the apoptotic effects of the extract, total RNAs were isolated from dose group and the control cells firstly, then cDNAs were synthesized. Expression profile of the apoptosis and cell cycle related target genes are determined by RT-qPCR. Apoptotic cells was determined with Annexin V kit. Protein expression were detected via western-blot method. According to the results, when the control group compared with the cells, it was determined that increase in the gene expressions of Bax, Caspase-3, Caspase-7, Caspase-8, Caspase-9, p53, p21, fas, pparg of dose group HCT 116 and HT-29 cells. Based on the obtained data, we believe that methanol extract of the A.ketenoglui induces apoptotic pathway.

Keywords: *Achillea Ketenoglui*, Extract, Apoptosis, Cancer

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Oral Presentation

The effect of thymoquinone on angiogenesis mechanism of agressive breast cancer cells

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Abstract

Thymoquinone obtained from black seed has been shown to have many positive effects on the organism such as antidiabetic, anti-inflammatory, antioxidant and antitumoral effects. Angiogenesis is one of the most important steps of malignancy and it is considered as a prerequisite for progression, proliferation and metastasis of tumor. Angiogenesis not only supply necessary nutrients for the tumor but also help them to invade the tissue and to metastasize to the distant sites. In this study, it was aimed to investigate the effect of thymoquinone on angiogenesis which is an important step of tumorigenic development.MD-MB231 breast cancer (highly metastatic and aggressive) cells were exposed to thymoquinone at different doses. Expression of angiogenesis- and metastasis-associated proteins, MMP-2 was evaluated by Western blott analysis. In addition, tubulogenesis , which is the last step of angiogenesis, was evaluated by tube formation assay, and invasion was analysed by matrigel invasion assay.It was seen that thymoquinone suppressed MMP-2 expression in aggressive breast cancer cells. In addition, it was observed that thymoquinone suppressed the tube formation and invasion ($p<0.05$). As a result of the study, it reduced the level of proteins involved in both angiogenesis and metastasis and disrupted the tubule formation. This is the first study in the literature indicating that thymoquinone inhibits angiogenesis and tubulogenesis in aggressive breast cancer cells. By inhibiting angiogenesis, thymoquinone may indirectly inhibit proliferation, invasion, and metastasis of tumors. For that reason, thymoquinone can be used as an effective agent in addition to the current treatments.

Keywords: Angiogenesis, breast cancer, thymoquinone, tubulogenesis

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Oral Presentation

Anti-cancer activity of methanol extracts of *Ranunculus Constantinopolitanus (Dc.) D'urv* on Mcf-7 breast cancer cell line

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Abstract

Ranunculaceae phytometabolites exhibit promising effects against cancer, many of which modulate signaling pathways that are key to cancer initiation and progression, and enhance the anticancer potential of clinical drugs while reducing their toxic side effects. In this study, it is aimed to investigate anticancer activity of flowers, body, leaf, and seed methanol extracts of *Ranunculus Constantinopolitanus (DC.) D'URV* in the MCF-7 breast cancer cell line and L-929 healthy adipose tissue cell line (mouse). Methanol extracts from flowers, body, leaf and seed of *R. Constantinopolitanus (DC.) D'URV* were prepared. The effects of the extracts on cell viability were determined by 3- (4,5-dimethylthiazol-2-yl) -2,5-diphenyltetrazolium bromide (MTT) method MCF-7 breast cancer cells and L-929 cell line were incubated for 96-well plates (100,000 cells / well) with different concentrations of extracts. MTT method was applied when incubation times were completed. The results were analyzed by the GraphPad Prism6 to determine the concentration values (IC50) of the extracts causing 50% mortality in MCF-7 breast cancer cells and L-929. Quantitative measurement of cell death was performed with Hoechst 33258 (HO; Sigma)/propidium iodide (PI; Sigma) staining, which allowed for apoptosis to distinguish necrosis. According to our experimental results, when the flower, body, leaf and seed methanol extracts of *R. Constantinopolitanus (DC.) D'URV* were compared with the L-929 cell, it was found that MCF-7 cell line viability significantly decreased with time and dose. As a result; flowers, body, leaf and seed methanol extracts of *R. Constantinopolitanus (DC.) D'URV* showed cytotoxic effects by reducing MCF-7 breast cancer cell line viability.

Keywords: *R. Constantinopolitanus (DC.) D'URV*, Extract, MCF-7, Hoechst 33258, Propidium iodide

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Oral Presentation

Toxicity and antioxidant properties of quercetin on 8305C Cells

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Abstract

Quercetin (3,5,7,3',4'-pentahydroxyflavon) is known as one of the best identified flavonoids and due to its strong antioxidant properties it is used in studies. Quercetin located in apples, onions, broccoli, strawberry, peas and green tea and a major phenolic components of plants. Thyroid cancer is a very common type of cancer and thyroid tumors constitute 1% of all tumors. In this study, we aimed to analyze antioxidant activity of Quercetin (QE) on 8305C (human thyroid anaplastic carcinoma) cells for the first time in the literature. Evaluation of cell viability was assessed using MTT (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide) assay. Following cell viability of QE, intracellular antioxidant activity and oxidative stress were establish by measuring malondialdehyde (MDA) levels, superoxide dismutase enzyme (SOD) activity and reduced glutation (GSH) levels. Briefly, 8305C (human thyroid anaplastic carcinoma) cells were seeded to 96 well plates and incubated at given cell culture conditions for 24 hours. After the incubation the medium was replaced with a fresh medium containing series of dilution of QE (0.5-1000 µg / mL) for 24, 48 and 72 hours. According to MDA, SOD and GSH levels the optimum doses of QE were found to inhibit oxidative damage in 8305C cells. Overall our results suggest that quercetin may could be used as a therapeutic support in human thyroid carcinoma cells.

Keywords: Antioxidant, Cytotoxicity, Human thyroid anaplastic carcinoma cells, Quercetin

Oral Presentation

Effects of juglone and resveratrol fractions on Ehrlich ascites carcinoma cells

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Abstract

Recent studies demonstrated persuasive evidence that juglone and resveratrol have mighty anticarcinogenic features. However, there is insufficient data on the fractions of these molecules. This study was therefore undertaken to evaluate the anticarcinogenic effects of JRK (Metabolites of juglone and resveratrol by Kefir) against Ehrlich ascites carcinoma bearing mice. Lactobacillus bacterias in kefir yeast were grown in the cell culture (1,5x109/ml). Juglone and resveratrol (1:2) were added to the medium and exposed for 48 hours. The solution obtained after filtration was applied to Bap-c male mice (0.1 ml/day i.p.) given EAC (Ehrlich ascites carcinoma) cells throughout five days. Then; Bax, Caspase-6, 8 and 9 mRNA levels were measured by Real-Time PCR method in the ascites which isolated from the abdomen after decapitation. JRK solution significantly reduced EAC cells. Accordingly, the waist circumference has also decreased. JRK did not change Bax, Caspase-8 and 9 mRNA expressions but caused a tendency towards elevation. However, no change was found in Caspase-6 mRNA expression with JRK. On the other hand, according to the immunohistochemistry study results, reduced Bax levels with EAT were enhanced with JRK; reversely, enhanced Bcl2 levels with EAT were decreased with JRK. These findings indicate that JRK may be an alternative anticarcinogenic agent. In the advanced phase, higher dosing and more compherensive results are likely to benefit from clarifying the effects of JRK solution.

Keywords: Juglone, Resveratrol, Kefir, Ehrlich ascites carcinoma, Bax, Bcl2, Caspase

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Oral Presentation

Investigation of the effect of medicarpin on head and neck cancer cell line

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Abstract

Medicarpin, a natural pterocarpan, has various beneficial biological roles including inhibition of osteoclastogenesis, stimulation of bone regeneration and induction of apoptosis. Medicarpin has also been shown to inhibit cell growth in various tumor cells via the NF-κB pathway. Although there are several studies analyzing the effect of medicarpin in various tumors, there are limited information about expression and activation of signal pathways in head and neck cancer cells (HNSCC). Therefore, we have investigated the differential expressions of AKT, PDK1 and PTEN at the mRNA and protein levels in HNSCC by using qPCR and western blot techniques. Cell viability was assessed by MTT assay; and, IC50 value of medicarpin was determined as 80 M. The wound healing assay was used to examine cell migration and cell interactions; and, results were statistically significant ($p<0.05$). Expression levels of the PTEN ($p=0.000382$) and AKT ($p=0.000276$) were statistically significant in HNSCC cell line compared to control cells. In conclusion, medicarpin treatment may be inhibited cell growth via PTEN/AKT signal pathway in HNSCC.

Keywords: Medicarpin, HNSCC, PTEN/AKT pathway

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Oral Presentation

The relationship between idiopathic male infertility and the polymorphisms of genes involved in xenobiotic metabolism

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Abstract

Antioxidant gene polymorphisms are thought to be effective in individual susceptibility to male infertility. This study aimed to investigate the relationship between polymorphisms of cytochrome P450 1A2 (CYP1A2) 734 C→A, cytochrome P450 2D6 (CYP2D6) 1934 G→A, glutathione S-transferase M1 (GSTM1) null, glutathione S-transferase T1 (GSTT1) null and glutathione S-transferase P1 (GSTP1) Ile105Val that play role in xenobiotic mechanism and idiopathic male infertility. A total of 306 azoospermic or oligozoospermic idiopathic infertile men and 129 normozoospermic or fertile controls were included in the study. Peripheral blood samples from all participants were collected and genomic DNA was isolated by salting out method. Genotyping was performed using multiplex polymerase chain reaction (PCR) and PCR-restriction fragment length polymorphism methods. There was a statistically significant relationship between idiopathic male infertility and CYP2D6 GG genotype ($P < 0.001$). CYP1A2 AA genotype was slightly higher in the infertile group ($P = 0.056$). There was no association between idiopathic male infertility with GSTT1 null ($P = 0.068$), GSTM1 null ($P = 0.843$) and GSTP1 Ile105Val ($P = 0.192$) polymorphisms. GSTM1 null polymorphism was higher in azoospermic men ($P = 0.009$). Our results show that CYP2D6 polymorphism may play a role in idiopathic male infertility in our sample population.

Keywords: Cytochrome P450, glutathione S-transferase, idiopathic infertile

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Oral Presentation

Transcript resolution and functional characterization of a novel gammaherpesvirus long noncoding RNA (lncRNA)

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Abstract

Gammaherpesviruses, including Epstein-Barr virus (EBV) and Kaposi's sarcoma-associated herpesvirus (KSHV) are oncogenic viruses that establish lifelong infections in hosts and are associated with the development of lymphoproliferative diseases and lymphomas. Recent studies have shown that the majority of the mammalian genome is transcribed and gives rise to numerous long noncoding RNAs (lncRNAs). Likewise, it was shown that herpesviruses undergo pervasive transcription, including the expression of many uncharacterized putative lncRNAs. Murine gammaperherpesvirus 68 (MHV68) is a natural pathogen of rodents, and is related to EBV and KSHV, providing a highly tractable model for studies of gammaherpesvirus pathogenesis. Previous tiled microarray studies identified 30 novel "expressed genomic regions" (EGRs) of MHV68 transcription which were not predicted by previous canonical ORF-based annotation analyses. We sought to determine whether EGR1, which lies antisense to at least five MHV68-encoded miRNAs, encodes a bona fide lncRNA transcript. Using strand-specific northern blots, we identified a polyadenlyated nuclear transcript that overlaps the important latency-associated genes M2 and M3. Knockdown of this transcript (M3M2) in lytically infected cells using GapmeRs resulted in expression of M2, strongly suggesting M2-regulatory function of M3M2. Furthermore, infection with a mutant virus lacking two M3M2-antisense miRNA stem loops results in increased expression of M3M2, strongly suggesting its regulation by viral miRNAs. Thus, together these data demonstrate a tripartite relationship between lncRNA M3M2, antisense miRNA, and important latency gene M2. Based on the importance of M2 in latent infection, we hypothesize that this relationship may be a key control point for chronic infection and pathogenesis.

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Oral Presentation

Role of *Schizosaccharomyces pombe git1* gene in oxidative stress response

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Abstract

Glucose is the preferred energy and carbon source for many organisms. Glucose sensing and signal transduction in yeast is generally accomplished through a system of heterotrimeric G-protein and G protein-coupled cell surface receptors. Signal transduction pathway to cAMP/protein kinase is activated with glucose sensing. In this pathway, *Git1* is a C2 domain protein that is directly linked to adenylate cyclase and it is one of the 6 proteins required for the activation of adenylate cyclase. The 3' end of *git1* gene contains ''Mammalian uncoordinated homology 13, domain 2.'' It plays role membrane trafficking, exocytosis, vesicle secretion. This study aims to find out whether the *git1* gene, which is one of the genes involved in glucose signaling, and the 3' end of git1 gene, are related to oxidative stress response. In this study, *Schizosaccharomyces pombe* wild type (972h-) and git1- (*git1Δ*) mutant with *Escherichia coli DH5α* were used. Genomic DNA of S. pombe 972h- was used as a template to obtain *git1* and 3' deletion *git1* genes. These genes were cloned into plasmid pSGP572 containing the GFP reporter gene in the cloning site. The resulting recombinant vectors were transfected into super-efficient *E. coli DH5α* and then isolated. These isolated vectors were transformed into the *S. pombe git1Δ* mutant. Cell morphologies of transformants in the selective media were stained DAPI and then examined under confocal microscope. Transformants carrying recombinant plasmids were confirmed by GFP luminescence detected in a confocal microscope. There was no statistically significant difference in superoxide dismutase and catalase enzyme activities in H2O2 induced oxidative stress conditions in S. pombe recombinants and *S. pombe git1Δ* mutant. These results make think that cells probably select the different pathway alternatives in the stress response.

Keywords: *Schizosaccharomyces pombe*, *git1* gene, oxidative stress, glucose metabolism.

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Oral Presentation

Application of CRISPR/Cas9 technique to the NRAS gene Q61K mutation in SK-MEL-30 skin cancer cell line

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Abstract

Malignant melanoma is a neoplasm of melanocytes or of the cells that develop from melanocytes. Although melanoma was once considered an uncommon disease, the annual incidence has increased dramatically over the past few decades, as have deaths from melanoma. The 3 Ras genes in humans (HRas, KRas, and NRas) are the most common oncogenes in human cancer; mutations that permanently activate Ras are found in 20% to 25% of all human tumors and up to 90% in certain types of cancer NRAS mutations in codons 12, 13, and 61 arise in 15–20 % of all melanomas. These alterations have been associated with aggressive clinical behavior and a poor prognosis. Until recently, there has been a paucity of promising genetically targeted therapy approaches for NRAS-mutant melanoma (and RAS-mutant malignancies in general). In this study, it was aimed to correct the Q61K mutation causing malignant melanoma cancer using the CRISPR / Cas9 technique, which is considered as one of the most effective techniques for genome editing. For this purpose, malignant melanoma SK-MEL-30 cell line containing the Q61K mutation was used. Once the gRNAs for the target mutation have been designed, they are transferred to plasmids and cloned. Then, plasmids and donor sequence were transferred to malignant melanoma skin cancer cells using electroporation technique. Successful transformed cells which are GFP + cells, sorted from other cells using fluorescence microscopy and flow cytometry. With the HDR-guided repair mechanism, knock-out and knock-in were targeted respectively. Real-time PCR analysis and deep-sequencing showed successful knock-out and knock-in in target cells in some cancer cells. In addition, end-point analysis supports the results of working successfully. In this project, it has been proved that even a point mutation can be corrected by the CRISPR / Cas9 technique. Using the CRISPR technique, we believe that we have given literature a new vision in terms of studying similar mutations.

Keywords: CRISPR/Cas9, Genome-editing, Malignant Melanoma, Q61K

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Oral Presentation

QTL mapping of *Ascochyta* blight resistance related DNA Markers on chickpea genome

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Abstract

Ascochyta blight is a fungal disease that causes blight lesions on chickpea plants (*Cicer arietinum* L.). It may cause severe yield losses when the environmental conditions are favorable for the fungus. In order to determine the genetic resistance in Chickpea for *Ascochyta* blight disease , Quantitative Trait Locus (QTL) analysis were performed using DNA markers. A Recombinant Inbred Lines (RIL) population consisting of 77 individuals, generated by crossing parental isolates *C. arietinum* (FLIP84-92C, resistant) x *C. reticulatum* Lad (PI599072, sensitive) was used for marker analysis and greenhouse trials. A linkage map was constructed using polymorphic RAPD markers, resulting 11 Linkage Groups (LG) with a total length of 889,1 cM. Two QTLs explaining 31% of the total phenotypic variation were revealed on LG1 and LG3 related to resistance background,. These markers may have the potential in developing *Ascochyta* blight-resistant varieties directly via marker assisted selection (MAS).

Keywords: Chickpea, *Ascochyta* Blight, linkage map, QTL Analysis

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Oral Presentation

Effect of galangin on cornea damage induced by acute radiation in rats

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Abstract

We aimed to investigate effect of galangin on cornea damage induced by acute radiation in rats. Thirty Wistar type rats were used in our study. The rats were divided into 3 groups. Groups were regulated as control, radiation and galangin+radiation groups. In the radiation group, the total cranium was exposed to 10 Gy external radiation. Galangin was received intraperitoneally 50 mg/kg dose to rats in the galangin treatment group for 2 weeks then irradiated as if used in the radiation group. In the radiotherapy group, the MDA level as a marker lipid peroxidation was significantly elevated comparing with the control group, and observed that this level was decreased in the galangin treatment group. In histological sections taken from the cornea, It was observed that the increase of endothelial cell folds reflecting vascular collapse was much more in the radiation group, whereas it was less in the galangin+radiation group. Galangin+radiation group showed that less corruption in the general morphological structure and less cellular edema, more dense cellular organs in the cytoplasm, whereas morphological structure in the radiation group deteriorated more severely. these results demonstrate that galangin has been effective in alleviating radiation-induced corneal damage.

Keywords: Radiation, cornea, galangin, rats

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Oral Presentation

Antigenotoxic potential of *Iris taochia* Woronow ex Grossh., an endemic plant from Turkey: *In vivo* wing somatic test (SMART) on *Drosophila melanogaster*

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Abstract

The aim of this study is to determine the antigenotoxic effects of the *Iris taochia* Woronow ex Grossh, which is endemic of Turkey and harvested in Erzurum region, by using four different concentration (10, 5, 2.5 and 1.25 mg/mL) of above-ground methanol extracts of it. SMART (Somatic Mutation and Recombination Test), also known as wing spot test in *Drosophila melanogaster*, was used to achieve this aim. In this test technique, two different mutant strains carrying the recessive flare (flr3) and the multiple wing hair (mwh) determinant genes in the genome of D. melanogaster were used. The 72±4 hour-trans-heterozygous larvae which were achieved through crossing between these two mutant strains were fed with the I. taochia methanol extract and Ethyl methanesulfonate (EMS) which is well known for its genotoxic activity. As a result of study, it was observed that plant extract prepared with methanol was showed no genotoxic effect at any concentration level, whereas somatic mutation and recombination rates were observed to decrease significantly, especially at concentrations of 5 and 2.5 mg/mL when applied with EMS. Especially in this two treatment groups with the highest concentration, inhibition percentage was found to be 52.48% in normal-winged groups and up to 61.25% in serrate-winged subjects. The results obtained were proved to be statistically significant with $p<0.05$. Going forward, the early matters of plant extracts and the antigenotoxic action mechanisms of these extracts need to be uncovered with further studies.

Keywords: *I. taochia, D. melanogaster*, Antigenotoxicity, SMART

Oral Presentation

Cloning of common bean LEA gene and functional evaluation in tobacco plant

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Abstract

Plants are frequently exposed to biotic and abiotic stresses such as drought, high salt, and low temperature which have to negative effects on growth and productivity of plants. Dehydrins (DHNs), or group 2 LEA (Late Embryogenesis Abundant) proteins, play a fundamental role in response and adaptation to abiotic stresses of plants. Therefore, it is important to screen and identify candidate genes that can confer resistance to abiotic stresses in plants. The aim of this study was clonning and functional evaluation of two novel dehydrin-like genes; LEA-dehydrin (late embryogenesis abundant-dehydrin) and OeSRC1, identified during the transriptome profiling of common bean (Phaseolus vulgaris L.) and olive (Olea europaea L.) respectively. The cloning of our gene of interest was achieved with the gateway cloning system. Tobacco leaf discs were afterwards successfully transformed with gene of interest by means of the Agrobacterium-mediated transformation method. Drought and salt stress tests were carried out on DHNs transgenic lines. It was observed that DHN expression transgenic lines displayed better growth and physiological performances compared to wild-type plants when grown under drought and salt stressed conditions.

Keywords: LEA-dehydrin, common bean, stresses, tobacco plant transformation

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Oral Presentation

Investigating microrna expression levels associated with ischemia/reperfusion in coronary artery patients before and after coronary artery bypass graft surgery

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Abstract

The objective of this study was to investigate microRNA (miRNA) expression levels associated with ischemia/reperfusion in coronary artery patients before and after coronary artery bypass graft (CABG) surgery. hsa-miR-21-5p, hsa-mi181a-5p, hsa-miR-199a-5p, hsa-miR-199b-5p and hsa-miR-320a levels were analyzed in 46 coronary artery patients pre-surgery and 60 min post- CABG and 24h post-CABG and 48 healthy controls by Quantitative real-time PCR (qRT-PCR) analysis. Pre-surgery miRNA levels were compared to controls and post-surgery (60 min and 24h) patients. Post-surgery miRNA levels were compared to time manner (60 min and 24h). Receiver Operating Characteristic (ROC) curve was used to evaluate the diagnostic value of these five serum miRNAs combination. It was found that miR-21-5p, miR-181a-5p, miR-199a-5p, miR-199b-5p and miR-320a gene expression levels were significantly lower in pre-surgery patients compared to controls. 24h post-CABG gene expression level of miR-199a was significantly lower compared to 60 min post-CABG (p=0.001). ROC analysis showed that the area under the curve (AUC) of pre-surgery was respectively 0.777 (sensitivity 65.2% and specificity 87.5%), 0.784 (sensitivity 63% and specificity 85.4%), 0.810 (sensitivity 87% and specificity 68.5%), 0.808 (sensitivity 82.6% and specificity 72.9%), and 0.784 (sensitivity 73.9% and specificity 81.2%) for miR-21, miR-181a, miR-199a, miR-199b, and miR-320a. Additionally, altered serum levels of miR-199a and miR-199b could be novel non-invasive biomarkers for coronary artery disease.

Keywords: microRNA, Coronary Artery Disease, Bypass Graft Surgery

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Oral Presentation

Production of polylactic acid nanofiber as drug carrier

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Abstract

A polylactic acid nanofiber have been produced by electrospinning for drug delivery. A colon specific drug called oralac was used to develope a new drug delivery system in terms of loading and release studies. The active compound of the oralac is lactulose. Lactulose loading and release were studied at specific wavelength of the drug by using UV-Spectrophotometer. Absorbsiton of lactulose was detected at 277 nm. Drug loading and release studied were done at 2,2; 4; 6 and 7.6 of pH. According to the data, maximum loading of the drug (30,53 mg at 15 min) was observed at 2,2 of pH and maximum release of the drug (18,89 mg at 15 min) was observed at 7,6. Characterization was done by using FT-IR and SEM methods. As conclusion, the results indicated that polylactic acid nanofiber can be used for drug release related to the pH in basic environment which means it may be effective on human colon. It can be a candidate to use as colon targeted drug system which may reduce the side effect of the lactulose.

Keywords: Lactulose, oralac, nanofiber, polylactic acid, electrospinning, pharmaceutical

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Oral Presentation

Evaluation of oxidative DNA damage on diabetic Rat by using ethanol extract of *Salvia huberi* HEDGE

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Abstract

The genus *Salvia* (Lamiaceae) comprises nearly 900 species is distributed throughout the world. The genus is represented in Turkish flora by 89 species and 94 taxa 45 of which are endemic to Turkey. In Anatolia, species of the genus known as "adaçayı" are used as diuretic, stimulant and antiseptic. In previous studies, antibacterial effect of *Salvia huberi* HEDGE which is endemic to Turkey is reported. Plant materials used in this study were collected from their natural habitat in Erzurum, Turkey. Two different concentration (0.5 % and 1 % (w/w)) of ointments were prepared from ethanol extract of aerial parts from S. huberi with glycol stearate, propylene glycol and paraffin (3:6:1) for evaluating their wound healing effect on diabetic rats and 0.5 g of the ointments were topically applied once a day for 7 and 14 days. In this study, comet assay was performed to evaluate the oxidative DNA damage in blood of all tested diabetic groups treated with *S. huberi* ointments. *Diabetes mellitus* was induced by STZ. Fito (Tripharma, Turkey) was used topically as the reference drug for positive control. In S. huberi ointments treated groups, genetic damage index (GDI) and damage cell percent (DCP) values were lower than both control and vehicle groups. Additionally, STZ increased statistically significant GDI and DCP values when compared with non-diabetic rats.($p<0.001$). The study results indicated that the ethanol extract ointments of the S. huberi reduced oxidative damage in diabetic rats as compared to the vehicle and negative and positive control groups.

ACKNOWLEDGMENTS;This study was supported from Adiyaman University Scientific Research Center TIPFBAP/2015-0004.

Keywords: *Salvia huberi*, DNA damage, comet assay, diabetes, streptozotocin

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Oral Presentation

Investigation healing effects of isgın and dandelion against of doxorubicin induced toxicity in *D. melanogaster*

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Abstract

Chemotherapy is one of the effective methods used in the treatment of cancer. The greatest concern during the use of chemotherapeutic drugs is side effects. Increasing free radical formation in cells and tissues and thus oxidative stress is known as one of the most damaging systems. Antioxidants used during chemotherapy may increase the efficiency of treatment by decreasing the formation of radicals due to oxidative stress and prevent healthy cells from being damaged. From this point of view, the therapeutic and protective properties of Isgın (*Rheum ribes*) and Dandelion (*Taraxacum officinale*) giant toxic effects of Doxorubicin, one of the drugs used in chemotherapy, were investigated by conducting survival rate experiments on *Drosophila melanogaster*. For this purpose, in each experimental set, fly larvae (72±4 hours) were placed in the media and individuals who developed from larvae were recorded. As a result of the study, it was determined that the percentage of survival rate decreased in Doxorubicin treated group compared to the control. In addition, while the percentage of survival rates belonging to Isgın and Dandelion treated groups were higher than the control, the values in plant extracts plus Doxorubicin treated groups were close to the control. These differences in survival percentage were statistically significant ($p < 0.05$). This protective effect can be explained by the inhibition of the formation of free oxygen radicals by the antioxidant properties of plants and the removal of them from the biological system.

Keywords: Doxorubicin, *Drosophila melanogaster*, *Rheum ribes*, *Taraxacum officinale*, The survival rate

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Oral Presentation

The effect of 1800MHz cell phone radiation on COMT, MAO-A, Crybb1 genes expression levels in rat cardiac tissue

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Abstract

Most of the research studies mainly focused on the radiofrequency electromagnetic fields (RF-EMF) exposure and it's health effect. Catechol-O-methyltransferase (COMT), Monoamine oxidase A (MAO-A) and Crystallin, beta B1 (Crybb1) genes could play an important role in congestive heart failure. This study examines the possible effect of 1800Mhz RF-EMF on these gene expression levels in cardiac tissue to eleminate that cell phone exposure may be effect cardiac problems. Twenty-two female wistar albino rats were divided into three groups. Experiment group was exposed 1800Mhz RF-EMF 2h/day along 8 weeks. Control group was kept in their own conditions. Sham group was kept in experiment conditions without RF-EMF exposure. Immediately end of the 8 weeks the rats were sacrified and removed their heart. Stored at -80oC until RNA isolation. RNA isolation was performed from tissue homogenate. COMT, MAO-A, Crybb1 genes expression levels was determined with TaqMan assays. Findings showed that Crybb1 gene (p= 0,015) and COMT gene (p=0,004) expression levels was significantly different between the groups. Further studies should be performed.

Keywords: Cell phone radiation, Cardiac tissue, Gene expression, COMT gene, MAO-A gene, Crybb1 gene

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Oral Presentation

Characterization of meniscus scaffolds containing PHBV nanofibers and loofah embedded in chitosan

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Abstract

Meniscus injuries are very important in orthopedic surgery. Meniscus stapling and stitching as well as meniscus prostheses are available for total meniscus injury. However, they do not meet all of the expectations. Tissue engineering techniques have been developed to provide alternative strategies for the repairment of damaged meniscus tissues. In this study, we aimed to develop hydrogel scaffolds that have similar characteristics with the meniscus and show good biocompatibility. For this purpose, three different types of scaffolds were prepared. The first scaffold was made of chitosan hydrogel only. The second scaffold was composed of natural cellulose based Loofah integrated within chitosan matrix. Poly(3-hydroxybutyric acid-co-3-hydroxyvaleric acid) (PHBV) nanofibers and Loofah embedded in chitosan was used as the third scaffold. PHBV nanofibers were prepared by wet-electrospinning method and then mixed with Loofah. This three-dimensional fibrous structure obtained after freeze-drying was immersed into chitosan solution. Second freeze-drying step was applied to obtain composite sponges. Chitosan based hydrogel scaffolds were maintained by using different concentrations of genipin as the cross-linking agent. The morphologies and chemical structures of the scaffolds were characterized by scanning electron microscope (SEM) and Fourier-transform infrared spectroscopy (FTIR), respectively. The swelling ratio test of the scaffolds was carried out in phosphate buffered saline (PBS) solution. Also, the mechanical properties of the scaffolds were assessed under compression loading. Hereby, the new meniscus scaffolds designed could have the potential of healing meniscal tears.

Keywords: Scaffold, Tissue Engineering, PHBV, Loofah, Chitosan

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Oral Presentation

Niche modelling study on some *Ampedus* species (Coleoptera: Elateridae) of Turkey

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Abstract

The genus *Ampedus* is one of the rich genera of Turkish Elateridae, has 44 species in Turkey. A considerable number of species are morphologically quite similar to each other and there are concerns about making species diagnostics using diagnostic keys. In order to understand phylogenetical relationships of *Ampedus* (*Elateridae*) species in Anatolia, Sequences of CO1 gene region of some *Ampedus* species were compared with CO1 sequence of five other species belonging to the same genus and outgroup species which are three species from the same subfamily, two species from different subfamilies and one species from the nearby family Buprestidae from NCBI database. Three Ampedus species selected for (*Ampedus platiai, Ampedus sanguinolentus, Ampedus samedovi*) for Ecological Niche Modelling (ENM) from the result of phylogenetic analysis. ENM results of current time for the species is consistent with the known distributions of the species. Using IPCC 5 climate scenarios, possible future distributions of species for 2050 and 2070 are estimated using ENM. The results obtained are important in understanding how species in Anatolia will react to climate change and planning conservation strategies. The fact that the *Ampedus platiai* is an endemic species, it increases the significance of results in terms of conservation biology.

Keywords: *Ampedus*, Coleoptera, Elateridae, Phylogeny, Ecological niche modelling, Climate change

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Oral Presentation

Molecular phylogeny of the *Thlaspiceras* sensu Meyer species complex of the genus *Noccaea* Moench (Brassicaceae)

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Abstract

Noccaea Moench is taxonomically one of the most problematic genera of the cabbage family (Brassicaceae) and discussions about its generic circumscription are still ongoing. Thlaspiceras species complex which previously considered as a different genus, consist of 11 species (9 of which are endemic to Turkey) mainly distributed Mediterranean part of Turkey. In this study, phylogenetic relationships of the members of this complex are investigated using of Internal transcribed spacer regions (including ITS1 and ITS2) and the 5.8S gene of nuclear ribosomal DNA and encompassing the largest sampled data set (44 populations of 8 species) used so far. This data set were investigated first time based on Bayesian phylogenetical analysis and contrary to previous cpDNA results, the members of the Thlaspiceras complex are monophyletic (posterior probability= 1.00), although their phylogenetic relationships are not concordant with the classical delimitations of the species. 9 haplotypes were detected in the data set, some of which are shared among species. Additionally all species examined were subjected first time a molecular biogeographical analyses. Ancestral area reconstruction analyses based on Bayesian Binary Marcov Chain Monte Carlo (BBM) simulations with 100 % statistical support revealed members of the Thlaspiceras species complex arose in the Amanos mountains. Finally the most important taxonomical character (fruit horn) was assessed by BBM algorithm and results clearly showed that hornless fruit (with % 97 statistical support) is ancestral for this complex.

Keywords: Brassicaceae, ITS, *Noccaea*, Molecular phylogeny, *Thalspiceras*

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Oral Presentation

Revealing the potential of plant- and fungus derived chitinase for enhanced fungal resistance in Transgenic Potato lines

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Abstract

Chitinases are strong antifungal enzymes, and their genes can be utilized to engineer crop plants, including potatoes, with tolerance against fungal pathogens. We have evaluated the fungal inhibition activity of Barley derived chitinase gene and chitinase from Trichoderma fungus. The recombinant chitinase proteins were initially expressed in prokaryotic host and subsequently the purified recombinant protein fraction was subjected to in-vitro fungal inhibition assay. The barley derived chitinase inhibited the growth of Alternaria solani from 39.5 to 60.5%; of Colletotrichum falcatum by 52-56%, in a quantitative in vitro assay. While the recombinant chitinase of Trichoderma inhibited the growth of Fusarium oxysporum to 78% in a quantitative in vitro assay. Further, transgenic potato lines were generated expressing chitinase as anti-fungal genes. The transgenes were driven by strong promoter to achieve enhanced transcription and translation. The bioassay of transgenic potato lines revealed varying degree of resistance against inoculated fungi. The transgenic plants remained healthy and green in comparison with the control plants, which turned yellow and eventually died 3 weeks after infection. mRNA expression of the transgene was revealed to be up to 7 folds high in fungus infected transgenic potato lines.

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Oral Presentation

Identification of potential transcripts in *Hibiscus sabdariffa* l. expressing under drought and salt stress

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Abstract

A better understanding of genetic and environmental factors affecting plant response to salt and drought stress is necessary to produce economic yield. The current study was performed to assess the effects of NaCl on Roselle (*Hibiscus sabdariffa* L.) by Differential display (DDPCR). By screening of 99 sets of primer combinations, an up-regulation of 34 cDNA transcripts were identified and 24 were gel purified, reamplified, cloned and sequenced. The BLASTX revealed 3 transcripts showed significant homology with known genes, while 6 transcripts for drought stress also showed overexpression. Real-time RT-PCR expression studies revealed significant over expression of transcripts in roots under salt and drought stress respectively. Full length sequence of RMYB gene revealed that it belongs to MYB protein comprises of a single Open Reading Frame (ORF) of 229 amino acids with no intron region. The high level of constitutive expression in stem, leaves and roots was observed. Expression analysis of RMYB gene demonstrated higher level in drought and salt stress followed by cold stress. 3D image of RMYB was predicted by *in silico* 3D homology modeling studies generated by using the *I-TASSER server* based on fold recognition method. Validation of 3D structure was done by Ramachandran plot and calculation was assessed by PROCHECK analysis for reliability. Gene was cloned in plant expression vector under CaMV 35S promoter, with GUS reporter gene and genetic transformation in local cotton variety was done and transgenic plants were confirmed through PCR by using gene specific primers. Identification of the potential and novel transcripts will contribute to understand the molecular mechanism of salt and drought stress.

Keywords: Differential Display, Drought stress, Gene expression, Salt stress

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Oral Presentation

Rational design of a novel biocatalyst using a gas sensor hemoprotein

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Abstract

Recent advances in molecular biology and protein design have led to the application of biocatalysis as an alternative to chemical catalysis in the synthesis of therapeutics with regioselectivity and enantioselectivity. Hemoproteins contain the heme prosthetic group. Hemoproteins play a large variety of roles in biological systems, making them good candidates for biocatalysis. The Heme-nitric oxide/oxygen binding (H-NOX) protein was identified by homology to the nitric oxide signaling protein. soluble guanylate cyclase. In this research, the H-NOX domain from the methyl-accepting chemotaxis protein, *Caldanaerobacter subterraneus* subsp. *tengcongensis* (TtH-NOX), was tuned into a biocatalyst using rational design. Four mutants of TtH-NOX were characterized. Each mutant was tested for catalase and peroxidase activities. The wild type TtH-NOX catalyzed hydrogen peroxide decomposition and 2,2'-azino-bis(3-ethylbenzthiazoline-6-sulfonic acid (ABTS) oxidation inefficiently. However, the mutation of a distal tyrosine to a histidine resulted in an increase in the oxidative activities as compared to the wild type. On the other hand, the mutations in the proximal pocket of TtH-NOX decreased catalytic activity for these reactions. Taken together, the mutations in the distal pocket and proximal pocket resulted in changes in reaction rates and electronic properties of the heme group. The mutations changed the molecular mechanism of the hemoprotein, showing that both the proximal and distal pocket residues are vital for catalysis. These observations contribute to the understanding of the physiological roles of hemoproteins. This project will pave the way for discovery of novel biocatalysts using H-NOX proteins as scaffold and aid in the design of future biocatalysts.

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Oral Presentation

Antioxidant properties of pitaya seeds and oxidative stability of seed oils

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Abstract

Two types of pitaya seeds were evaluated on antioxidant activity and stability of seed oils. Each of them have red outer shell but *Hylocereus undatus* have white pulp color while *Hylocereus polyrhizus* have red pulp color. Fruit samples were obtained from Gazipaşa/Antalya in September 2016. The fat content of *H. polyrhizus* and *H. undatus* pitaya seeds were 22.78-23.97 %, respectively. The total phenolic content, α-tocopherol content, γ-tocopherol content, free radical scavenging activity and induction time of H. polyrhizus and H. undatus pitaya seed oils were determined as 12.81-11.90 mg GAE/g dry sample, 3.67-2.75 g/kg oil, 1.29, 1.64 g/kg oil, 46.90 to 51.47% inhibition and 5.37 to 5.07 hours, respectively. Seeds contain significant quantities of phenolic compounds and tocopherols. Percent of unsaturated fatty acids were found to be high in seed oils of both pitaya species. Unsaturated fatty acids detected in H. polyrhizus seed oil was 77.79 % and was 80.67 % in H. undatus seed oils. In both pitaya species, linoleic acid, a polyunsaturated fatty acid, was the dominant fatty acid. Antioxidant activity of seed extracts were found to be at medium level. Resistant of seed oils to oxidation were similar to resistant of sunflower oil. It may be suggested that furthure studies on betalains of pitaya may produce more detailed activity data.

Keywords: *Hylocereus polyrhizus, Hylocereus undatus*, Antioxidant activity, Fatty acids, Oxidative stability

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Oral Presentation

Seven fungal strains with a potential for the bioethanol production from lignocellulosic materials

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Abstract

Bioethanol has been considered as one of the best candidates for the replacement of the fossil fuels. However, the use of food sources as raw materials in traditional production methods increases social and scientific concerns. This situation has accelerated the search for alternative raw materials, and consequently, lignocellulosic biomass has been approved as a promising non-food source for next-generation biofuel production. Thus, recent research efforts have focused on the microorganisms having lignocellulolytic and bioethanol producing activities. In this context, our present study was conducted to identify seven ethanol producing fungal strains that were previously isolated from decaying woody materials. Ethanol yield rates of the strains grown in the modified BMC medium were 1.72 g/L for MG3, 6.61 g/L for MG8, 26.68 g/L for MG9, 9.93 g/L for MG11, 6.12 g/L for MG16, 4.37 g/L for MG47 and 3.91 g/L for MG50. Conventional microscopic examinations and molecular techniques including ITS-PCR, sequencing of amplicons and their BLAST analysis on the NCBI database were used for identification of the fungal strains. According to the results, the strains were identified as Penicillium brevicompactum (MG3), Trichoderma harzianum (MG8 and MG50), Mucor plumbeus (MG9), Fusarium solani (MG11 and MG47) and Fusarium candidum (MG16). In conclusion, seven fungal strains with a potential for the bioethanol production from lignocellulosic sources were cultured and identified. This data is valuable for the development of next-generation biofuel production technologies using the non-food based raw materials.

This study was supported by Republic of Turkey – Ministry of Food, Agriculture and Livestock: TAGEM-13/ARGE/17.

Keywords: Bioethanol, Fungi, Internal transcribed spacer (ITS), Lignocellulose

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Oral Presentation

Removal of Cu (II), Co (II) and Ni (II) Ions from Aqueous solutions using modified sporopollenin

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Abstract

Heavy metal pollution is one of the most important environmental problem. Heavy metal accumulation in soil and water has an important influence not only on functions of ecosystem but also on the health of animals and human beings via food chains. The most important source of heavy metal pollution is the industries. Heavy metals in wastewater can be removed by different methods. Particularly the issue of removing heavy metals with solid support sporopollenin is of great interest. The rapid growth of the industry and technology in our age increases the environmental pollution. Sporopollenin used in this study is naturally found on plant walls. Because sporopollenin is a natural substance, it has great resistance to external influences. In this study, (E)-2-((2-hydroxynaphthalen-1-yl) methylene)amino)pyridin-3-ol was covalently bound on the surface of sporopollenin via chemical reaction. Newly synthesized substance was characterized with infrared spectroscopy method. The sorption capacity of such a matrix for Cu(II), Co(II) and Ni(II) in aqueous solutions was studied. Langmuir, Freundlich and Dubinin-Radushkevich adsorption isotherms were calculated. For adsorbent, thermodynamic parameters were calculated and ΔH0, ΔS0 and ΔG0 values were estimated. This investigation reveals a new, simple, environmentally friendly and cost-effective method for removal of metal ions from aqueous solutions.

Keywords: Sporopollenin, Self-Assembled Monolayers, Immobilization, Adsorption, Adsorption Isotherm, Termodynamic

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Oral Presentation

Molecular binding profile of protoberberine alkaloids on glycogen synthase kinase 3β as a drug candidate for Alzheimer's diseases

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Abstract

Glycogen Synthase Kinase 3β (GSK-3β) is a serine/threonine kinase which has essential roles in Alzheimer's Diseases (AD) processes. AD shows neuropathological markers as tau hyperphosphorylation and accumulation of amyloid β (Aβ) proteins. Aβ proteins are generated from sequential cleavages of amyloid precursor protein (APP). Recent studies show that inhibition of GSK-3β causes to decrease in the cleavage of APP. Thus the accumulation of Aβ was prevented by this process. Due to the therapeutic benefit of the inhibition of GSK-3β it has been a favoured target for scientists. Alkaloids are secondary metabolites which are produced by a large variety of organisms as plants with diverse structures. Protoberberine alkaloids such as berberine, palmatine, jatrorrhizine, columbamine, magnoflorine were found to prevent a progressive neurodegenerative disorder as experimentally, the mechanisms of them are not absolutely clear. In this study, we have aimed to elucidate the binding and affect mechanism of these alkaloids on the GSK-3β. For this purpose, molecular docking studies were applied for these natural products by using CDOCKER module of Discovery Studio 3.5 Client. Binding mechanism was identified by Hydrogen, π bindings' between ligands and GSK-3β.

Keywords: Alzheimer's Diseases, Protoberberine alkaloid, Molecular docking

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Oral Presentation

Structural and spectroscopıc analysıs of ε-caprolactam molecule and dockıng studıes on NDM-1

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Abstract

Caprolactam, which is soluble in water, some hydrocarbons and many solvents containing oxygen and chlorine, is a colorless crystalline cylic amide with a melting point of 70 °C. Caprolactam as monomers for nylon-6 and engineering plastics is an important basic organic chemical widely used in textiles, automobiles, electronics and other industries. Some lactam derivatives have antibacterial, anticancer and antifungal properties. Caprolactam is readily biodegradable and classified as non-toxic to the environment or aquatic life. In addition to these, it is not classified as carcinogenic. In this study, the optimized molecular structure of caprolactam was determined by density functional theory and the molecular structure has been revealed by comparing the experimental 1H-NMR, 13C-NMR and IR spectra with the theoretical 1H-NMR, 13C-NMR ve IR spectra. Also, the New Delhi metallo-β-lactamase 1 (NDM-1) enzyme is a key enzyme that pathogenic Klebsiella pneumonia uses to hydrolyze nearly all lactam antibiotics. The hydrolysis is the most common cause of resistance among clinically important Gram-negative bacteria. Because of this property, the interaction of ε-caprolactam molecule with NDM-1 enzyme has been investigated theoretically and the position and the orientation of the caprolactam molecule in this enzyme were determined.

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Oral Presentation

Preparation of gelatin-based electro-conductive hydrogel for biomedical applications

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Abstract

Herein, an electro-conductive hydrogel (ECH) was synthesized by encapsulation of poly(3,4-ethylenedioxythiophene):poly(styrenesulfonate) (PEDOT:PSS) into the gelatin methacrylate (GelMA) hydrogel. Three different amounts of PEDOT:PSS (0%, 1%, 1.5%, 2.5% w/w) were used to invesitgate the effect of amount of PEDOT:PSS on the conductive properties of hydrojel. According to conductivity measurements which were performed by using 4-probe methods, the highest conductivity (1×10^{-2} S/cm) was obtained by encapsulating 1.5 wt.% PEDOT:PSS into the GelMA polymeric network. The presence of PEDOT:PSS in GelMA network was confirmed by FT-IR and SEM analysis. Cytotoxicity test was carried out by using WST-1 assay and L929 cell lines. It was seen that GelMA-PEDOT:PSS hydrogels have no any toxic effect on the viability of L929 cell lines. All results showed that the obtained ECH could be a promising biomaterial for biomedical applications in the future works.

Keywords: Electro-conductive hydrogels, GelMA, PEDOT:PSS.

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Oral Presentation

Cytotoxicity and cellular uptake of re-labeled magnetic protein cages

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Abstract

Protein cage architectures designed for medical imaging and therapy, provide enhanced stability and biocompatibility under physiological conditions as well as providing functionalization and targeting. In the study, empty ferritin protein was used as a cage architecture and magnetic iron oxide nanoparticles were synthesized within the interior cavity of the protein (magnetoferritin). Non-radioactive Re was incorporated on the protein cage exterior, so that a multifunctional nanoparticle (Re-magnetoferritin) was prepared for localized radiation therapy due to its' magnetic targeting capability while enhancing contrast in MRI signals. In order to evaluate the potential use of these nanoparticles in cancer therapy; cellular uptake, in vitro cytotoxicity, apoptotic potential of nanoparticles were evaluated in both human normal mammary epithelial and breast metastatic adenocarcinoma cell lines. The results showed that the internalization of nanoparticles into the cells is through receptor mediated endocytosis and increased in 4 hours. Cancerous cells exhibited significantly highest uptake as well as highest cytotoxicity compared to normal cells. The mineralization and surface modification of ferritin did not alter the cell viability when compared of the results of the proteins without modifications to a large extent. IC50 values of nanoparticles were calculated as 0.96 mg/mL for cancerous and 1.73 mg/mL for normal cells. The main mechanism of cell damage in both cell types is found to be apoptosis and nanoparticles induced higher apoptotic rates in cancer cells compared to normal cells. At concentrations above 1 mg/mL, NPs induce apoptosis which can also be used for cancer treatments.

Keywords: Magnetoferritin, Cytotoxicity, Apoptosis, Breast cancer cell lines

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Oral Presentation

Investigation of pre-miR-34a rs35301225 and pri-miR-34b/c rs4938723 polymorphisms in lung cancer

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Abstract

Lung cancer is the most common cancer in worldwide according to GLOBOCAN 2012. A number of factors play a role in lung cancer etiology. Expression level of some miRNAs in lung cancer has been associated with increased risk of cancer. MicroRNAs (miRNAs) are small (19-25 nucleotides), noncoding RNAs and negative gene regulators. miRNAs play a substantial role in the pathogenesis of human cancers. Because of that, miRNA polymorphisms can be important for carcinogenesis. MiR-34 is a family of miRNAs known to have reduced levels of expression in lung cancer and other human cancers (pancreas, colon). It is function like tumor supressors and targeting oncogenes like MET, RET and RAB43. In this study we investigated two polymorphisms (rs35301225 C/A,T and rs4938723 T/C) in miR34a and miR-34b/c from miR-34 family. The study population composed of 100 patient with lung cancer and 100 healty controls. Blood was collected into EDTA-containing tubes and genomic DNA was extracted. Genetic polymorphisms of miR-34a rs35301225 and miR-34b/c rs4938723 were detected by using PCR-based restriction fragment length polymorphism (RFLP). We found that miR-34b/c rs4938723 variant heterozygote CT was associated significantly increased risk of lung cancer compared with their wild-type homozygote TT ($p<0.01$). There was no polymorphism in 100 controls but we found heterozygous polymorhism in 42 patients from 100. However, no significant effects were observed on association between miR-34a polymorphism rs35301225 and lung cancer. In conclusion, rs4938723 polymorphism of miR-34b/c is thought to play an important role in the pathogenesis of lung cancer.

Keywords: Lung cancer, miRNA, miR-34a, miR-34b/c, polymorphism

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Oral Presentation

Investigation of gene polymorphisms associated with vasodilator effect of leptin in in-vitro pre-eclampsia model

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Abstract

The aim of this study was to investigate whether leptin has both molecular and pharmacological effects on serotonin-induced contraction responses in normal and pre-eclamptic human umbilical artery. Umbilical cord from both normal pregnant women and pregnant women with pre-eclampsia were used which were obtained from Obstetrics and Gynecology Clinic. These tissues were performed as in-vitro experimental model. The in-vitro isolated organ bath was used for evaluation of pharmacological agent effectiveness. Serotonin which is a vasoconstrictor agent available in human plasma, was applied to umbilical artery as 10-9-10-7M concentrations cumulatively. Vasoconstrictor effects of serotonin were examined in the presence or absence of leptin. Leptin, a vasodilator agent, was applied at 10-7M concentration in order to distinguish the responses of vasodilation and vasoconstriction on normal and pre-eclamptic cords by MP36 software. For molecular-based experiments, a modified DNA isolation protocol was created. eNOS and leptin receptor genes polymorphisms were determined by HRM analysis and validated by PCR-RFLP analysis. In conclusion, there is no significant vasodilatation rate of leptin at serotonin concentration of 10-7M ($p>0.05$). However, the difference was significant on vasodilatation rates in normal and pre-eclampsia groups compared to controls at 10-9-10-8M concentrations ($p<0.05$). As for molecular analysis, rs1137100, rs1137101 and rs2070744 single nucleotide polymorphisms (SNP) were determined ($p>0.05$). Student t-test was used as statistical analysis. The results suggest that SNPs in the eNOS and leptin receptor genes may be related to pre-eclampsia. Therefore, future studies are required to reveal the role of eNOS and leptin receptor genes in the pathogenesis of pre-eclampsia.

Keywords: Gene polymorphism, Leptin, Pre-eclampsia, Serotonin, Vasodilatation

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Oral Presentation

Investigation of gene expression in sciatic nerve ınjury using lithium loaded hyaluronic acid microgel

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Abstract

Recently, studies about peripheral nerve injury treatment have focused on use of various conduits obtained from some biomaterials. These biomaterials may be natural or biodegradable synthetic materials. Especially hyaluronic acid is one of the best-known natural biomaterials and it is known to reduce scar formation at injury site. Therefore, the significance of cellular survival pathways in the effective treatment of nerve injury is great. Ionic agents such as lithium have important roles in these pathways. Lithium is an enzymatic inhibitor of Glycogen synthase kinase 3 beta and it activates the Wnt/ β-catenin signaling pathway. So, it plays an important role in the survival of the cells in nerve injury. It also has great potential therapeutic benefit for some neurodegenerative diseases because of its protective effects. In this study, hyaluronic acid microgel was synthesized and then loaded with lithium. This microgel was used as filling material. The results were compared to the solely lithium treated case. Our study revealed that the treatment of rat with lithium solution or lithium loaded hydrogels after peripheral nerve injury stimulated the expression of vascular endothelial growth factor A, brain derived neurotrophic factor, glial derived neurotrophic factor, nerve growth factor, restored nerve structure and accelerated the recovery. According to our data, this system has proliferative effects of lithium on both axon and Schwann cells and so it may be used as a potential nerve guidance filling material. This work was supported by a Grant from TUBİTAK (Project number SBAG 215S839)

Keywords: Microgel, Nerve injury, Lithium, Gene expression

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Oral Presentation

Protective effect of hyperbaric oxygen therapy on gentamicin-induced nephrotoxicity

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Abstract

Hyperbaric O2 is a method of using pure O2 at a higher atmospheric pressure in order to treat a medical condition. Hyperbaric oxygen therapy (HBO) for gentamicin-induced nephrotoxicity is thought to be effective in the treatment of renal toxicity in animal models. The purpose of this study is to investigate the effect of HBO therapy on gentamicin-induced nephrotoxicity in rats. Rats were randomly assigned to four different groups of seven rats in each group. The study consists totally 28 male wistar albino rats. Fourteen of the rats were injected with 100 mg/kg intraperitoneal gentamicin once daily for 7 days. The other half of the rats were exposed to HPO 90 min daily for 7 days under 2.5 atm. On the day of eight, the laboratory results were obtained from serum. Moreover, we also performed malondialdehyde, Superoxide dismutase and α–Glutathione-S-Transferases levels of the kidney in all groups. When the gene expression of cytokines in kidney tissue was examined, TNF-α, IL-1β and Kim-1 levels in the gentamicin treatment group were statistically increased compared to the HBO+Gentamicin group (p=0.015, p=0.024, p=0.004). Serum Urea, albumin and LDH levels were found to be increased (p = 0.006, p = 0.224 and p = 0.180 respectively) in gentamicin group compared to HPO + gentamicin group. The HPO + Gentamicin therapy group was not statistically different from the control groups but significantly different from the Gentamicin group for antioxidant parameters. Histopathologic studies have been performed in which hyperbaric oxygen administration significantly reduced the renal damage. Gentamicin administration caused tubular necrosis in kidney. HBO administration may be recommended for treatment of nephrotoxicity originating from gentamicin. Therefore, in this study, we investigated the effects of HPO to discuss the potential role of HPO in nephrotoxicity.

Keywords: Gentamicin, HPO treatment, nephrotoxicity

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Oral Presentation

Investigation of osteogenic associated genes in a new generation bone substitute: Combination of mesenchymal stem cells and fibrin glue coated ceraform

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Abstract

There are three fundamental elements for bone tissue regeneration: osteogenic progenitor cells, osteoinductive growth factors and osteoconductive scaffolds. Ceraform®, is a synthetic calcium phosphate ceramic and it is biocompatible bone defect filling material. In this study adipose tissue derived mesenchymal stem cells were differentiated into osteoblast cells and loaded on Ceraform®. In order to improve cell adherence, Ceraform® was covered with fibrin glue (FG). The cells were cultivated for a 28-day period by osteogenic induction medium. Days 1, 7, 14, 21 and 28 were selected as specific intervals for incubations. Total RNA was isolated and cDNA was synthesized. Differences in the expression of runt-related transcription factor 2 (Runx2), bone morphogenetic protein-2 (BMP-2), and osteocalcin (OCN), collagen (COL-1) and osteopontin (OPN) were determined by qPCR. The peptidylprolyl isomerase A (PPIA) gene was used as an internal control. According to the qPCR results Runx2, COL-1 and OCN gene expressions were highest on the day 14th and then start to decrease. BMP-2 gene expression was increased on day 14 and 21 then maximum on day 28. On the other hand, OPN gene expression was decreased on days 7 and 14. These findings pointed out that the osteogenic induction was successfully activated on FG coated bone material. Therefore, this new bone substitute is promising in clinical applications.

Keywords: Adipose- derived mesenchymal stem cell, ceraform, fibrin glue, osteoinduction

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Oral Presentation

CoQ0 (Coenzyme Q0) decreases nitrite levels in IFN-γ activated RAW 264.7 macrophages

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Abstract

CoQ0 is a redox-active ubiquinone compound that accumulates mostly in the mitochondria of cells. Anti-angiogenic, anti-inflammatory and cancer modulatory effects have been reported for CoQ0 in vitro or in vivo. However, the effects of CoQ0 on IFN-γ mediated inflammatory signaling is largely unkown. In this study, we tested CoQ0 for its modulatory effects on IFN-γ activated RAW 264.7 macrophages which are widely accepted models of inflammatory signaling. We used spectrophotometric MTT assay,Griess assay and Western blot for the determination of cell viability,nitrite levels and STAT1 protein levels respectively.Our results showed that, when applied solely,CoQ0 did not significantly effect cell viability at 0.5-10 μM concentration range whereas diminished cell viability at 25 μM and higher concentrations ($p<0.001$). According to these results,non-cytotoxic concentrations of CoQ0 (0.5 μM-10 μM) were applied to IFN-γ stimulated RAW 264.7 cells. To examine the probable anti-inflammatory activity of CoQ0 on macrophages,nitrite levels which are the end product nitric oxide were measured in the medium.For this purpose, RAW 264.7 macrophage cells were treated with CoQ0 for 1 hour before IFN-γ (20 ng/ml) treatment for 20 hours.According to the results, IFN-γ treatment caused a significant increase in nitrite levels compared to cells without IFN-γ stimulation and CoQ0 treatment (1-5 μM) decreased nitrite levels ($p<0.001$) compared to cells treated with IFN-γ only. Cell viability significantly decreased with 10 μM CoQ0/IFN-γ treatment and it is concluded that the inhibitory effect of CoQ0 on nitrite levels is between 1-5 uM concentration range.CoQ0 also decreased p-STAT1 protein levels in IFN-γ stimulated macrophages at its nitrite inhibitory concentrations.These results collectively show that CoQ0 has inhibitory activity in IFN-γ treated macrophages and further studies may contribute to reveal its effects on IFN-γ related signaling to use this compound for IFN-γ associated pathologies.

Keywords: CoQ0, RAW 264.7, macrophage, nitrite

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Oral Presentation

A new approach to the meniscus damage treatment: Synovium-derived exosomes

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Abstract

In surgical meniscus tear treatment rehabilitation and patient satisfactory rate is low and patients face a strong risk factor of osteoarthritis therefore development of a non-invasive and more efficient treatment is crucial. Exosomes are emerging as a popular cell free candidate with many advantages over cell therapy. In this study we hypothesized that the efficiency of meniscus tear treatment with exosomes enhanced with stem cells derived from join itself can be rather high and the treatment could be forefront and better alternative than cell therapy. Therefore exosomes derived from mesenchymal stem cell isolated from rat synovium tissue (rS-MSC) were isolated, characterized and analysed and its regenerative abilities were analysed and compared with parents. Initially rS-MSCs were enzymatically isolated from synovium tissue and characterized by immunophenotypic and differentiation assays. Afterwards exosomes that isolated from the characterized rS-MSCs were characterized and analysed in terms of cell to cell transplantation and regenerative ability. As a result, MSCs isolated from synovium tissue were positive for CD90, CD54, CD29, MHC Class I and negative for MHC Class II. The cells were also differentiated to adipo-, osteo- and chondrogenically to characterize as MSC. Exosomes were also positive for CD63 and CD81 markers. It was observed that they could be uptaken by target cells in transplantation assays. Wound healing assay proved that regenerative abilities were better than parents. Our study suggests exosomal transplantation; a bioactive cell-free therapy could be a better therapy alternative for meniscus injury.

*This study was supported by grants from the Scientific and Technical Research Council of Turkey (TÜBİTAK 214S331).

Keywords: Rat, synovium, mesenchymal stem cell, exosome

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Oral Presentation

In vitro shoot regeneration in olive (*Olea europaea* L.) cv. Gemlik

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Abstract

The olive (*Olea europaea* L.) is one of the oldest and most important crops in terms of human consumption, and has economic value due to its nutritive and therapeutic values. In the present study, the effect of plant growth regulators (PGRs) on in vitro shoot regeneration of *O. europaea* was studied. For this purpose, nodal explants were cultured on woody plant medium (WPM) supplemented with cytokinins [6-benzyladenine (BA), kinetin (Kn), or gibberellic acid (GA_3)] at the concentrations of 0.5–4.0 mg/L. The highest shoot regeneration rate (93.33%) and shoot number (1.87 shoots per explant) were observed on WPM containing 4.0 mg/L BA followed by 2.0 mg/L BA and 4.0 mg/L Kin which were statistically placed in the same group. The longest shoot (3.0 mm) was obtained with 1.0 mg/L Kn. WPM supplemented with 2.0 mg/L GA_3 gave the best response regarding the leaf number (2.67 leaves per explant). The highest leaf length (5.4 mm) was recorded on WPM containing 0.5 mg/L BA and 4.0 mg/L GA_3.

Keywords: *Olea europaea*, Shoot regeneration, Cytokinin, *In vitro*

Acknowledgment: This work was supported by the Ege University Scientific Research Projects Coordination Unit through project no 09-MUH-010.

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Oral Presentation

Application of plant cell and tissue cultures in environmental genetics

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Abstract

The plant cell and tissue cultures were used for investigation of influence of environmental factors including urban pollutions like UV irradiation and low frequency (50 Hz) electromagnetic field (LF EMF) of different density in presence of silica nanoparticles. The changes of cell relative fluorescence in tested cultures were detected with use of BD FACSJazz® cell sorter. Influence of different density LF EMF on cells of several plant species (*Cyclamen persicum, Tilia cordata, Hordeum vulgare* and *Triticum aestivum*) was investigated. In order to use test organisms using most suitable preparations somatic cell culture from callus culture initiated from leaves of flax (*Linum usitatissimum*) was used first of all. Somatic and gametic cell cultures of other species were also established. The relative fluorescence of the somatic cells had large distribution, since the cells differed by many parameters (size, shape, metabolism etc.). Immature pollen cells (one-nucleus stage) as most appropriated for investigation of influence of environmental factors were found. A significant increase in relative cell fluorescence was observed for all mentioned plant species after treatment by UV irradiation and LF EMF with density 400μT. It was found that cell relative fluorescence was dependent on duration of cultivation in SiO2 nanoparticles suspension. The genetically different clone cultures of freshwater macrophyte duckweeds (*Lemna minor*) were established and used as excellent model system for investigation of environmental factor influence on whole organisms.

Keywords: Cell culture, UV irradiation, LF EMF, silica nanoparticles, *Lemna minor*

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Oral Presentation

Effects of EGFR 19. exon 747-750 deletion on capture of non-small cell lung cancer

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Abstract

The most important factor in the etiology of lung cancer is smoking, which is important in other environmental pollutants and genetic susceptibility. The course of NSCLC is very aggressive, has a high mortality, and constitutes a large proportion of lung cancers, about 80%. Among the gene mutations that are prognostic value in NSCLC, EGFR accounts for the highest rate with 50-80%. EGFR is a transmembrane glycoprotein that exhibits both tyrosine kinase activity associated with normal cell growth and conversion to malignant transformation. In our study; The relationship between EGFR gene 19th exon 747-750 deletion in NSCLC has been examined. A sample of 180 patients who were diagnosed as NSCLC in Mersin University Medical Faculty Oncology Clinic and healthy 192-person control group that was created by considering the same age and gender characteristics. The DNAs were obtained according to the standard salt precipitation method. Mutation detection and genotyping analyzes were determined by polymerase chain reaction (PCR) and restriction fragment length polymorphism (RFLP) analyzes. The mutant genotype ratio of EGFR exon-19 deletion was 15.1% in the control group and 29.5% in the NSCLC group, increasing the risk of NSCLC by 2.68 fold($p<0.001$). Distribution of NSCLC according to major histological types of tissue; adenocarcinoma. 61.8% in squamous cell carcinoma, 28.9% in squamous cell carcinoma and 9.2% in squamous cell carcinoma($p<0.001$). Male gender, smoking, and older age were shown to be important risk factors for NSCLC. ($p<0.001$).

Keywords: KHDAK, EGFR gene, ekzon-19, 747-750 deletion, older age

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Oral Presentation

Pyrosequencing of KRAS, NRAS and BRAF mutations using in metastatic colorectal cancer cases: The need to establish a NGS based specific cancer panel

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Abstract

Approximately 50–60% of patients diagnosed with colorectal cancer have metastases. The relative 5-year survival rate in metastatic colorectal cancers is 10%.The receptor for EGFR has been reported to be overexpressed in 49–82% of colorectal tumours. In recent years, anti-EGFR therapy has given hope to these patients. Unfortunately, anti-EGFR therapy only affects 10–20% of these cases. The presence of KRAS, NRAS and BRAF (V600E) mutations in the tumour have been associated with anti-EGFR therapeutic resistance. For this reason, it is critical to investigate the mutations of related genes in the tumour tissue of these cases. At our centre, KRAS (exon 2, 3, 4), NRAS (exon 2, 3, 4) and BRAF (V600E) mutations in metastatic colorectal cancer cases were analyzed using a pyrosequencing method. Of 93 analyzed patients, 51 (54.8%) mutations were detected. There were KRAS mutations in 45 (48.3%) patients, an NRAS mutation in 1 (1.07%) patient and BRAF mutations in 5 (5.37%) patients. The KRAS codon 12 mutation was present in 36 (38.7%) of 93 patients and in 70.5% of the patients with other mutations. These findings were consistent with the literature. The reliability of the pyrosequencing technique is quite high; however, the working process is quite laborious. With the NGS analysis system, more patients and genes can be studied in a shorter time and at greater cost efficiency. Therefore, there is need for cancer-specific NGS gene panels.

Keywords: KRAS, NRAS, BRAF

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Oral Presentation

Parental and Epirubicin-HCl resistant lung cancer cells showed different sensitivity to mountain tea (*Sideritis stricta* Boiss & Heldr.) essential oil

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Abstract

Research conducted the consumption and value of herbal teas has increased in recent years. Indeed, in our country "dag çayı" or "yayla çayı (mountain tea)" known by the name *Sideritis stricta*, it is commonly consumed in tea form. Mountain tea is collected and consumed by local people and it is also widely sold to domestic and foreign markets in the form of tea bags prepared by grinding directly or dried plants after being collected and dried by some companies. In this study, the cytotoxic effect of essential oil obtained from Sideritis stricta, endemically grown in Antalya flora, was assessed with using two different tests as 3-(4,5-dimethyl-2-thiazolyl)-2,5-diphenyl-2H-tetrazoliumbromide (MTT) and CellTiter-Blue® Cell Viability in parental and epirubicin-HCl (drug) resistant non-small cell lung cancer (H1299) cells. After 24, 48 and 72 hours incubations IC50 values were calculated respectively from MTT test results, for essential oil on parental cells, 90, 76 and 60 µg/mL, for essential oil on drug resistant cells 115, 92 and 68 µg/mL. Also, after 24, 48 and 72 hours incubations IC50 values were calculated respectively from CellTiter-Blue® Cell Viability test results, for essential oil on parental cells, 75, 50 and 37 µg/mL, for essential oil on drug resistant cells 106, 84 and 69 µg/mL. Parental H1299 cells were found to be more sensitive to cytotoxic effect of the essential oil according to both tests. It has been observed that cytotoxic effect of the essential oil increased with time and concentrations on parental and drug resistant H1299 cells in both tests.

Keywords: *Sideritis stricta*, Essential oil, Cytotoxicity, Drug resistance, Lung cancer

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Oral Presentation

Apoptotic DNA fragmentation triggered by combination therapy of 5-FU and CAPE in A549 cell line

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Abstract

Non-small cell lung cancer (NSCL) is a leading cause of cancer mortality over the World. Caffeic Acid Phenethyl Ester (CAPE) is a major active component in propolis. It has been previously identified as a strong antioxidant, anti-inflammatory, antiviral and anticancer molecule. We aimed to investigate the comparative effects of 5-FU, CAPE with single and combine treatment in A549 cells. We investigate to analysis of apoptosis by DNA fragmentation in A549 cells. Thus, we further examined DNA fragmentation to clarify whether CAPE analogues induced apoptosis or not. Cells were cultured in RPMI-1640 in a humidified atmosphere of 5%CO2 at 37°C. Cell viability was determined by MTT assay. The IC50 values were detected for 5-FU, CAPE and combined treatment by 50µM, 4µM and 12,5µM +1µM respectively. We compared the effect of monotherapy and polytherapy of drugs on cells. Cells were treated with determined concentration for 24 and 48 hours. After treatment, cells were isolated according to DNA fragmentation protocol and DNA fragments showed on 3% agarose gel. For cell viability, cells were treated with IC50 value for each drug and combination 24h, 48h of incubation. Combine therapy is more effective than single therapy of these drugs. We determined that DNA fragmentation, a marker for induction of apoptosis, increased with 5-FU treatment at 48 hours. These results suggest that 5-FU is more effective than CAPE to induction of apoptosis. This study is a basic qualitative study for the investigate of the apoptosis pathway triggered by 5-FU.

Keywords: Lung cancer, CAPE, 5-Fluorouracil, Apoptosis

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Oral Presentation

Molecular identification of *Citrus cachexia viroid* (CCaVd) in citrus variants

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Abstract

Citrus growing has a remarkable production potential in our country and particularly in our region. Recently, a number of studies have been carried out on viroids; one of the disease agents in citrus fruits. In addition, 12 major viroids have been reported in citrus fruits. *Citrus cachexia viroid* (CCaVd) disease, which causes the death of trees have a substantial negative economic impact on citrus growing. This viroid has recently become a critical threat as various new rootstocks are introduced in the region. A total of 160 specimens were examined in the citrus viroid samplings held between 2015-2017, including 50 oranges (Citrus cinensis), 50 mandarins (*C. reticulata*), 50 lemons (*C.limon*) and 10 sub-notches. In some of the mandarin trees examined in Adana, Mersin and Hatay of Cukurova Region, the characteristic gummy bark formation symptom of CCaVd was observed. In samples of Satsuma and Rize mandarin varieties, the presence of CCaVd was detected by molecular applications with specific primers. By implementation of the PCR products on a 2% agarose gel, banding was recorded at 283 bp in CCaVd-infected samples and at 220 bp in non-cachexia-ethnic infected samples. Among the examined samples, 125 of them were reported to be contaminated with CCaVd while the 115 samples were contaminated with non-cachexia. PCR products were purified and transferred to the sequence analysis. Blast analyses and dendogram generation of the obtained sequences were performed using the Mega 7 program. The BLAST analyses of the selected specimens displayed 99% similarity to the registered isolates (AF213493, AB054605, DQ014514, KC584013, AJ490824, KX156936, etc.) when compared to the NCBI database isolates.

Keywords: Citrus viroids, *Citrus cachexia disease, Hop stunt viroid*, molecular detection, Phylogenetic analysis

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Oral Presentation

Use of gaseous ozone for reduction of ochratoxin A and fungal population on sultanas

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Abstract

Contaminated dried vine fruits including sultanas are regarded as an important source of ochratoxin A (OTA), a fungal secondary toxic metabolite, in human diet. In this study, sultanas were treated with gaseous ozone at 12.8 mg/L to evaluate the effects of ozonation on OTA level, fungal viability and total phenolic content. Sultanas were exposed to continuous stream of gaseous ozone up to 240 min in a treatment chamber at ambient laboratory conditions. The initial OTA level on spiked sultanas, determined as 16.7 µg/kg, decreased by 60.2 and 82.5% after 120 and 240 min of ozone exposures, respectively. Exposure to gaseous ozone for 120 min yielded more than 2.2 log reduction in the fungal population naturally present on sultanas. Ozonation did not cause a significant ($P>0.05$) change in the total phenolic content of sultanas up to 120 min of treatment. The results obtained indicate that over the 60% reduction in the level of OTA on sultanas can be achieved by gaseous ozone treatment without causing a significant decrease in total phenolic content. This study shows that gaseous ozone has a remarkable potential to degrade OTA and reduce fungal viability on sultanas.

Keywords: Gaseous ozone, sultanas, ochratoxin A, fungal viability, total phenolics

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Oral Presentation

Morphological and molecular characterization of four fungal *Hebeloma* species and identification of *Hebeloma subtortum* as a new record

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Abstract

Hebeloma (Fr.) P. Kumm. (Hymenogastraceae) is an ectomycorrhizal fungus distributing in the temperate zones of the northern hemisphere. The genus was divided into thirteen sections using different characters such as habitat, smell, lamellae, presence of cortina, structure of cheilocystidia and dextrinoid reaction of the spore. 27 *Hebeloma* species have been reported in Turkey and in the current study four of them (*H. subtortum, H. mesopheum, H. cavipes, H. eburneum*) were characterized based on both microscopic/macroscopic features and molecular techniques. Structures of pileus, lamellae, stipe, basidia, spores, pileipellis, hyphae and cheilocystidia were studied as morphological characters. The nuclear ribosomal internal transcribed spacers (nrITS) region was used to determine the phylogenetic relationships among species. In the tree, *H. subtortum* and *H. mesopheum* located in sect. *Hebeloma* with their representatives retrieved from NCBI while *H. cavipes* and *H. eburneum* grouped with their representatives and caused sect. *Denudata*. *Hebeloma subtortum* and *H. mesophaeum* have almost similar spore length and width, but *H. subtortum* is differentiated by mainly ovoid spore; adnate, occasionally subdeccurent lamellae; a pruinose stipe, widened towards the base and smaller basidia. DNA sequence of H. subtortum showed 99% similarities with those of representatives. At the end of the study, we contributed to the documentation of a new record of *Hebeloma subtortum*, supported by a full description and phylogenetic results. *Hebeloma subtortum* has already been recorded in Turkey (under the names *Hebeloma mesophaeum* var. *lacteum* and *H. sordidum*), but this study appears to be the first record which is further confirmed by phylogeny.

Keywords: *Hebeloma*, ITS, Mycogenetics, New record, Phylogeny

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Oral Presentation

Comparison of 16S rRNA and nosZ denitrification functional genes as molecular markers for assessing bacterial diversity in environments

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Abstract

Bacterial denitrification in agricultural soils is a major source of nitrous oxide, a potent greenhouse gas. Denitrification is a dissimilatory process in which nitrate and nitrite are reduced to gaseous nitric oxide, nitrous oxide and molecular nitrogen when oxygen is limited, which consists of four reaction steps catalyzed by nitrate reductase (napA or narG), nitrite reductase (nirK or nirS), nitric oxide reductase (qnorB or cnorB) and nitrous oxide reductase (nosZ). The aim of this study was to investigate the comparison of 16S rRNA and nosZ genes as molecular markers in the identification of bacteria with denitrification ability. For 16S rRNA, PCR products of 49 bacteria were obtained with 27F-1492R primer pairs. For nosZ, PCR products were obtained with primers 1F-1R (259 bp), 2F-2R (267 bp) and F-1622R (453 bp) of 39 bacteria that the single nosZ band provided on the agarose gel. Following the procedure, PCR products were purified to perform sequence analyses. We compared the 16S rRNA and nosZ gene sequencing results analyzed with the GenBank and EzTaxon. The bacterial 16S rRNA gene clone library was dominated by Gammaproteobacteria and Bacilli. The nosZ clone library did not contain similar to pure culture; these sequences were most closely associated with environmental clones. Our study showed that the nosZ functional gen could be used to identify denitrification abundance in environment but could not be used to identify pure bacterial cultures. It was also found that the nosZ sequences showed uncultured denitrifier species.

Keywords: 16S rRNA, nosZ, Denitrification, Phylogeny, Molecular markers

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Oral Presentation

Production of γ-poly(glutamic acid) using feather hydrolysate as fermentation substrate

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Abstract

Polyglutamic acid (PGA), which is water-soluble and biodegradable, can be used for numerous applications. One of the significant challenges of producing PGA at an industrial scale is its cost. As an effort to move towards feasible PGA production, feather hydrolysate (FH) derived from enzymatic hydrolysis of feather was used to produce PGA. 30-L fermentation was realized to obtain keratinase using *S.pactum* DSM 40530. Fermentation broth retentate were concentrated after centrifugation by using cross-flow filtration. When the total volume was decreased by a factor of 15, the volumetric enzyme activity increased by 8.75-fold and 8×103 U L-1d-1 of enzyme activity was the optimum for achieving 75% feather degradation per gram of feather. 40 g/L of FH was used with different media compositions using *B.licheniformis* 9945a. Among four different cultivation where L-glutamate, tri-sodium citrate and glycerol were used, highest yields of both γ-PGA and cell dry matter (CDM) were obtained from cultivation 1, at 5.4 and 8.6 g/L, respectively, despite culture media did not contain glutamic acid, an essential precursor for γ-PGA production. In cultivation 2, which was not only missing glutamate but also citrate, the γ-PGA and CDM yields decreased to 3.2 and 7.8 g/L, respectively whereas it was only 1.94 and 4.2 g/L when FH was used as the sole substrate in cultivation 3. When cultivation 4 was adopted where only glycerol was missing, the γ-PGA and CDM yields slightly increased to 2.3 and 5.46 g/L, respectively. This is the first study that achieved the production of PGA from FH.

Keywords: γ-Poly(glutamic acid); γ-PGA; Feather hydrolysate; Keratinolytic activity; Feather

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Oral Presentation

Investigation of *las* and *rhl* quorum-sensing systems in clinical isolates of ceftazidime resistant *Pseudomonas aeruginosa*

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Abstract

Pseudomonas aeruginosa is a Gram-negative, common opportunistic pathogen in immunocompromised patients and is responsible for causing a huge variety of infections with important levels of morbidity and mortality. P. aeruginosa has also numerous virulence factors. Production and regulation of these virulence factors depend on intercellular communication systems called Quorum Sensing (QS). Bacterial cell density reaching a certain threshold QS triggers the expression of many virulence factor genes (*lasI, lasR, rhII and rhIR*). This study aims to investigate of ceftazidime resistant *P. aeruginosa* strains from different sources in terms of virulence factors that is, QS capability. For this study, ceftadizime resistant *P. aeuginosa* strains (n:50) causing clinical infections were isolated from patients in intensive care, wound, and infection units of Samsun Education and Research Hospital in Turkey. The strains were analysed for the production of several virulence factors such as N-acylhomoserine lactone, swimming, twitching, and swarming controlled via mediated QS. Then, the capacity of biofilm formation was investigated by microtitration plate method. The existence of *lasI, lasR, rhII and rhIR* genes which are under the control of QS genes for the synthesis virulence factors were investigated with PCR. *P. aeuginosa* ATCC 15692 was served as a positive control. As a result of the study, twenty-nine strains expressed HSL and they were recorded as QS (+). Remaining twenty-one strains were recorded as QS (-). *lasI* gene was shown in 48 strains, lasR gene in 46, *rhlI* gene was shown in 41 QS(+) strains, *rhlR* was shown in 36. Our results show once again that virulence factors have important role in intercellular communication systems.

Keywords: *Pseudomonas aeuginosa*, Virulence factors, Quorum Sensing

Acknowledgements: This study was supported by the Anadolu University Research Foundation (Project Code: 1403F090).

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Oral Presentation

Genetic identification of biocatalysts from functional metagenomic DNA library

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Abstract

Employing metagenomic approach, researchers are able to decode the genetic patrimony of unculturable microbes, but the DNA sequence information alone is not enough to determine the gene function and this is the main challenge of sequence-based metagenomics. Functional metagenomic which consists on the cloning and expression of metagenomic DNA and screening for enzymatic activity can be the right approach to bioprospect known or/and unknown enzymes. Library of over 108,000 EPI300T1R of pCC1FOS fosmid recombinant about 40 K of metagenomic DNA was constructed from microbiota of Malaysian palm oil mill effluent and screened with a cocktail of three fluorescent substrates; methylumbelliferyl-ß-D-glucopyranoside (MUGlc), methylumbelliferyl-ß-D-cellobioside (MUC) and chlorocoumarin-xylobioside (CCX) to detect endo-glucanase, ß-glucosidase and endo-xylanase activities. The high-throughput screening of the library indicated high number of clones with fluorescence signal and 100 high rated clones were selected for sequencing with Next-Generation Sequencing strategy. Over 80 probable cellulose-degrading enzymes and over 30 probable xylan-degrading enzymes were found in the NGS-data.

Keywords: Functional metagenomics, high-throughput screening, next-generation sequencing, cellulose-degrading enzymes, xylan-degrading enzymes

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Oral Presentation

Pyrethroid resistance and distribution of kdr allele in field populations of *Culex pipiens* in Turkey

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Abstract

Mosquitoes within the *Culex pipiens* complex have been implicated as major vectors for several pathogens responsible for infectious human diseases. Vector control is important in terms of mosquito-borne disease prevention and management. Insecticides are used extensively to control mosquito insect vectors. Due to their high efficacy, rapid rate of knockdown, low mammalian toxicity and less environmental impact, pyrethroid insecticides are currently being promoted worldwide for disease vector. The widespread and improper use of pyrethroid insecticides has resulted in the evolution of resistance in many mosquito species, including *C. pipiens*. Previous studies demonstrated that pyrethroid insecticide resistance is caused by point mutations in the S6 transmembrane segment of domain II of the para-homologous voltage gated sodium channels in the *C. pipiens*. In the majority of cases, an A→T transition at position 1014 is observed, resulting in a leucine to phenylalanine (L1014F) substitution. In this study field collected mosquito specimens were identified individually using Sanger Sequencing with standard insect DNA barcoding primers targeting fragment of cytochrome oxidase I gene. gDNA samples belonging to *C. pipiens* were monitored in order to detect kdr allele frequency by allele-specific PCR. The results showed that the distribution of the L1014F kdr mutation is widespread and the kdr mutant alleles in all populations were mostly in heterozygous condition. These data provide suitable information for the design and implementation of successful resistance management strategies against this species.

Keywords: *Culex pipiens*, pyrethroid resistance, kdr, allele-specific PCR

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Oral Presentation

Effects of stearic acid on programmed cell death mechanisms of the fission yeast (*S. pombe*)

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Abstract

Stearic acid (SA) is a type of saturated LCFA (long chain fatty acids) including 18 carbon atoms. SA is found in many foods and oils, and also used in pharmaceutical industry. Some researchers have reported significant inhibition of p21 and PI3K/Akt signaling in response to dietary uptake of SA. We evaluated apoptotic effects of SA (300-1500 μM) in the fission yeast (*S. pombe*), which is a uni-cellular model organism and also known as micro-mammal. Effects of SA on cell proliferation and viability were assessed using hemocytometer and methylene blue staining method. For visualizing nuclear morphology, nucleus was stained with DAPI and acridine orange/ethidium bromide (AO/EB) dual stain. DNA fragmentation and nuclear condensation were observed between 900-1500 μM doses. 10-90% of cells showed apoptotic nuclear morphology in correlation with increasing doses of SA. The results were validated with AO/EB dual staining. In addition, expression of *S. pombe* caspases, Pca1 and Sprad9, markedly increased. The potential effects of SA on cell proliferation and programmed cell death mechanisms were shown in unicellular model fungi, *S. pombe*. Besides, *S. pombe* was evaluated as a new model organism in molecular toxicology and cell death research.

Keywords: Stearic acid, apoptosis, DNA fragmentation, *S. pombe*

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Oral Presentation

Inhibition of nanotoxic effect of zinc oxide by resveratrol

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Abstract

Zinc oxide (ZnO) is a compound that has harmful effects as well as being used in many different areas. Numerous studies have been carried out to minimize the toxic effects of ZnO nanoparticles (NPs). In the present study, the protective role of resveratrol (RSV), a potent antioxidant polyphenol substance, was examined against ZnO-induced nanotoxicity on human pulmonary alveolar epithelial cells (HPAEpiC). In this context, the cytotoxic and genotoxic effects of different concentrations of RSV (5, 10, 20 mg/L) and ZnO NPs on the cells were measured alone and in combination. At the same time, the effects of aforementioned applications on the total antioxidant capacity (TAC) level in HPAEpiC were assessed. The results obtained showed that ZnO NPs alone significantly increased cytotoxicity and genotoxicity on cells compared to negative control (control (-)). In the experiments performed with RSV + ZnO NP combination, cytotoxic and genotoxic activity decreased at the level of $p < 0.05$ especially at 20 mg/L application of RSV. When the level of TAC in cells was examined, a concentration-dependent increase was detected between TAC and RSV. It was determined that ZnO NPs reduced the TAC level statistically ($p < 0.05$) in comparison with control (-). In conclusion, the present study revealed that RSV, a natural antioxidant, showed protective property against genotoxic and cytotoxic damage induced by ZnO NPs on HPAEpiC.

Keywords: Antioxidant, Nanotoxicity, Resveratrol, Zinc oxide

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Oral Presentation

Preparation of magnetic CuFe2O4 and reduced graphene oxide nanocomposite for L-Cysteine detection

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Abstract

Graphene has gained tremendous interest as a supporting material due to its large surface area, high conductivity, ionic mobility, and superior mechanical flexibility [1] Graphene can be synthesized by two reactions: (1) chemical oxidation of graphite to graphene oxide (GO) and (2) reduction reactions. GO is a two dimensional (2D) carbon material with a large specific surface area, multiple aromatic regions and hydrophilic oxygen groups [2]. CuFe2O4 has received great attention and is widely used in sensors, electronics and catalysts in recent years [3]. In this study, I report the synthesis of a copper ferrite-reduced graphene oxide nanocomposite. The nanocomposite was characterized by X-ray diffraction (XRD), scanning electron microscope (SEM) and Fourier-transform infrared (FTIR) spectroscopy. Detailed investigations of the detection of L-cysteine was carried out using Cyclic Voltammetry (CV).

Keywords: Copper ferrite, electrochemical, reduced graphene oxide, L-cysteine

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Oral Presentation

Preparation, caharacterization, biological and sensor application of copper nanoparticles (CuNPs) based on nitrogen-doped porous carbon particles (GQDs)

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Abstract

Nitrogen-doped porous carbon particles, the next generation carbon based nanomaterials, due to their outstanding physical, chemical and biological properties, have potential in revolutionizing the future of nanomedicine and biotechnology. Hence recently, many studies were conducted on graphene quantum dots nanomaterials. Here, copper nanoparticles (CuNPs) were synthesized using nitrogen-doped porous carbon nanomaterials (GQDs) as reducing reagent and stabilizer. Compound was characterized by UV-Vis, FT-IR spectroscopy, transmission electronmicroscopy (TEM) and thermogravimetric analysis (TGA). UV-Vis spectroscopy studies of the interactions between the CuNPs and GQDs with calf thymus DNA (CT-DNA) showed that the compound interacts with CT-DNA via electrostatic binding. The DNA cleavage activity of the CuNPs and GQDs was studied by agarose gel electrophoresis method. pBR322 DNA (0.1 µg µL-1) in Tris-HCl buffer (100 mM, pH:7,2) treated with the compound at 37 ^{0}C for 3 h. DNA cleavage study showed that the CuNPs and GQDs cleaved DNA without any external agents.

Support from Canakkale Onsekiz Mart University, The Scientific Research Commission (ÇOMÜ-FBA: 2018-1291) is greatly acknowledged.

Keywords: Copper nanoparticles (CuNPs), Nitrogen-doped porous carbon particles, Calf thymus DNA (CT-DNA), DNA cleavage, DNA binding

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Oral Presentation

Preparation and characterization of BSA-gold nanoparticle conjugates

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Abstract

In this study, we have conjugated different ratios of bovine serum albumin (BSA) protein with TAMRA labelled gold nanoparticles (AuNPs) and characterized these conjugates. Gold nanoparticles were synthesized in the aqueous medium using sodium citrate acted as both reducing and capping agent. Polyethylene Glycol (PEG) chains were used for passivation. The particles were then labelled with TAMRA dye. The nanoparticle formation was confirmed with its characteristic surface plasmon absorption band observed at 521 nm. In addition, transmission electron microscopy analysis revealed the average particle size to be about 20 nm. BSA model protein was conjugated to PEGylated AuNPs via EDC/NHS chemistry. The bio-conjugation process was investigated using the measurements of optical density, fluorescence intensity, Dynamic light scattering, gel electrophoresis and zeta potential. Fluorescence intensity was found to be increased in proportion to BSA ratios. After conjugation, the zeta potential of the resulting AuNPs was reduced from -31,2 mV to -20,1 mV in this experiment. The studies on the conjugation of biomolecules onto nanoparticles have been increasing day by day. However, it is extremely important to determine whether these biomolecules maintain their biological efficacy prior to biological or medical applications. Therefore, before assessing the bioactivity of prepared bioconjugates, irrelevant model biostructures such as proteins, antibodies or oligonucleotides whose effects have already been known, should be used. The clarification of conjugation and interaction with the model protein BSA will further enrich the nanomedicine field by developing and conjugating nanotherapeutic agents especially nanoparticle-protein conjugates.

Keywords: Gold nanoparticles, Polyethylene Glycol, Bovine Serum Albumin, bio-conjugation, nanoparticle-protein interaction

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Oral Presentation

Preconcentration of Al(III) by coriolus versicolor immobilized γ-Fe2O3 nanoparticles prior to its determination by ICP-OES

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Abstract

This study investigated utilization of Coriolus versicolor loaded with γ-Fe2O3 nanoparticles as a biosorbent for magnetic solid phase extraction (MSPE) and detection of trace levels of Al(III) from some environmental and food samples. The surface structure of immobilized *C. versicolor* was characterized by FT-IR, SEM and EDX. The effects of pH, flow rate, quantities of *C. versicolor* and γ-Fe2O3 nanoparticles, eluent type, concentration and volume, foreing ions and sample volume were tested for optimization of the process. The best experimental conditions were found as pH 6.0, 2.0 mL min-1 flow rate, 100 mg amount of *C. versicolor* on 150 mg amount of γ-Fe2O3 magnetic nanoparticles, 5.0 mL of 1.0 mol L−1 HCl as eluent, and 500 mL of sample volume. The limit of detection and preconcentration factor were achieved as 0.03 ng mL-1 and 100, respectively. Accuracy of the recommended process was tested by recovery measurements on the certificated reference materials and high recoveries (≥95%) with low RSDs were obtained. The developed process was successfully applied for quantification recovery of Al(III) in various environmental and food samples.

Keywords: *Coriolus versicolor*, Aluminium, Preconcentration, Biosorbent, Magnetic solid phase extraction

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Oral Presentation

Molecular and screening assay in nematode-viroid interactions in *Kalanchoe daigremontiana*

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Abstract

Root knot nematodes are important nematode group cause crop losses in many plant species. They also interact with many organisms including viroid. As a minuscule pathogen, Viroid consists of a short strand of circular, single-stranded RNA without protein coat. They are inhabitants of higher plants and cause diseases. Hop stunt viroid (HpSVd) and *Potato spindle tuber viroid* (PSTVd) are most damaging viroid disease agents. Nematode and viroid interactions may cause devastating effect on plants. However, the effect of both pathogen interactions on plants have not been fully understood. Therefore, this study was conducted to determine the nematode and viroid effects on an indicator plant, *Kalanchoe daigremontiana* using molecular and screening assay. For this aim, *Meloidogyne incognita* with HpSVd and PSTVd viroid were inoculated to *K. daigremontiana* to determine the interactions among them. The experiment was set up as the infection of nematode, PSTVd, HpSVd, nematode+HpSVd, nematode+PSTVd, PSTVd+HpSVd and PSTVd+HpSVd+nematode. RNA extraction and screening assay were achieved following the mechanical inoculation, and specific primers were used for the detection of viroids. Results revealed that the replication of circular RNA of viroid in all infected plants were detected in PSTVd, HpSVd, nematode+HpSVd, nematode+PSTVd, PSTVd+ HpSVd, PSTVd+ HpSVd+nematode samples apart from control and solely nematode infected plants. Decreased plant growth was observed in both nematode and viroid inoculated plants, and molecular and screening results showed parallelism. Results indicate that this study is a leading research on nematode-viroid interactions in *K. daigremontiana* that may provide a useful resource for future studies.

Keywords: *Melodiogyne incognita, Hop stunt viroid, Potato spindle tuber viroid, Kalanchoe daigremontiana*

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Oral Presentation

Biological activity evaluation of most popular edible plant-Salsify (*Tragopogon porrifolius*) in Sivas

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Abstract

Tragopogon porrifolius belongs to the Asteraceae family, is an annual or biennial plant. It is subdivided into three subspecies as *T. porrifolius* subsp. *australis*, *T. porrifolius* subsp. *cupani* and *T. porrifolius* subsp *porrifolius*. The plant is known as ''Yemlik'' among the local people. The roots, leafy shoots, and open flowers of this plant is consumed in Southern and Central Europe, North America and United Kingdom and further is also used to treat cancer in Lebanese folk medicine. *Tragopogon porrifolius* has antioxidant activity due to some phenolic acids and flavonoids. In addition to that this plant has monounsaturated and essential fatty acids, vitamins and polyphenols components. The plant materials were collected from natural habitat before flowering stage. In this work, GC-MS was used for characterization of the chemical composition of ethanol extracts from *T. porrifolius*. In vitro antioxidant activity as well as some enzyme inhibitory activities such as α-glucosidase, α-amylase, acetylcholinesterase and butyrylcholinesterase have been examined on the extract. GC-MS results indicate that T. porrifolius ethanol extract have 4H-Pyran-4-one (15.0%), Benzeneacetaldehyde, Isosorbide as major constituents. The extract demonstrated potent antioxidant activity in a concentration dependent manner. The *T. porrifolius* extract exhibited higher levels of ABTS scavenging activity than ABTS. The total phenol and flavonoid content assay results demonstrated that T. porrifolius contains quercetine equivalent 12.33 ± 0.23 mg/g flavonoid and gallic acid equivalent 74.71 ± 5.59 mg/g phenolic constituents. As for the enzyme inhibition activity, the extract exhibited strong inhibition activity on the tested five enzymes such as AChE, BChE, α-glucosidase, α-amylase and tyrosinase at concentration of 2 mg/mL. The identification of AChE, BChE, α-glucosidase and α-amylase inhibitory activity in *T. porrifolius* support the possible use of the plant as functional food for the management of Alzheimer's and diabetes. The study results support the traditional use of this plant among the Turkish people scientifically. The results of this study will shed light on the further study on the plant as well as on the carrying out of biological activity guided isolation of active compounds.

Keywords: *Tragopogon porrifolius, in-vitro*, antioxidant, enzyme-inhibition, GC-MS

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Oral Presentation

High-throughput genomic simple sequence repeat (SSR) marker development and construction of a high resolution physical map in chickpea (Cicer arietinum L.) genome

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Abstract

Chickpea (Cicer arietinum L.) (2n=16) is the second most important legume crop in the world, cultivated globally in arid and semi-arid regions. It is a rich source of protein, dietary fibers, carbohydrates and minerals. In addition to its high nutritional value, the crop supports soil fertility via fixation of atmospheric nitrogen. The present research reports the development of 29,207 novel simple sequence repeat (SSR) markers specific to C. arietinum genome. A bioinformatic approach with high-stringency repeat identification criteria was utilized in order to mine C. arietinum chromosomes for simple sequence repeats, resulting in 67,816 identified repeat loci. Repeat loci were further converted to 29,207 PCR markers using high-stringency marker design parameters. The markers are well-distributed among the eight C. arietinum chromosomes with an average distance of 16.5 kb between adjacent markers. A physical distance map of the C. arietinum genome was constructed based on absolute marker positions. A set of newly developed markers that represent all eight C. arietinum chromosomes was validated with laboratory experiments in order to prove the amplificability of markers generated through bioinformatic analyses. As a result of the present research, C. arietinum genome was saturated with almost 30,000 genome-specific markers with known absolute positions along physical chromosomes. The large number of, C. arietinum specific DNA markers introduced in the present work constitute a valuable resource for molecular genetic research in chickpea, including germplasm characterization and preservation, and mapping genes/QTLs (Quantitative Trait Loci) that control relevant traits (e.g. disease resistance, drought and salinity tolerance) in chickpea production.

Keywords: Molecular genetics, Bioinformatics, Sequence-specific markers, DNA markers

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Oral Presentation

Development of novel sequence-based markers linked to CMV (*Cucumber Mosaic Virus*) resistance in pepper (*Capsicum annuum L.*)

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Abstract

CMV (*Cucumber Mosaic Virus*) is one of the earliest known plant diseases with a broad host range, affecting hundreds of crop species including members of the *Solanaceae* family. CMV resistance in *Capsicum annuum* has long been identified as a multigenic trait, requiring the introgression of multiple loci from resistance sources for breeding toward CMV resistance. In 2010, a single dominant gene was identified in the short arm region of *C. annuum* LG2 (Linkage group 2), at a location syntenic to ToMV resistance locus in tomato genome. Yet, a tightly linked marker was not defined and the closest marker was mapped at 2 cM away from the CMV resistance locus. In the present work, bioinformatic analysis was performed in order to saturate the short arm region of *C. annuum* LG2 with simple sequence repeat (SSR) markers and primers were designed that flank the repeat loci. A total of 10 primer pairs were used amplify the SSR loci from a set of CMV resistant and susceptible *C. annuum* genotypes. Among the 10 SSR markers, three displayed polymorphisms among the tested *C. annuum* genotypes. More importantly, allelic distribution of two polymorphic SSR markers correlated with the CMV resistance status of the tested genotypes. Thus, the two markers developed specific to the short arm of pepper chromosome 2 represent candidate loci for the selection of CMV resistance in pepper breeding programs.

Keywords: Marker assisted selection, Molecular breeding, Simple sequence repeat markers, Disease resistance

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Oral Presentation

Identification and regulation of antiporters in strawberry (*Fragaria X ananassa*) under salinity stress

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Abstract

Soil salinity is a major abiotic stress that decreases plant growth and productivity. The strawberry cultivar Sweet Charlie which was chosen for physiological attributes determination, identification and differential regulation of antiporters under salinity stress. We have identified 10 antiporters in cultivated strawberry. These antiporters belong to 6 gene families. *SOS1* (Salt Overly Sensitive) gene family has 3 members (*FaSOS1.1, FaSOS1.2* and *FaSOS1.3*), *SOS2, SOS3, SOS4* and *SOS5* has one member (*FaSOS2, FaSOS3, FaSOS4* and *FaSOS5*). NHX (Cation/H+ exchanger) gene family has 3 members *FaNHX1.1, FaNHX1.2* and *FaNHX2*. Sweet Charlie exhibited the highest (80 mM NaCl) salt tolerance index (LT50) during 7 days' stress treatment. Further, maintenance of leaf area, relative water content by closure of stomata aperture and osmotic potential, chlorophyll content contributed physiologically to prevent salinity toxic effects during short period salt stress. Furthermore, upregulation of SOS genes *FaSOS1.2* and *FaSOS3* in root tissues and *NHX* gene member *FaNHX1.2* in root and shoots under salinity stress might be played role in ameliorating toxic effect of salinity. During short term salinity stress impacted on cellular damages were observed by monitoring ROS production by staining, MDA content and electrolyte leakage. In future studies, over-expression of upregulated antiporters *FaSOS1, FaSOS3* and *FaNHX1.2* will be performed in Arabidopsis thaliana to determine their role in ameliorating effect of salinity stress.

Keywords: Antiporters, strawberry, regulation, salinity, *SOS* gene family, *NHX* gene family

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Oral Presentation

Synthesis of sericin capped silver nanoparticles for use as bioactive agent in wound dressing materials

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Abstract

In this work, silk sericin was used as reducing and coating agent to prepare sericin capped silver nanoparticles (S-AgNPs) which can be used as antibacterial agents in wound dressings. The sericin, which makes up 25-30 % of the silk, has properties such as excellent oxygen permeability, antioxidant effect, moisture regulating ability and antibacterial activity. Because of these properties, studies on silk sericin for wound healing give promising results. For S-AgNPs synthesis, 1 mM, 5 mM and 10 mM AgNO3 solutions were prepared and 10 mL of each AgNO3 solution was transferred to a 50 mL Erlenmeyer. While the AgNO3 solutions were stirred at high speed with magnetic stirrer, 10 mL of 1 % sericin solution was added to each AgNO3 solution after the pH of the sericin solution was adjusted to 11 with NaOH. The mixture was stirred at room temperature overnight. The transparent solution which turned yellow-brown indicated the formation of S-AgNPs. AgNPs formation was also determined by measuring the absorbance spectra of S-AgNPs between 300 and 600 nm using UV-Vis spectrophotometer. The aqueous stability and size of S-AgNPs were investigated by zeta potential measurements. All of the S-AgNPs synthesized were found to have negative zeta potential and their size was found to be within the range of 47.06 to 54.86 nm on average. To determine the antimicrobial properties of S-AgNPs, agar-well diffusion and minimum inhibitory concentration (MIC) tests were performed. 5 mM and 10 mM S-AgNPs groups showed antimicrobial activity on both gram-negative *Escherichia coli* (ATCC 25922) and gram-positive *Staphylococcus aureus* (ATCC 6538). Synthesized S-AgNPs have the capacity to be used as antibacterial agents in wound dressings.

Keywords: *Bombyx mori* silkworm cocoon, Sericin, Silver nanoparticles, Antibacterial agents, Wound dressing

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Oral Presentation

The Association between androgen related genes polymorphisms and idiopathic male infertility

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Abstract

Androgens have an unignorable role in the development of reproductive organs, male sexual function, puberty as well as male fertility. Androgen receptor (*AR*), steroid 5-alpha reductase 2 (*SRD5A2*) and tumor necrosis factor-alpha (*TNF-α*) genes are androgen related genes that are involved in androgen biosynthesis and metabolism. In our study, the aim was to investigate the relationship between polymorphisms of *AR, SRD5A2* and *TNF-α* genes, and idiopathic male infertility. In this study, 335 idiopathic infertile male patients and 142 fertile controls were recruited. Peripheral blood sample was collected from each of the participants and the genomic DNA was isolated from these blood samples using salting out procedure. The genotyping of *SRD5A2* and *TNF-α* genes was performed by restriction fragment length polymorphism (RFLP) method, and CAG repeat polymorphism of *AR* gene was evaluated by polyacrylamide gel electrophoresis. We found a significant association between the polymorphisms of *AR* and *SRD5A2* genes, and idiopathic male infertility ($p=0.015$ and $p<0.005$, respectively). However, we found no statistically significant association between *TNF-α* ($p>0.005$) polymorphism and idiopathic male infertility. In view of these findings, the polymorphisms of *AR* and *SRD5A2* genes may take part in idiopathic male infertility and might be contributory factors to its etiology.

Keywords: *AR* gene, idiopathic infertile, *SRD5A2, TNF-α*

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Oral Presentation

In vitro antimicrobial activity and wound healing potential of wild *Hypericum lydium* Boiss. from Turkey

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Abstract

The genus *Hypericum*, a member of Hypericaceae family, is represented by 100 taxa, 45 being endemic to Turkey. The genus *Hypericum* sp. has been used for the treatment of burns, eczema, ulcers, diarrhea, hemorrhoids as well as wounds in traditional medicine. It is not known whether *Hypericum lydium* Boiss. has any properties related to the antimicrobial effect of oral microorganisms and the healing of wounds. The present study was designed to investigate the in vitro antimicrobial, anti-collagenase, anti-hyaluronidase and anti-elastase activities of the ethanol extract from the aerial parts of *H. lydium*. The ethanol extract of *H. lydium* showed antibacterial as well as antifungal property. In the study, *Streptococcus sanguinis* (ATCC10556) (MIC: 1.0 mg/mL) and *Streptococcus mutans* (ATCC25175) (MIC: 2.0 mg/mL) were relatively sensitive, while *Staphylococcus aureus* (ATCC25923) (MIC: 32.0 mg/mL) and *Candida albicans* (ATCC10239) (MIC: 8.0 mg/mL) were more resistant to the extract. The extract could inhibit collagenase, hyaluronidase and elastase activity with values of 26.3, 14.2 and 80.27%, respectively at 1 mg/mL concentrations. These findings indicate that *H. lydium* can be used as a promising agent in mouthwash for curing periodontal diseases and in dentistry for the healing of oral injuries.

Keywords: *H. lydium*, antimicrobial, wound healing

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Oral Presentation

Effects of different sized silica nanoparticle on ultrastructure of rat brain

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Abstract

Silica is among the most popular nanoparticles and is used, besides many areas including agriculture, food, cosmetics and medicine. It is not clear how silica nanoparticles affect brain tissue. In this study, we aimed to investigate the ultrastructural effects of SiO2 NPs in rat brain. Twenty eight male Wistar albino rats were divided into four groups (n=7 rats) as group I (control), group II (6 nm), group III (20 nm) and group IV (50 nm). The rats in the experimental group were exposed to intraperitoneally 150 µg/mL per day SiO2NPs for 28 days and the rats in the control group were treated with 1 mL saline for the same period. 24 h after the last exposure, rats were sacrificed and their brains were removed. Brain tissue sections of were examined ultrastructurally. In the control group, neurons, myelinated and unmyelinated nerve fibers, glial cells and perivascular area were found to be normal in structure. In the myelin sheath of nerve fibers and axoplasms of myelinated and unmyelinated nerve fibers that have degenerative changes were observed in 6 nm, 20 nm and 50 nm groups. In addition, perivascular edema, nuclear and intracytoplasmic vacuols in some neurons were observed in the 50 nm group. The findings of this study show that intraperitoneal administration of 6, 20 and 50 nm sized SiO2 NPs cause structural changes in brain cells. This result suggests that SiO2 NPs may be a potential risk for neurodegenerative diseases.

Keywords: Brain, nanoparticle, electron microscopy, neuron, glial cells

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Oral Presentation

Investigation of microRNAs affected by high fructose diet in kidney tissues

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Abstract

Increase in total sugar and especially fructose intake in daily energy consumption might lead to the development of obesity, type 2 diabetes, metabolic syndrome and fatty liver. Scientific studies have shown that miRNAs might be associated with metabolic syndrome related pathologies; especially in the formation or prevention of insulin resistance which lead us to consider miRNAs as potential therapeutic targets. In this project, it was aimed to investigate some miRNAs associated with insulin resistance and antioxidant systems in metabolic syndrome caused by high fructose diet. Within the scope of the study, animal model of metabolic syndrome was formed by giving rats high fructose (20%) in drinking water and TNF-α, IL-1β, IL-6, IL-10 and NFκB levels, which are markers of inflammation in renal tissues, were determined by ELISA method. In addition, expression levels of miR-135a (5p), miR-200a (3p), miR-125a (5p), miR-195 (5p), miR-103 (3p) which were considered to regulate insülin resistance and antioxidant systems were measured with real time quantitative PCR (qRT-PCR). Gene expression levels of insulin-PI3K-Akt signaling pathway genes (insulin receptor, IRS1 / 2, PI3K, Akt, mTOR) and major antioxidant enzymes (cat, sod, gpx, gst), which are the target genes of these miRNAs were measured and correlated with changes in miRNA levels. The results showed an increase in tissue inflammatory markers in kidney tissues of rats fed with high fructose diet. Besides, almost all the antioxidant enzymes' and expression levels of irs1 and pi3k in the signal transduction pathway of insulin were found to be significantly suppressed as compared to the control group. This suppression in gene expression may be attributed to a significant increase in miR-103, miR-125 and miR-195 levels that likely to regulate these pathways. These results indicate that fructose can regulate antioxidant systems in kidney tissues via miRNA molecules.

Keywords: Diabetes, Kidney, Oxidative stress, Inflammation, Resveratrol, İnsulin signaling Pathway, Gene expression.

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Oral Presentation

Determination variations encountered on KATP protein encoding genes in Raynaud's phenomenon cases

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Abstract

Raynaud's phenomenon (RP) is a vascular disorder characterized by recurrent vasospastic response of the fingers and toes to cold or emotional stimuli. Classically ischemia, deoxygenation and hyperemia are the sequence of a typical attack. RP is a relatively common disorder in worldwide population with the prevalence of 3.3% to 22%. ATP-dependent potassium channels (KATP) containing Kir6.1 and SUR2A proteins (KCNJ8/ABCC9 genes), particularly in the regulation of vascular tone in the coronary arteries has a critical role and deficiency or defects in the function can cause vasospasm associated with Prinzmetal's angina. It would be important to determine whether variations of KATP genes related to Raynaud's phenomenon is thought to be associated with vasospasm. It is believed that the studies describing mechanisms involved in the pathogenesis of inherited vascular disorders offers the best opportunity for investigation of the early stages of pathogenicity and diagnosis of Raynaud's phenomenon and associated other diseases. The purpose of this study, KATP channel which is gene coding of run across mutations in vasospasm associated with Raynaud's phenomenon in patients to determine the characterization and investigation of mutation frequency. In our study; the cases with Raynaud's phenomenon, the relation between the variation in the KCNJ8/ABCC9 genes (S422L/V734I) was examined. 50 subjects who were diagnosed with Raynaud's phenomenon (patient group) and 50 healthy subjects (control group) were included in the study. Variations were determined using the Tetra-Primer ARMS PCR method. KATP channel protein variants analysed for possible correlations among Raynaud's phenomenon were not observed in patient and control groups.

Keywords: Raynaud's Phenomenon, KATP Channel Proteins, KCNJ8/ABCC9 Genes, S422L/V734I Variants.

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Oral Presentation

Investigation of miRNA profiles in patient groups with st elevation acute myocardial ınfarction and non-ST elevation acute myocardial ınfarction

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Abstract

Coronary artery disease (CAD) is the leading cause of deaths in our country and all over although improved diagnosis, treatment and prevention methods in recent years, Due to the sudden occurrence and unpredictability, the determination of early diagnostic markers of Acute myocardial infarction (AMI) is very important. Today, alongside the improved diagnostic methods, in recent years another markers which might be associated with a diagnosis of AMI are miRNAs molecules. Certain miRNAs were shown to play a role in the pathogenesis of atherosclerosis and in regulating cardiac functions. In our study we aimed to investigate hsa-hsa-miR-1, hsa-miR-25-3p, hsa-miR-30d-5p, hsa-miR-34a-5p, hsa-miR-92a-3p, hsa-miR-133a-3p, hsa-miR-150, hsa-miR208a-3p, hsa-miR-221-3p, hsa-miR374a-5p and hsa-miR499a-5p expression levels in patients who had been diagnosed with AMI with ST elevation and non-ST elevation. 25 ST-segment elevation and 25 non-ST elevation patients with the diagnosis myocardial infarction and 20 healthy control group were enrolled in the study. Blood samples were taken from patients and controls to 5ml EDTA tubes, centrifuged at 2000xg for 10 minutes and then the plasma was separated. miRNAs were isolated by the plasma miRNA isolation kit. Isolated miRNAs was transformed to cDNA by Reverse Transcription kit and miRNA expression analysis was performed using high capacity Real-Time PCR System from cDNAs on Dynamic Arrays. There is no significant increase or decrease detected in the expression miRNA levels in the patients group compared to control group ($p>0.05$). In conclusion, miRNAs may be an early biomarker for the diagnosis of AMI however further and larger studies are needed.

Keywords: microRNA, acute coronary syndrome, acute myocardial infarction

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Oral Presentation

Effect of paricalcitol on paroxanase and arylesterase activities in cardiac tissue of rats exposed to radiofrequency radiation (1800 MHz)

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Abstract

The use of wireless technology is increasing day by day in relation to advancing technology. 1800 MHz radio frequency (RF) radiation is used in wireless technology. RF radiation affects the proliferation, differentiation and apoptotic process of the cell by making changes in the plasma membrane function and gene expression of the cell with thermal and non-thermal effects. Different studies have shown that RF waves cause the formation of reactive oxygen species and lipid peroxidation, disrupt biomolecules structure, alter enzyme activities, cause cell damage and cell death. Antioxidants are widely used to prevent the formation of ROS and the damage it causes. The aim of this study was to investigate the possible toxic effects of 1800 MHz RF radiation on the heart and the role of paracalcitol, a vitamin D vitamin analgesic in eliminating these effects. Twenty eight 8-10 week old male Wistar rats were used in the study. Rats; 4 groups were divided into Group I (control), Group II (only RF applied), Group III (only paricalcitol) and Group IV (RF + Paricalcitol). No treatment was performed in Group I (n = 7). Group II received 1800 MHz RF (1 hour / 30 days). Group III was injected subcutaneously with 0.02 µg / kg paricalcitol (3 times / week for 30 days). Group IV received 1800 MHz RF (1 hour per day for 30 days) and 0.02 µg / kg paricalcitol (3 times per week / 30 days). At the end of thirty days of treatment, the heart tissues obtained from the sacrificed rats were homogenized and the paraoxanase (PON) and arylesterase (ARE) enzyme activities were evaluated in these tissues. In Group II, PON and ARE enzyme activities were significantly lower than Group I ($p < 0.05$). In Group III, PON and ARE activities were significantly increased in all groups ($p < 0.05$). PON activity increased significantly in Group IV compared to Group II ($p < 0.05$). ARE activity increased in Group IV compared to Group II, but this increase was not statistically significant ($p > 0.05$). As a result of the study, paricalcitol was thought to play an important role in eliminating the oxidative damage caused by RF waves in the heart, especially by increasing PON enzyme activity.

Keywords: Electromagnetic field, paraoxonase, arylesterase

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Oral Presentation

The effect of high cholesterol diet on expression of scavenger receptors and kidney damage

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Abstract

Hypercholesterolemia plays an important role especially in cardiovascular diseases, chronic kidney diseases, obesity, metabolic syndrome and neurodegenerative diseases. As a result of increased LDL levels, the amount of oxLDL increases with the oxidation of LDL. The forming oxLDL is taken up by many scavenger receptors (SR). Modified LDL stimulated activation of intracellular signaling pathways might leads an increase in lipid accumulation, foam cell formation, apoptosis, inflammation and fibrosis. The aim of our work; is to investigate if high cholesterol diet effects SRs expressions and various transcription factors that might be related with kidney damage of rabbit. In this purpose, mRNA expressions of well-identified SRs (SCARA3, SRA, SRB1, CD36, CD68, LOX1, SRF1, SRI, SRG) and following transcription factors (LXR, PPAR) were measured by qPCR in addition to the protein levels of transcription factors (ABCA1, SREBP, PPAR) that regulate modified lipid-scavenger receptor signaling pathways in kidney tissue evaluated by western blotting. Damage-fibrosis formations occurs and lipid deposition in kidney tissue evaluated by periodic acid schiff (PAS), masson trichrome and oil red staining under light microscopy. We observed that high cholesterol diet induced CD36, CD68 and SRI expressions. In this context, vitamin E supplementation in hypercholesterolemic rabbits showed its beneficial effect by decreasing PPAR while enhancing ABCA1 levels. Our light microscopy findings, glomerulosclerosis, interstitial fibrosis, tubular atrophy and degeneration were similarly observed in all groups, nevertheless renal tubular vacuolation increased in cholesterol and cholesterol+vit E groups compared to control group. Morover lipid accumulation were not observed in all groups.

Keywords: Hypercholesterolemia, Scavenger receptor, Kidney damage

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Oral Presentation

The effects of myo-inositol on biomass, phenolic compound composition and antioxidant activity in basil callus exposed to drought stress

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Abstract

Myo-inositol (inositol) has several functions in plant metabolism such as cell wall biosynthesis, transport and storage of auxins and stress metabolism. In this study, the effects of inositol on some biochemical and physiological parameters in basil callus culture exposed to drought stress. For this purpose, antioxidant capacity, total phenolic content, flavonoid content, average callus weight and individual phenolic composition (12 phenolic compound) of callus obtained from in basil (*Occimum basilicum* L.) plants were investigated. Explants were cultured in a medium prepared by adding 2 mg/L naphthaleneacetic acid (NAA), 0,1 mg/L 6-benzylaminopurine (BAP), 30 g/L sucrose and 2 g/L phytagel to the basal MS medium (Murashige and Skoog) for callus inductions. The calluses were applied drought stress, inositol and drought stress together with inositol. PEG (polyethyleneglycol6000) was used to generate drought stress in callus cultures. The distribution of phenolic compounds containing 4-hydrobenzoic acid, salicylic acid, vanilic acid, ferulik acid, rosmarinic acid, chicoric acid, caffeic acid, caftaric acid, epicatechin, rutin, quercetin, and kaempferol were determined by HPLC-DAD. The antioxidant activities of the callus were measured by ABTS (2,2-azino-bis(3-ethylbenzthiazoline-6-sulfonic acid) radical scavenging, DPPH (1,1-diphenyl-2-picryl-hydrazyl) free radical scavenging and FRAP (ferric reducing antioxidant power) methods. Drought stress caused a significant reduction in callus weight and inositol increased the average weight of callus. Drought stress significantly increased the total phenolic compound content and antioxidant activity. Inositol reduced the total phenolic compound content and antioxidant activity of the callus. According to HPLC results, individual phenolic compound contents were differently affected by inositol and drought stress. The amount of some phenolic compounds increased, but the amount of some compounds decreased significantly.

Keywords: Antioxidant activity, Myo-inositol, Occimum basilicum, PEG, Phenolic compound

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Oral Presentation

Pomegranate seed oil: Uses, remarkable benefits and chemical properties

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Abstract

The pomegranate (*Punica granatum* L.) is generally grown in tropical and subtropical regions such as Near and Far Eastern countries and the Mediterranean area, including Turkey. Pomegranate seeds are a waste product obtained after the processing of beverages, juices and sauces. Pomegranate seeds contain vary valuable oil about 6.3-12.2 % on dry matter basis. The oil contained in pomegranate seeds (PSO) consists of 65–85 % conjugated linolenic acids (CLnAs), the most important of which is 9-cis, 11-trans, 13-cis, octadecatrienoic acid, so-called punicic acid. A range of nutraceutical components such as tocols, sterols, fat-soluble vitamins as well as conjugated unsaturated fatty acids are rich in pomegranate seed oil. In this study; triglyceride, tocol composition and fatty acid, sterol profiles of pomegranate seed oil were evaluated by newly developed methods in high performance liquid chromatography (HPLC) and gas chromatography (GC), respectively, and were investigated the chemical and nutritional properties of cold pressed pomegranate seed oil. Different compositions of the mobile phase and flow rates for the HPLC system were used to obtain better separation for accurate quantitative analysis. The dominant triglyceride was found to be PuPuPu and γ-tocopherol was predominant tocopherol in pomegranate seed oil. For fatty acid composition analysis, triglyceride fractions were derivatized into their respective methylesters which were injected into GC-MS to identify and GC-FID to quantify the conjugated fatty acids of each fraction of triglycerides. Punicic acid was found to be dominant followed by catalpic acid and β-eleotearic acid, while β -sitosterol was the most abundant phytosterol form.

Keywords: Pomegranate seed oil, triglyceride, tocopherol, fatty acid and sterol

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Oral Presentation

Application of SSR and SRAP markers for genetic diversity of some *Origanum* species from Turkey

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Abstract

Origanum L. is one of the high value medicinal and aromatic plant species used for various purposes in the field of food, pharmaceutics, cosmetics and health. Within the study, 21 different specimens belonging to 18 species of the genus *Origanum* which comparises 10 endemic species in this study (*Origanum amanum* Post, *O. bilgeri* P.H. Davis, *O. boissieri* Ietswaart, *O. brevidens* (Born.) Dinsm., *O. haussknechtii* Boiss., *O. husnucan-baseri* H. Duman, Z. Aytaç & A. Duran, *O. minutiflorum* O. Schwarz & P.H. Davis, *O. saccatum* P.H. Davis, *O. solymicum* P.H. Davis, *Origanum vogelii* Greuter & Burdet) naturally grown in our country were used in this study. SSR (Simple Sequence Repeat) and SRAP (Sequence Related Amplified Polymorphism) markers were used to assess molecular genetic diversity among *Origanum* genotypes. The genetic relationship of 21 *Origanum* genotypes was analysed by SRAP and SSR markers yielding 91 polymorphic alleles among the tested lines. The DARwin (http://darwin.cirad.fr/product.php) computer program was used to determine a Dice coefficient dissimilarity matrix for clustering analysis. The average polymorphism information content (PIC) of marker loci was 0.3. Clustering analysis with NJ (Neighbor Joining) showed that minimum and maximum dissimilarity values are 0.127 and 0.882, respectively. According to the obtained data, *Origanum onites* L. and *Origanum vulgare* L. subsp. *hirtum* (Link.) Ietswaart were found as the closest species to each other among the 18 species.

Keywords: *Origanum*, Genetic diversity, SSR, SRAP

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Oral Presentation

The relation between bioavailability and physicochemical properties in coconut oil and curcumin combinations

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Abstract

Coconut oil contains saturated and medium chain fatty acids (MCFA) by 92% and the other fatty acids like lauric, palmitic, capric, linoleic, stearic and oleic acids which make the coconut oil an important ingredient for health respect. As the MCFAs can metabolize fastly in intestines and they do not take parts in cholesterol biosynthesis and transfer directly to the liver, therefore it is claimed that coconut has HDL lowering effects in the body. Coconut oil also is known for its cardioprotective, antidote, antioxidant, antidiabetic, antimicrobial, antiaging effects and it is very popular with different usage alternatives in cosmetics and drug formulations. Curcumin is an active substance which can be found in the turmeric plant's root which is used in traditional medicine applications for many years for treatments of inflammations, metabolic syndromes, anxiety, hyperlipidemia, rheumatoid arthritis with its antimutagenic, antimicrobial and antioxidant effects. But when the curcumin is used as monopreparate because of the lipophilic structure its absorption is very limited and the bioavailability rate is very low. As a result of the fast metabolization and elimination, the expected health effects cannot be achieved. The studies showed that if the curcumin is combined with the oils which are rich in unsaturated fatty acids like coconut and flaxseed, the bioavailability rate increased considerably. In this study, we started to evaluate the stability (at 25 C %60 RH), shelf life, in vivo-in vitro correlation and physicochemical properties of curcumin and coconut oil combination if there is any relation with chemical stability and bioavailability.

Keywords: Curcumin, coconut oil, bioavailability, chemical stability

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Oral Presentation

Proteome analysis of sunflower leaf responses to drought stress and recovery

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Abstract

With its global significance, sunflower (*Helianthus annuus* L.) have an important position in oilseed production and is in danger of drought in recent years. To investigate the role of proteins in the drought stress response, 40-day-old sunflower plants were subjected to drought for 9 days followed by 5 days of re-watering. In this study, it was used proteomic approach to study the responses of three genotypes which are showing different levels of tolerance to water deficit (tolerant, sensitive and wild type) before flowering stage. 720 30 spots were identified in each of three genotypes in MALDI-TOF/TOF MS/MS analyses. The analysis showed that 63 differentially expressed proteins identified in water-stressed and recovery plants when contrasted to well watered. More than half of the significantly changed proteins belong to primary metabolism as photosynthesis and carbohydrate metabolisms; besides other proteins function in energy and respiration, defense, arginine, nucleotide, fatty acid and glycolipid, protein and signal metabolisms and cell wall biogenesis. Different expression of proteins in metabolisms and the reductions in nucleotide and protein metabolisms, as well as protein involved in signal transduction of sensitive cultivar, made Tunca less successful in stress resistance compared to other genotypes. Tolerant genotypes were found to exhibit better performance in terms of photosynthesis and carbon metabolism, as well as protein expression in energy and respiration and fatty acid and glycolipid metabolisms in the same way, and increased the expression of 14-3-3 like protein in signal transduction pathway may increased resistance to drought conditions.

Keywords: Cultivated and wild sunflower, drought, recovery, proteomics, tolerance

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Oral Presentation

Effect of different parameters on facile synthesis of chitosan/poly (n-isopropylacrylamide) microspheres

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Abstract

Microspheres have currently attracted great interest for a wide variety of potential applications such as controlled drug delivery systems in regenerative engineering. Poly (N-isopropylacrylamide) (PNIPAM) is one of the most widely investigated synthetic polymer due to its thermo responsive properties. Chitosan has a variety of applications in biomedical area owing to its good stability, low toxicity, excellent biocompatibility and biodegradability. The combination of PNIPAM and chitosan has been studied as a pH and thermo sensitive material. Herein, we reported a facile synthesize of Chitosan/PNIPAM composite microspheres via water in oil (w/o) emulsion polymerization under different conditions such as initiator [2,2′-Azobis (2-methylpropionitrile)-AIBN] and crosslinking agents (glutaraldehyde and N,N'-Methylenebisacrylamide-MBAm) concentration. Obtained microspheres were successfully synthesized and characterized. Optical Microscopy determined the surface morphology and diameter of the microspheres. Our results revealed that the concentration of initiator and crosslinking agents was affected the surface morphology of synthesized composites. Chitosan/PNIPAM multiresponsive microspheres can be utilized as a potential material for use in biomedical applications.

Keywords: Fabrication, Chitosan, Poly (N-isopropylacrylamide), Responsive polymer, Microsphere

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Oral Presentation

An experimental and theoretical epr study on molecule and radical structures of metronidazole

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Abstract

Metronidazole (MZ), a synthetic antibacterial and antiprotozoal agent of the nitroimidazole class, is used against protozoa such as Trichomonas vaginalis, amebiasis, and giardiasis. Metronidazole is extremely effective against anaerobic bacterial infections and is also used to treat Crohn's disease, antibiotic-associated diarrhea, and rosacea. Metronidazole is a prodrug. Unionized metronidazole is selective for anaerobic bacteria due to their ability to intracellularly reduce metronidazole to its active form. This reduced metronidazole then covalently binds to DNA, disrupt its helical structure, inhibiting bacterial nucleic acid synthesis and resulting in bacterial cell death. In this study, to obtain molecular structure, conformational analysis of MZ was performed by Spartan 08 program. Consequently, ten conformers have been obtained. Geometry optimization calculations were performed and stable conformer was detected. Also this stable conformer parameters and XRD parameters were compared. For this conformation, seventeen possible radicals were modelled by using density functional theory (DFT) computations with respect to molecular structure. And then Electron Paramagnetic Resonance (EPR) parameters were calculated for these modeled radicals using the DFT/B3LYP method TZVP basis set. EPR parameters which were obtained from gas phase experiment of MZ were taken from literature. Experimental g value is good agreement with model radicals..

Keywords: DFT; EPR; Molecular modelling, Radical models, Metronidazole

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KONYA

Oral Presentation

Investigating the antioxidant and cytotoxicity characterıstics of a silver nanoparticle system (agnps) prepared with *curcuma longa*

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Abstract

Drugs used in cancer patients systematically and negatively affect the entire body. In order to minimize or eliminate these effect, scientists have been turning towards the anticancer properties of natural products and try to carry out treatment methods directly on the cancer cells or tissues by targeting. For this, the focus is mostly on nanoparticle systems. Usage of metal particles, especially silver and gold nanoparticle systems, have become prominent. However, chemical synthesis of these NPs creates toxic effects. In recent years, scientists have resorted to synthesis by natural products. This type of synthesis is known as "GREEN SYNTHESIS" in the literature.

This study prepared a silver nanoparticle system with turmeric and compared the antioxidant and anticancer activities of this system to synthetic antioxidants. The resulting particles were characterized by UV spectrophotometer, scanning electron microscopy (SEM), X-ray diffraction (XRD) and Fourier transform infrared spectroscopy (FTIR). Antioxidant activities were determined in vitro and comparatively with those of synthetic antioxidants using parameters of DPPH, metal chelating and total antioxidants. Cytotoxic effects on the PC-3 prostate cancer cell line were determined using XTT test.

The NPs system was created based on the results. The UV, SEM, FTIR, XRD results indicated this in the characterization trials. The bond releases of the plant extract are seen in the FTIR results of the NPs. An activity of close to 45% was observed in DPPH removal with a concentration of 1mg/ml, while 30% metal removal activity was seen in metal chelating. The cell vitality test results were analyzed in the range of 1000 µg/ml-62.5 µg/ml, and all concentrations showed activity. The highest activity was in the highest concentration and activity decreased along with reduced concentrations.

Keywords: Anticancer, Antioxidant, Curcuma longa, Silver nanoparticle, PC-3

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Oral Presentation

Pectin extraction from lemon peels for the production of chitosan/pectin cryogels

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Abstract

Pectin is a natural, biocompatible, biodegradable and water-soluble heteropolysaccharide that exists in the cell walls of many plants. In the cell walls they serve as one of the main agents cementing the cellulose. Pectin has potential to be used as a biomaterial in tissue engineering field. This study aims to extract pectin from lemon (Citrus limon) peels and its use in the production of chitosan/pectin cryogels for tissue engineering applications. Pectin was extracted using alcohol precipitation method from the albedo of lemon peels. The extracted pectin was then subjected to qualitative and quantitative analyses. Functional groups present in the pectin were investigated using Fourier Transform Infrared (FTIR) spectroscopy. Chitosan/Pectin scaffolds were produced by cryogelation method with different ratios of chitosan and pectin (100:0, 80:20, 60:40 and 40:60, w/w). Interactions between pectin and chitosan, and crosslinking of cryogels with glutaraldehyde were verified by using FTIR. The weight loss of the cryogels was demonstrated as a result of the in vitro degradation test during 21 days. The swelling ratio of cryogels was measured and the duration of the equilibrium was determined as approximately 60 min. The fabricated and characterized cryogels can have potential to be used in tissue engineering applications.

Keywords: Pectin, Extraction, Chitosan, Cryogel, Tissue engineering

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Oral Presentation

Antibacterial activity of recombinant azurin against *Escherichia coli*

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Abstract

Azurin is an anticancer bacteriocin secreted by *Pseudomonas aeruginosa*. Bacteriocins are antibacterial proteins produced by bacteria that kill or inhibit the growth of other bacteria. The antibacterial proteins are used to improve food safety and quality. In this study, the antibacterial activity of recombinant azurin against *Escherichia coli* was determined. After genomic DNA was isolated from *P. aeruginosa*, azurin gene was amplified using forward and reverse primer containing restriction enzyme recognition sites. Amplified gene was ligated with plasmid digested by same restriction enzyme. The resulting plasmid was transformed into food-grade *Lactococcus lactis*. Azurin gene was expressed by the induction of nisin after verified by DNA sequencing analysis. Extracellular production of azurin was determined by Western blot analysis. The well diffusion method was used to determine the antibacterial activity of recombinant azurin against *E. coli*. Lyophilized cell-free supernatants containing azurin were applied at three different concentrations to nutrient agar plates with *E. coli*. After the application, diameter of inhibition zone was observed as 23 mm and 30 mm for 5 mg/ml and 10 mg/ml concentrations respectively. It was also determined that the diameter of zone increased as the concentration increased. Antibacterial azurin produced by food-grade *L. lactis* can be used as protective food additive agaist *E. coli.*

Keywords: *E. coli*, Expression, *P. aeruginosa*, Recombinant product

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Oral Presentation

Determination of the changes on the small intestine of the pregnant mice by histological, enzymehistochemical and immunohistochemical methods

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Abstract

We aimed to determine the changes on the small intestine in mice during different periods of pregnancy using histological, enzyme histochemical, and immunohistochemical methods. Twenty four mice were divided into four groups as non-pregnant control, at the middle of the first, second, and the third week of the pregnancy. Tissue samples were taken from duodenum, jejunum and ileum regions of the small intestine. Sections were stained with Crossmon's triple staining. Alkaline phosphatase (ALP) was demonstrated with simultaneous azo-coupling method and PCNA protein was demonstrated with the strept-avidin-biotin-peroxidase complex (S-ABC) method. In the last week of pregnancy in duodenum, jejunum and ileum were decreased the villus height, villus width and the rate of villus height/crypt depth. The crypt depth was decreasing in jejunum and ileum while it was increasing in duodenum with pregnancy. The muscle width was also found to increase in each section of the small intestine in the later weeks. It was identified that the reaction intensity of relative ALP statistically significant increased in duodenum, jejunum and ileum in the later weeks of pregnancy compared to control group. In duodenum, jejunum and ileum PCNA positive cell number was found to increase in the first and second weeks of the pregnancy whereas it was determined to decrease in the third week compared to the control group. According to the data obtained in the pregnancy period, though there are some differences among the gestational periods, it was concluded that pregnancy affected villus parameters of small intestine, intensity of ALP and PCNA positive cell number.

Keywords: ALP, mice, PCNA, pregnancy, villus

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Oral Presentation

Development of lipidic nanocarrier for gene delivery

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Abstract

Gene therapy is generally defined as the transfer of genetic material to cells to treat a disease or at least to improve the clinical condition of a patient. The most commonly used vectors in gene therapy are viral (retroviruses, adeno-associated virus, adeno virus, etc) and non-viral cationic liposomes, polymers and solid lipid nanoparticles etc.) vectors. The aim of this study was to develop a gene carrier system based on Cationic Lipid Nanoparticles (cLNs) and to evaluate the physicochemical properties (zeta potential, particle size, DSC, pH), cytotoxicity, DNA binding properties, serum stability and also transfection to cells. For this purpose, cationic formulations were formulated using glycerol dibehenate (Compritol® ATO 888) and Geloil™SC as a lipidic phase with DOTAP as a cationic agent. These formulations were produced by using oil-in water emulsification technique. GFP was selected as the genetic material to be loaded into the formulations. GFP was adsorbed to formulations via electrostatic interactions. According to results, the cLNs prepared showed considerably small particle sizes (285 nm) and high zeta potential (+44mV). Based on the MTT assay the cytotoxic effect of formulation on the NIH 3T3 cell line showed dose dependant pattern. Prepared formulations was bind to DNA effectively and protect the DNA against to nuclease in serum. It was concluded that cLN formulations can be prepared as pDNA-cLNs complex can be used as gene delivery system. Further studies are going on in vivo experiments on animals.

Keywords: Lipidic Carrier, Nanoparticle, Gene Delivery, GFP

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Oral Presentation

Determination of milk/plasma rate and, the milk and plasma pharmacokinetics of amoxicillin in dairy cattle

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Abstract

The present study was conducted to determine the passage ratio of amoxicillin into milk and, pharmacokinetics of amoxicillin in milk and plasma after intramuscular administration. In this study, a total of 5 healthy dairy cattle (Holstein, 450-500 kg, 2-4 years) were used. Animals received a single intramuscular amoxicillin trihydrate at a dose of 14 mg/kg bw. Blood samples were collected from the jugular vein into tubes with EDTA prior to drug administration (0) and at 0.25, 0.5, 0.75, 1, 1.5, 2, 3, 4, 6, 8, 10, and 12 h after administration. Milk samples were collected prior to antibiotic administration (0) and at 0.25, 0.5 0.75, 1, 1.5, 2, 3, 4, 6, 8, 10, and 12 h after administration. The plasma and milk concentrations of amoxicillin were determined using HPLC system with UV detector. The passage ratio of amoxicillin into milk was determined by both AUC-based calculation and using milk and plasma concentrations at sampling times .The milk/plasma ratio of amoxicillin was found 0.46-052. The terminal half-life and MRT parameters of amoxicillin in plasma and milk were determined 6.05 and 2.62 and 8.60 and 5.35 h, respectively. The Cmax levels of amoxicillin in plasma and milk were measured as 1096 and 457.25 ng/mL, respectively. In conclusion, it may be stated that amoxicillin exhibits similar pharmacokinetic behavior profile in plasma and milk.

Keywords: Amoxicillin, Milk, Plasma, Pharmacokinetic

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Oral Presentation

Molecular and biochemical characterization of a novel pectate lyase from *Bacillus amyloliquefaciens* BS-6

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Abstract

Microbial Pectate lyase have been commonly used in a variety of industrial applications including waste papers, prebiotic production, and wine clarification, of which the largest bacterial enzyme share has been taken by the *Bacillus*. Although there has been a large amount of research on bacterial pectinases, the challenge is to make a unique enzyme that can work at a wide range of pH and temperature with a stable enzyme activity so that the cost of industrial process to maintain in a specific temperature and a pH for various enzymes used in a single process could be reduced. Here we report cloning of a pectate lyase gene from *Bacillus amyloliquefaciens* BS-6, and biochemical characterization of the recombinant pectate lyase. PEL BS-6 is identical with *B. subtilis* 168 pel enzyme with 100% amino acid and 71% nucleotide sequence homology. Although, they are genetically very close, they are distinctly different in physiology. The pel gene from BS-6 encodes a 421-aa protein with a molecular mass of 65.75 kDa. Specific enzyme activity increased from 12.8±0.3 to 49.6±0.4 units/mg after cloning. The relative enzyme activity percentage of the recPEL BS-6 ranged from 80 to 100 at pH between 4 and 14. It was quite stable at different temperature values ranging from 15 to 90°C. The recPEL BS-6 showed a maximal activity at pH 10 and at 60°C. 0.5mM of CaCl2 is the most effective metal ion on the recPEL BS-6 by increasing the activity with 473%. recPEL BS-6 was stable at -20 °C for 18 months. Additionally, recPEL BS-6 increased the clarity of the juices. This study introduces a novel bacterial pectate lyase enzyme with its ability been thermostable, thermotolerance, and active over wide range of pH meaning that can work at both acidic and alkaline environment, which is the most required properties in the industry.

Keywords: Pectate lyases, pH-thermotolerance, pH-thermostable, *Bacillus amyloliquefaciens*

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Oral Presentation

Effects of *Agaricus arvensis* mushroom extract on erythrocyte fargility and antioxidant parameters against CCl4-induced oxidative stress in rats

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Abstract

Carbon tetrachloride (CCl4) is a toxic chemical that causes generation of free radical species (ROS) in many tissues such as liver, kidney, testis, brain and blood. The present study was designed to establish the protective effect of *Agaricus arvensis* extract on CCl4-induced oxidative stress in rat. After the toxicity test, rats were divided into four experimental groups: Control, CCI4, CCI4+*A. arvensis*-100 mg/kg and CCI4+*A. arvensis*-500 mg/kg groups. At the end of experiment, the roles of the orally administrated *A. arvensis* extract against CCl4-induced oxidative stress were evaluated by measuring, erythrocyte fragility and antioxidant defence system enzymes such as reducte glutathione (GSH), glutathione peroxidase (GPx), superoxide dismutase (SOD) activities and malondialdehyde (MDA) content in erythrocyte cells of rats. According to the results, erythrocyte hemolysis were significantly increased whereas GPx enzyme activity decreased in erythrocyte of CCl4 treated rats. *A. arvensis* lyophilized extract (100 and 500 mg/kg) successfully debilitated these effects of CCl4. In conclusion, our study demonstrated an improved the erythrocyte fragility and protective effect of *A. arvensis* in CCl4 induced oxidative stress in rat. This protective effect of *A. arvensis* can be correlated to its direct antioxidant effect.

Keywords: *Agaricus arvensis*, Antioxidant, Malondialdehyde, Erythrocyte fragility, Rat

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Oral Presentation

Molecular structure and the spectroscopic calculation of the allyl alcohol molecule

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Abstract

As a consequence of detailed conformational search of the Allyl Alcohol, five different conformers of molecule have been obtained. Then geometry optimizations of all of the possible conformers was performed by Becke's three-parameter hybrid-exchange functional combined with the Lee-Yang-Parr correlation functional (B3LYP) of Density Functional Theory (DFT) and standard 6-311++G(d,p) basis sets in liquid phase. Conformational energy of most stable conformer is -121227.8552 kcal/mol. Using this conformer, 14 possible radicals were modeled for the same level of DFT. Later, Electron Paramagnetic Resonance (EPR) parameters were calculated for these modeled radicals using the DFT/B3LYP method and TZVP basis set and they were compared with the experimental counterparts. The calculated g value of model radical (Rad 3) is 2.00311 and calculated hyperfine constants of model radical (Rad 3) are H: 12.96 G, H: 3.35G, H: 13.01 G, H: 13.89 G and H: 2.94 G. The calculated and experimental values were good agreement in that study.

Keywords: Molecular Modelling, DFT; EPR; Conformational Analysis, Allyl Alcohol

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Oral Presentation

Synthesis, structral elucidation, ın vitro anticancer activity and molecular docking studies targeting RXRα with some novel retinoid analogues

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Abstract

Bexarotene which is currently used as a drug in cancer disease and has reached phase II / III stages in various cancer types.In this study, novel six bexarotene-like retinoid derivatives were synthesized, characterized and evaluated their in vitro anticancer activities. These retinoid analogues (6-11) were synthesized in six steps. Compounds were purified by column chromatography using suitable solvent system. The purity of the compounds was controlled by TLC followed by determining of the melting points. The chemical structures of the compounds were explained with their elemental analysis, mass and 1H-NMR spectral data.It is focused to analyze the activity of compounds against target, Retinoid X Receptor (RXRα), to identify binding properties of compounds to active site of enzyme and to evaluate relationships between biological activity and binding affinities of compounds by using Autodock 4.2. program. The sulforhodamine B (SRB) assay, a colorimetric assay based to measure of cellular protein amount was employed for evaluating cytotoxic activity of the compounds on human cancer cell lines (A549, lung cancer; HeLa, cervix cancer; MCF-7, breast cancer and WiDr, colon cancer cell lines). Cells were treated with the test compounds for 48 h. Absorbance of wells was measured at 490nm following cell fixation and SRB staining. IC50 values of compounds were calculated from cell growth (%)-data by S-probit analysis. Data in this study were presented as mean values obtained from three independent experiments.

According to the obtained cytotoxicity results, compounds 6, 8, 11 were found having the highest cytotoxic activity against four cancer cell lines. Among these three compounds, compound-11showed the highest anticancer activity. In addition to these results, it was revealed that compound-11showed slightly higher cytotoxicity against WiDr colon cancer cell line with the IC50 value of 2.38μM than CPT-a routine anticancer drug (IC50: 2.57 μM). Furthermore, when compared to the anticancer activity with molecular docking results, it was found that the better RXRα binding affinities of the compounds, the higher the anticancer activity of them. Considering the results in this study, the highest active compounds can be used as the lead-compounds targeting RXRα for anticancer compounds for further studies.

Keywords: Bexarotene, Retinoid derivatives, SRB, Molecular docking, RXRα

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Oral Presentation

miR-378 target gene TGFB2 in the Stage II colon cancer tissue

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Abstract

Colorectal cancer (CRC) is the third leading cause of cancer-related deaths in worldwide. The sensitivity of markers used in the early and painless diagnosis of various cancers, including CRC, remains low. Recent studies have shown that non-protein coding small RNA molecules, called microRNAs (miRNA), play a key role in the mechanism of both the development of cancer and its treatment. miRNAs have tumor suppressing and oncogenic effects in the development of certain types of cancer, including CRC. The aim of the present study was to determine the profiles of oncogenic and tumor suppressing miRNAs affecting cancer development and miRNA target gene in the tumor tissue as well as in normal tissues of patients with Stage II CRC. Arrays analysis belong to this study have demonstrated been for the first time in colorectal tumor tissues, 6 of the 8 miRNAs of the miR-378 family (hsa-miR-378i, hsa-miR-378c, hsa-miR-378d, hsa-miR-378e, hsa-miR-378f and hsa-miR-378g) showed that targets TGFB2. It is possible to suggest that early diagnosis of mir-378 colon cancer may have an important role in early diagnosis .

Keywords: microRNA, Stage II colorectal cancer, TGFB2

Acknowledgement: This work was approved by the Medical Ethics Committee of Harran University, Turkey (no. 16/05/14).

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Oral Presentation

Molecular screening of *Potato virus Y* resistance and genetic characterization of local potato cultivars from Niğde province

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Abstract

Potato (*Solanum tuberosum* L.) is the world's fourth largest food crop plant with its nutritionally valuable food and has been dispersed from their origin to many countries around the world. *Potato virus* Y (PVY) is a plant pathogenic virus of the family *Potyviridae*, and one of the most serious virus diseases of potatoes worldwide. Niğde province has an importance for potato cultivation and ranked first in potato production in Turkey. The aim of the study was screening of local potato cultivars for PVY resistance and genetic characterization of them via microsatellites. The most common potato cultivars of the region (Agria, Granola, Hermes, Sante, Agata, Alegria, Aurea, Banba, Belmonda, Borwina, Brooke, Concordia, Estrella, Infinity, Jelly, Medeleine, Marfona, Melody, Orchestra, Provento, Soraya, VR-808, Pomqueen, Natascha, Bettina, Nectar and Marabel) were collected and germinated at greenhouses. Nucleic acids (DNA) were extracted from the young leaves based on CTAB method. For determination of virus resistance, STM0003 marker system for potato Rysto resistance gene was used and PCR analyses were performed. Based on the results, Madeleine, Melody, Orchestra, Provento, Belmonda and Estrella are the promising cultivars for PVY resistance. For the genetic diversity analysis, highly polymorphic 8 SSR markers were used and the results indicate that the local cultivars have narrow genetic base. These findings can help growers and breeders to improve PVY resistant potato cultivars.

Keywords: Potato, PVY, Ry_{sto}, Microsatellite, Cluster analysis

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Oral Presentation

The apoptotic activity of juglone and juglone-ascorbate combination in pancreatic cancer cells

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Abstract

Discovery of new therapeutic agents is mandatory to overcome the challenge of Pancreas Cancer treatment, due to its aggressivity, insufficiency of current therapeutics and acquired resistance to conventional chemotherapy and radiotherapy Juglone, as a naphthoquinone, is a secondary metabolite produced naturally in walnuts type trees having allelopathic feature in its native environment. It was shown that juglone prevents cell proliferation and induce ROS-mediated mitochondrial apoptosis. Ascorbate with both antioxidant and oxidant feature shows selectively cytotoxicity in cancer cells. In this study, according to our hypothese that cytotoxic and apoptotic effects of juglone could be increased by ascorbate, we aimed to evaluate the expression levels of proapoptotic Bax gene, mitochondrial apoptotic pathway related antiapoptotic bcl-2 gene and an important apoptosis inhibitor gene Birc5 (Survivin). Expression levels of Bax, Bcl-2 and Birc5 genes were determined by qPCR following treatment of PANC-1 cells with different Juglone and juglone-ascorbate combination doses during 24 hours. For Bax gene, a statistically significant 2,9 -1,78 ve 2,89-fold increase were determined after 20μM juglone and 10μM and 20μM juglone with 1mM ascorbate treatments, respectively ($p < 0,05$). In the BIRC5 gene expression, there was a significant decrease as 2.93 fold after 20 μM juglone-ascorbate administration. Also, we observed a statistically significant decrease in the expression of Bcl-2 gene as 1.4 and 1.69 folds after 15 μM and 20 μM juglone and 2.93 folds decrease after 20 μM juglone-ascorbate aplications ($p < 0,05$). Taken together, our results suggest that juglon is a promising anticancer agent that has a stronger activitiy in combination with ascorbate.

Keywords: PANC-1 cells, juglone, ascorbate, apoptotic activity

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Oral Presentation

Expression profile of alpha-glucosidase in sunn pest, *Eurygaster maura*

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Abstract

The sunn pest, *Eurygaster maura*, is a sap-sucking pest of cereal crops in Turkey and neighboring countries. This univoltine species has two biological forms, including active (feeding) stage and passive (non-feeding) stage, a combination of overwintering and aestivating periods. Prior to diapause, adults accumulate lipid reserves in order to meet their energy demand during hibernation in cold winter. Later these adults migrate to grain fields during spring where they feed, mate, lay eggs and die. New generation adults, the major destructive individuals on grains, keep feeding to store fat body for winter until migration. Finally, hibernation period starts after grain harvest and the insect completes its life cycle. Carbohydrates have significant importance with being the large source of stored fat in insect body. Alpha-glucosidase also known as maltase and beta-glucosidases hydrolyze the glycosidic bonds between sugar residues. In this study, Real time PCR analyses were conducted to examine alpha-glucosidase expression in pre-migrated, migrated, feeding, aestivated, pre-hibernating and hibernating stages of sunn pest adults. Results showed that expression of alpha-glucosidase transcript was higher in the feeding stage, while no transcript was found in the migrated stage. These results suggest that this enzyme is likely used during feeding stage to consume carbohydrates and store energy when preparing for hibernation.

Keywords: Alpha-glucosidase, carbohydrate metabolism, diapause, *Eurygaster maura*

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Oral Presentation

In vitro cytotoxic activity of a novel oral anticoagulant on hela cells

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Abstract

New oral anticoagulants including dabigatran are commonly used in the prophylaxis and treatment of systemic embolism and deep vein thrombosis worldwide. Cancer patients have also an increased risk of developing venous thromboembolic events or may have other indications for anticoagulation, such as atrial fibrillation. However, several data suggest that anticoagulant drugs may have an effect on tumor development and progression. In this study, we aimed to investigate the cytotoxic effects of dabigatran on a cancer cell line HeLa cells derived from human cervical cancer. Cells were placed in 96-well culture at an initial density of 50.000 cells/ml in six replicates and incubated in the Dulbecco's Modified Eagle's Medium (DMEM)/Ham's F12 supplemented with 10% fetal bovine serum (FBS). Following incubation, the cells were treated with six dilutions of the test material [Pradaxa (dabigatran etexilate, 150 mg)™]. Test material was prepared in culture medium supplemented with 1% dimethyl sulfoxide. Stock solution were prepared as 0.30 g/20 ml for the initial dose. Stock solution underwent serial dilution and were prepared in five dilutions and only DMEM/F12 medium was served as control groups. The cell viability was determined by MTT assay. At 24-hour incubation, the cells exposed to all dilutions of dabigatran showed a significant difference compared to normal fibroblastic morphology. The cells displayed cellular alterations including nuclear condensation, rounded morphology, and cell degeneration. The viability of HeLa cells was examined at 24 and 48 post-incubation hours. At 24 and 48 hours, dabigatran showed a cytotoxic effect in all dilutions. The results showed that dabigatran may reduce proliferation of cancer cells.

Keywords: Dabigatran, Cell Culture, Cytotoxicity, HeLa cells

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Oral Presentation

Screening and production of protease enzyme from *Bacillus sp.* strains and ıts dehairing application

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Abstract

The leather processing industry contributes significantly to the country's economic development. In this industry, in the conventional dehairing process, chemical pollutants such as lime, sodium sulphide, chrome salts and formaldehyde are used. Presence of these chemicals in tannery waste is responsible for tremendous pollution, causing health hazards to the tannery workers. Chrome salts and formaldehyde contain a special substance that causes bronchial asthma in tannery workers. Chrome intoxication, liver and renal disorders are seen. In recent years, microbial enzymes are used as an alternative technology to the conventional methods. Enzymatic dehairing process was accomplished by proteolytic enzymes of great commercial importance. Proteases have dehairing properties, and used in the leather processing industry. Due to the increasing demand of enzyme in the leather industry, there arises a need for new proteases. Therefore in this study, we have performed screening of protease producing *Bacillus sp.* in Turkish soils. The morphology and biochemical tests were studied for *Bacillus* genus. Most efficient a isolate selected. The nucleotide sequence of the 16S rRNA gene of this new isolate E10-2 was 100% similar to *Bacillus cereus* SL1. The protease produced by *Bacillus* was studied for its dehairing application against beef and goat skins pieces for different soaking periods (12, 24, 36 h). The removal of hairs was found efficient and the quality of dehaired skin was satisfactory after 12 h of treatment. It reported that protease produced by new isolate E10-2 had a potential for dehairing, and might be used as dehairing agent in tanning industries.

Keywords: *Bacillus*, Protease, Beef and Goat Skin, Dehairing

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Oral Presentation

Discovery of the first microRNA-like species in human pathogenic fungus *Aspergillus fumigatus*

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Abstract

Aspergillus fumigatus is not grouped in the most prevalent fungi in the world however it is one of the most common one in the atmosphere. *A. fumigatus*, an opportunistic pathogen causing fungal lung diseases, is recently shown to harbour several different types of mycoviruses. The miRNAs were first discovered in *Caenorhabditis elegans* and have been identified in animals and plants, however no miRNAs have been reported in fungi apart from microRNA-like (milRNAs) have been identified in *Neurospora crassa, Sclerotinia sclerotiorum, Metarhizium anisopliae* and *Trichoderma reesei* to date. However none of those fungi were infected with viruses. Therefore, here we investigated the existence of A. fumigatus microRNAs in the presence and absence of three mycoviruses: *Aspergillus fumigatus* partitivirus-1 (AfuPV-1, PV), *Aspergillus fumigatus* chrysovirus (AfuCV, CV) and *Aspergillus fumigatus* tetramycovirus-1 (AfuTmV-1, NK). Small RNA-sequencing (sRNA-seq) libraries of virus-free and virus-infected isolates were created using adapters and sequenced using Illumina HiSeq2500. The data was analysed in order to identify miRNA-like reads differentially expressed between virus-free and virus-infected samples using bioinformatic methods. MicroRNA identification was performed using three different approaches; (i) similarity search using miRBase database and known fungal miRNA-likes, (ii) miRNA prediction using the miRCat program, (iii) searching the differentially expressed sRNAs for annotation and folding the flanking regions. Five predicted miRNA-like candidates were checked by northern blotting and out of five candidates, three of them namely Folded-1, Folded-2 and miRCat-2 were detected in related isolates. To our knowledge, this is the first study reporting miRNA-like species in *A. fumigatus*.

Keywords: *A. fumigatus*, microRNAs, miRNA-likes, fungi, mycovirus, sRNA-seq, bioinformatics

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Oral Presentation

Why molecular modelling and spectral analysis are important for drug design? Key applications: novel thiosemicabazone complexes

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Abstract

Molecular modelling and spectroscopic methods are the rapidly advancing and exciting fields in the physics, chemistry and biology today. Electronic structure methods used for molecular modeling calculations are successful methods for calculating and predicting molecular parameters and molecular properties using the laws of quantum physics principles and some mathematical approaches. By means of spectroscopic techniques, information about the structure, electronic and magnetic properties of the compounds forming the substance can be obtained. The biological activity of metal complexes, popular compounds used for the next generation of drug design, depends intimately not only on the metal and its oxidation state, but also on the type and number of coordinated ligands, and the coordination geometry. This provides a rich platform in pharmacological space for structural and electronic diversity. In the case of the determination of a metal complex structure with spectroscopic (EPR, UV, IR, NMR etc.) and molecular modelling calculations (HF, Post HF and DFT etc.), the anticancer and antimicrobial activity potential of the complex can be revealed out because the electronic structure parameters provides information about the chemical activation properties. In this study, the importance of combined spectroscopic techniques and molecular modelling analysis for drug delivery will be emphasized by the examples of novel thiosemicarbazone metal complexes that have various biological activities such as antifungal, antibacterial, anticancer activities.

Keywords: Metal complexes of thiosemicarbazones, molecular modelling, spectroscopic techniques

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Oral Presentation

Quantitative determination of sunset yellow, allura red, fast green, erythrosin-B and quinoline yellow using Fe3O4 modified with *Elaeagnus angustifolia* based on solid phase extraction and HPLC

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Abstract

In this study, we developed and optimized a method for simultaneous quantitative determination of sunset yellow (SY), allura red (AR), fast green (FG), erythrosine-B (Ery) and quinolone yellow (QY), which have toxicological important. The Fe3O4 modified with *Elaeagnus angustifolia* as an adsorbent was used for solid phase extraction (SPE). Optimum conditions such as pH, adsorption and elution time, volume elution were optimized for SPE. Optimum quantitative analysis conditions for adsorption time, elution time, eluent type and elution volume were observed for 5 minutes, 3 minutes, methanol / 1 M NH3 (6/4, v / v) and 2 mL respectively. These optimum values were obtained 25 mL of 10 mM HCl which includes 10 mg/L dye solutions. After SPE extraction, dyes were quantitatively determined by HPLC coupled by an ultraviolet detector. The separation was performed gradiently on a Zorbax C18 reverse phase analytical column (4.6 x 250 mm, 5 µm) with 20 mM ammonium acetate buffer/acetonitrile/methanol as a mobile phase mixture, at 30°C. Mobile phase rate was 1 mL/min. Detection wavelengths were set to 500, 600, 530, 410 nm for SY and AR, FG, Ery and QY, respectively. The retention times were 7.1, 9.2, 10.0, 12.4, 14.8, 22.1 min for SY, AR, FG, Ery and QY, respectively.

Acknowledgment: This study has been supported by Cumhuriyet University Scientific Research Projects Commision as the research Project with the ECZ -040 code.

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Oral Presentation

Investigation of selected exons from RPE65 gene in syndromic Retinitis pigmentosa

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Abstract

Retinitis pigmentosa (RP), also known as night blindness which cause loss of vision, has syndromic forms accompanied by systemic anomalies in many organs. One of the most common is Bardet-Biedl syndrome. Retinal pigment epithelium-specific protein 65 kDa (RPE65) is expressed in the retinal pigment epithelium. Mutations in RPE65 cause autosomal recessive RP. In our study, we aimed to analyze 50 patients who had autosomal recessive inheritance in RP by sequence analysis. Two individuals had syndromic RP (Bardet Biedl syndrome). 4-5-10-11-13 exons which are 14 exons of RPE65 gene were selected for the mutation screening. DNAs which were isolated with DNA isolation kit from blood samples, were amplified with PCR. PCR products were sequenced with ABI Prism 310 Genetic Analyzer instrument and were analyzed with Sequencing Analysis, SeqScape and BioEdit softwares by using the mutation tables. As a result of the sequence screening in individuals who had syndromic RP, G>A E352E polymorphism in Exon 10 of RPE65 gene were detected.

Keywords: Retinitis pigmentosa, Bardet Biedl syndrome, RPE65, Sequencing Analysis

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Oral Presentation

Fabrication of hydrophilic thin films with enhanced electroconductive and mechanical properties by the reinforcement of RGO

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Abstract

In this study, novel hydrophilic films with enhanced mechanical and conductive properties were synthesized by the incorporation of reduced graphene oxide (RGO) at different concentrations into the polymeric network forming hyaluronic acid, gelatin and poly ethylene oxide (HyA/Gel/PEO) by solvent-casting method. The fabricated films were characterized by FT-IR analysis. Mechanical performance was analyzed by universal mechanical tester. The results verified that mechanical properties of RGO-reinforced HyA/Gel/PEO films enhanced significantly with respect to that of unreinforced HyA/Gel/PEO films. To determine biocompatibility of the films, L929 (Murine Fibroblasts) cell lines were used. Water-uptake capacities were measured by swelling tests. 4-prob method was used to measure conductivity features. According to the conductivity results, HyA/Gel/PEO film bearing 20 v.% RGO has the highest electrical conductivity value (1.832x10-6 S/cm). All of the results demonstrated that the obtained electroconductive, durable, biocompatible and hydrophilic films can be used for many applications especially controlled drug release systems and tissue engineering in the future.

Keywords: Electroconductive hydrophilic film, reduced graphene oxide, solvent-casting method

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Oral Presentation

Production and characterization of biomimetic hydroxyapatite coated polyvinyl alcohol/chitosan composites

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Abstract

Nowadays, hundreds of people of all ages are treated due to accidents or various disabilities resulting from organ or tissue loss. Tissue engineering is a science that aims to increase and restore tissue and organ functions in order to improve quality of life for all these treatments. Cryogels are open cell structured matrices that are produced from frozen solutions of monomeric or polymeric initiators and they are typically composed of interconnected macropores. Hydroxyapatite, which forms the inorganic structure of bone tissue, is a calcium phosphate based bioceramic material used for the construction of various prostheses as artificial bone due to its biocompatibility, for the repair of defected bones, and for the coating of metallic biomaterials. Biomimetic hydroxyapatite coating is a unique method carried out in biomimetic conditions at 37ºC, which is the human body temperature, and 7.4, which is the human body pH value, by using a "Synthetic Body Fluid (SBF)" which has almost equal ion concentration of human blood plasma. In this study, PVA / Chitosan composite cryogels coated with biomimetic hydroxyapatite were produced to be used for the renewal of bone tissue, and characterization was achieved. In the results, it was observed that as the chitosan ratio and the coating duration increased, the coating efficiency increased. The effect of PVA/Chitosan ratio and coating duration on the final properties of the coated cryogels were analysed. For characterization studies, swelling test, porosity analysis, weight increase after coating, in vitro degradation, FT-IR, SEM, EDXS analysis were performed.

Keywords: Cryogel, Polyvinyl Alcohol (PVA), Chitosan, Hydroxyapatite (HA), Synthetic Body Fluid (SBF)

Acknowledgement: This work was supported by the Scientific Research Projects Unit of Mersin University, Project No: 2018-1-TP2-2733

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Oral Presentation

Determinations of protein secondary structural alterations in the aging of bloodstain on cotton fabric using fourier transform infrared spectroscopy study

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Abstract

Accurate assesment of bloodstains age has great importance for forensic investigator in the determination of time range of crime. The utility of various methods such as HPLC, EPR in the identification of this age were indicated. However none of them are not fast and reliable. The ability of Fourier Transform Infrared (FTIR) Spectroscopy in the estimation of bloodstain age was indicated with recent studies. In these studies the effects of various temperatures on this determination has not been clarified yet. Therefore, the current study was established to elucidate these effects. IR spectra of bloodstain on cotton samples were collected at different temperatures (10°C, 20°C, 30°C and 40°C) and times (1, 24, 48, 72 hours and 5,10 days). Quantitative spectral analysis including the determination of wavenumber of amide I band, area ratio of amide I/amideII bands and secondary structures of proteins were performed the protein region (1740-1475 cm^{-1}). These analyses results implied that there is a structural alteration in the proteins of bloodstain in time and temparature dependent manner especially in the protein secondary structures (α-helix, aggregated β-sheet and random coil). Based on these alterations, Lineer discriminat analysis (LDA) was performed to test the success of FTIR in the estimating bloodstain age. 100 % classification succes was obtained in all cases. These findings proved that this technique together with chemometric analysis can be succesfully implemented in the quick and accurate identification of bloodstain age.

Keywords: ATR-FTIR, bloodsatin age, protein secondary structures, time, temperature

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Oral Presentation

Characterization of a novel esterase obtained from hypersaline lake (Acıgöl) by metagenomics approach

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Abstract

Metagenomics is a promising field that enables scientists to discover and identify novel biomolecules from microorganisms, regardless of their cultivability. Here a novel esterase, Est_Ag, was successfully isolated from Acıgol (Denizli) by metagenomics approach. First, environmental DNA from Acıgol sediment was obtained. Then, by targeting the conserved regions among lipolytic enzymes, degenerate PCR and genome walking strategies were applied. The full gene sequence of the protein was analyzed using bioinformatics tools and the putative protein sequence showed a maximum identity of 91% with a previously known esterase. After confirmation of the novelty of the gene sequence, the gene was cloned into expression vector and the protein was over-expressed in *E. coli.* Histidine tagged protein was successfully purified and detailed biochemical characterization was carried out. The enzyme showed optimum activity at pH 9 and 30°C. In substrate specificity experiments, it was shown that the enzyme prefers short acyl chain length para-nitrophenyl esters as substrate. The effect of NaCl, organic solvents, metal ions, detergents and inhibitors on the activity and the stability of the enzyme were also investigated. The outstanding features such as activity at cold temperatures, stability in the presence of organic solvents and metal ions make this novel esterase a potential candidate for industrial applications.

Keywords: Genome walking, metagenomics, esterase

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Oral Presentation

Determınatıon of carbamazepıne ın human plasma by hplc ultravıolet method: applıcatıon to a therapeutıc drug monıtorıng study

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Abstract

In this study, a high-performance liquid chromatography method was developed and validated for quantitative analysis of CBZ in plasma. The validity of the method was monitored in real plasma samples of 30 patients under epilepsy treatment using CBZ. The chromatographic separation was carried out with a reverse-phase C18 analytical column (3.9 x 150 mm, 5 µm particle size), at 30 °C. 20 mM KH2PO4 (1% triethylamine), acetonitrile, methanol (6:3:1, v/v) was used as a mobile phase. It applied to the column isocratically at 1 mL/ min flow. Ultraviolet detector was set at 220 nm. Chlorpromazine trihydrate was used as an internal standard. The samples were loaded into the HPLC using a manual injector which have a 20 µL loop volume. Accuracy and precision were found between (-9.71) - 1.65 (RE%) and 4.15 - 1.33 (RSD%), respectively for intraday and interday reproducibility study. The detection and quantification limits were 40.1 and 121.7 ng/mL, respectively. Plasma recovery tests were carried out at concentrations of 1, 5 and 20 ppm and the results obtained ranged from 82.42% to 105.68%. Carbamazepine levels were found in the range of 0.15 to 11.38 ppm (6.15 ppm ± 2.38 (mean ± SD)) in blood samples taken from patients who were under epilepsy treatment with carbamazepine between 200 and 1200 mg/day. The method developed, validated and successfully applied to patient samples is a simple, rapid, reliable method that can be used in both therapeutic drug monitoring study and overdose toxicological analysis of patients using CBZ.

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Oral Presentation

Synthesis of novel chiral tetraoxocalix[2]arene[2]triazine derivatives for enantioselective aldol reaction of aldehydes with acetone

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Abstract

Organocatalysis is a reaction carried out by sub-stoichiometric amounts of organic compounds which do not contain even a small amount of enzyme or inorganic element. Although metal catalyzed reactions have wider substrate scope, they are associated with a few drawbacks such as high cost involved in the preparation of catalysts and toxicity of metals which can be carried over to products. Organic compounds, as compared to metals, are more stable, less expensive, non-toxic, readily available, and environmentally friendly. Besides, organocatalytic reactions are less sensitive to the presence of water or air in comparison to metal catalyzed reactions. Thus, the reproducibility and operational simplicity of these reactions are enhanced. Organocatalysts provide better alternatives not only to metal catalysts but also to biocatalysts. They provide broad substrate scope in contrast to enzymes which are highly substrate specific and cannot tolerate even a minor change in the structure of the reactants. In addition, organocatalysts display another advantage over both metal catalysts and enzymes in that they are easily amenable to solid support, leading to easy recovery of the catalyst and simplification of the reaction work up.

Chiral tetraoxocalix[2]arene[2]triazine functionalized at the lower rim with chiral naphtylethylamine units have been prepared. The structures of these receptors were characterized by a combination of 1H NMR, 13C NMR, FTIR and elemental analysis. These compounds were evaluated as organocatalysts for asymmetric aldol reactions between various aldehydes and acetone. Very good yields and enantioselectivities were achieved in optimal conditions.

Keywords: Enantioselectivity, HPLC, Organocatalyst, Tetraoxocalix[2]arene[2]triazine

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Oral Presentation

Synthesis of a new polyoxometalate copper complex and its use in determination of dopamine by uv spectroscopy

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Abstract

Polyoxometalates are a class of discrete transition metaloxide clusters that are constructed on the condensation of metaloxide polyhedral by a king of self-assembly proces [1]. POMs are attractive in terms of their applications, including in catalysis [2], medicine, biotechnology [3,4], and electrochemistry[5]. POMs also can be activated by UV or visible light, respectively[6]. Dopamine is one of the important catecholamine neurotransmitter distributed in the central nervous system [7]. It also plays key roles in the function of the renal, hormonal, and cardiovascular systems [8]. As a result, dopamine has been given tremendous consideration by neuroscientists and chemists in bio-medical and bio-analytical research and there is a strong need to establish highly sensitive and selective methods for the direct detection of dopamine [9]. Herein, the crystal structure Na[(Cu(bipy)2)2(BMo12O40)] has been hydrothermally synthesized and characterized by single crystal X-ray diffraction, Fourier-transform infrared spectrum (FT-IR), powder X-ray diffraction (XRD). Product was used in dopamine determination by UV spectroscopy. Our results have demonstrated that the compound has an effective feature for determination of dopamine by UV spectroscopy with low costs and easy, fast laboratory performance.

Keywords: Polyoxometalates, Dopamine Detection, UV spectroscopy

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Oral Presentation

A new appraoach for malondialdehyde determination: gold-modified electrode

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Abstract

Living organisms have to use molecular oxygen to maintain metabolic functions and during metabolic events, during the metabolism free radicals form. However, free radicals are harmful and whereas the metabolic system do not maintain its function related with removing radical structures from many sources, number of pathological events can occur. As a result of this, the polyunsaturated fatty acids, present in the membrane structure are oxidized, thus the lipid peroxidation process starts. Malondialdehyde (MDA) as an biological marker used to determine the level of oxidative damage in the systemic circulation forms as a result of the conversion of lipid hydroperoxides to aldehydes and carbonyl compounds. The current analytical methods for the analysis of MDA have limitations. In this study, it was planned to develop a new analytical method that is much faster, more accurate and lower cost process for MDA determination. For this aim, modified electrode surface was prepared by modification of carbon electrode surfaces with gold nanoparticles. Modified surfaces were characterized by cyclic voltammetry, electrochemical impedance spectroscopy, scanning electron microscopy, atomic force microscopy and contact angle measurement techniques. The modified surfaces were investigated as MDA sensor.

Acknowledgement: This paper was supported by the Selcuk University Scientific Research Projects Coordination Project Number: 1522021.

Keywords: Biosensor, Malondialdehyde, Modified Surfaces

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Oral Presentation

Cystine-selective fluorescent probe based on yellow emitting nitrogen doped carbon quantum dot

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Abstract

Carbon quantum dots (CQDs) have been agreed as fluorescent nanomaterials with unique optical and electronic properties and they have been the potential alternatives for organic emitter in the recent years. In this study, a novel heteroatom (nitrogen) doped CQDs, generated by bottom-up approach between L-ascorbic acid and p-phenylenediamine as carbon and nitrogen source, were synthesized by hydrothermal reaction at 160 ^{0}C for 10 h. After purification by silica column chromatography, the structural (FT-IR, XPS) and morphological (AFM, TEM) characterizations were performed in detail. CQDs exhibited a maximum fluorescence emission centered at 530 nm excited at 356 nm. The obtained strong yellow emitting fluorescent CQDs were used as sensitive and selective fluorescence probe in order to detect cystine among sulfur-containing amino acids (cysteine, homocysteine and methionine) based on its quenching effect in aqueous media around physiological conditions. As a result, CQDs can be evaluated as a promising fluorescent probe for cystine.

We express our thanks to the Scientific and Technological Research Council of Turkey (TUBITAK) for financial support (215Z222).

Keywords: Carbon quantum dot, Yellow emission, Cystine detection

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Oral Presentation

A BODIPY-bearing pillar[5]arene for mimicking photosynthesis based on multi-fluorophoric light harvesting system

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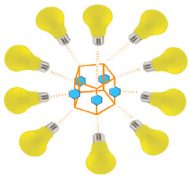
Abstract

Among macromolecules, pillararene compounds linked with methylene bridges at para-positions have multi-terminals and they can be possessed for various applications such as smart polymer, drug delivery, chemosensor, transmembrane. To make a more efficient process of the electron-transfer, various donor and acceptor linked dyads were developed. Among most dyads, Bodipy's have been extensively used as antenna molecule in artificial photosynthetic systems due to their excellent properties such as high molar absorption coefficient, high fluorescence yield, long lifetimes good photostability. Herein, we submit for the original synthesis, characterization, energy transfer mechanism of the pillar[5]arene based on Bodipy and its reactants by employing of infrared, ^{1}H, ^{11}B, ^{13}C, ^{19}F-NMRs, UV-vis, fluorescence spectroscopy, melting point apparatus, CHN elemental analysis and mass spectroscopy. Preliminary UV-vis, fluorescence and excitation studies in in CH_2Cl_2 as solvent revealed that a novel fluorescence resonance energy transfer (FRET) system based on the interaction of pillar[5]arene and Bodipy derivative was disclosed. ε_{max} of target molecule reached to a maximum value and calculated as 955 000 $M^{-1}cm^{-1}$. This fluorescent macromolecule worked well for mimicking photosynthesis a light harvesting system with highly energy transfer efficiency up to 92%. Therefore, this study not only provided a novel model for fabricating mimicking photosynthesis system but also increased the potential bio-medical applications of pillararenes and Bodipy in the field of optoelectronic materials.



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Oral Presentation

Detailed chromosome measurements and karyotype asymmetry of *Vicia* L. (Fabaceae) some taxa from Turkey

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Abstract

This study examined the detailed chromosome measurements and karyotype asymmetries of seven taxa, Sect. *Cracca* Gray-*V. articulata* Hornem., Sect. *Cracca* Gray-*Vicia cassubica* L., Sect. *Cracca* Gray-*V. villosa* Roth. subsp. *villosa*, Sect. *Vicia* L.-*V. noeana* Reuter ex Boiss. var. *noeana*, Sect. *Vicia* L.-*V. sativa* L. subsp. *sativa*, Sect. *Vicia* L.-*V. peregrina* L., and Sect. *Ervum* (L.) Gray-*V. caesarea* Boiss. & Bal. which is represented by only these seven taxa in Turkey, in the genus *Vicia*. *V. cassubica*, *V. noeana* var. *noeana*, *V. sativa* subsp. *sativa*, *V. caesarea* have 2n = 12 chromosomes. *V. articulata, V. villosa* subsp. *villosa, V. peregrina* have 2n = 14 chromosomes in somatic cells. Total chromosome lengths are 2.93 µm and 4.99 µm in *V. articulata*, 2.09 µm and 4.73 µm in *V. cassubica*, 1.86 µm and 3.36 µm in *V. villosa* subsp. *villosa*, 4.23 µm and 6.05 µm in *V. noeana* var. *noeana*, 2.07 µm and 3.72 µm in *V. sativa* subsp. *sativa*, 4.32 µm and 7.21 µm in *V. peregrina* and 2.39 µm and 5.78 µm in *V. caesarea. V. articulata* is the most symmetrical karyotype, while *V. villosa* subsp. villosa is the most asymmetrical karyotype in intrachromosomal asymmetry including parameters of MCA, AsK, TF, Syi, A1, and A. However, the asymmetrical karyotypes are different in interchromosomal asymmetries. While *V. noeana* var. *noeana* is the most symmetrical karyotype in CVCL, Rec, and A2. *V. caesarea* is the most asymmetrical karyotype in only CVCL and A2. Unlike all parameters, *V. cassubica* is the most asymmetrical karyotype in Rec value.

Keywords: Asymmetry index, *Vicia*, Fabaceae, Karyotype

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Oral Presentation

Investigation of the relationship between matrix gamma carboxyglutamic acid protein G-7A gene polymorphism genotype distributions and diabetic nephropathy development

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Abstract

Diabetic nephropathy (DN) is characterized by without other renal diseases the persistent positive urine albumin rod in a diabetic patient or by albumin excretion of more than 300 mg per day. Matrix Gamma Carboxyglutamic Acid Protein (MGP) is a potent inhibitor of calcification in blood vessels. Human MGP gene is localized on the genomic chromosome 12p (12p12.3). MGP G-7A gene polymorphism is localized in the promoter region of the MGP gene and is characterized by a guanine / adenine base translocation. It is known that MGP G-7A gene polymorphism is associated with Type 2 Diabetes Mellitus (DM). Therefore, the aim of this study is to investigate the relationship between the development of DN, one of the microvascular complications of Type 2 DM, and genotype distributions of MGP G-7A gene polymorphism. Our study was performed by 60 DN patients and 55 healthy controls. DNA isolation was performed from peripheral blood containing EDTA obtained from patient and control groups. The purity and quality of the isolated DNAs were determined by measuring with a nanodrop spectrophotometer. Polymerase chain reaction (PCR) and restriction fragment length polymorphism (RFLP) methods were used to determine MGP G-7A gene polymorphism genotype distributions. The significant difference was not found statistically in MGP G-7A gene polymorphism genotype distributions between DN patients and healthy control group ($p>0,05$) (Chi-Square Test). In our study, genotype distributions of MGP G-7A gene polymorphism were found to be not a genetic risk factor for the development of DN.

Keywords: Type 2 DM, DN, MGP G-7A gene polymorphism, PCR, PFLP

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Oral Presentation

Reversible ımmobilization of laccase for reactive blue-24 removal

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Abstract

Laccase (1.10.3.2) enzyme has gained great attention due to its efficient and low-cost biodegradation ability on organic pollutants including synthetic dyes. Laccases are commonly found in white-rot fungi and they are capable of oxidizing various phenolic compounds. Thus, they have been reported as promising tools in the field of synthetic dye degradation from waste water. In addition, their enzymatic reaction promotes formation of less toxic compounds than selected dyes. New generation polymeric systems, cryogels, were chosen as stationary phases for reversible laccase immobilization in presented study. Cryogels with interconnected supermacropores are easily functionalized to carry different molecules such as drugs, enzymes and cells. In this study, reversible immobolization of laccase from Trametes versicolor on poly(hydroxyethyl methacrylate-N-methacryloyl-L-phenylalanine) (PHEMAPA) cryogel discs was performed. Laccase immobilized PHEMAPA cryogel discs was characterized by scanning electron microscopy and swelling tests. Effects of different experimental conditions on reversible immobilization of laccase on PHEMAPA cryogel were investigated. Reactive blue-24 removal with laccase immobilized PHEMAPA cryogel discs was carried out at different pH and temperature conditions. Laccase activity was determined by using guaiacol as substrate. In conclusion, laccase immobilized PHEMAPA cryogels are potentially suitable for Reactive Blue-24 removal with high catalytic activity.

Keywords: Laccase, cryogel, dye removal, reactive blue-24, enzyme immobilization

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Oral Presentation

Effect of type 1 diabetes and resveratrol on gene and protein expression of renal insulin signaling pathway components

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Abstract

Insulin is a hormone that is produced by the beta cells of the pancreas and regulates the amount of sugar in the blood. Diabet occurs due to loss of function and lack of insulin leading to increase blood sugar and causing glycosuria. In this study, it was aimed to investigate changes in gene and protein expression of renal insulin signaling pathway components with type 1 diabetes and resveratrol which is a potent antioxidant molecule. Male Wistar rats of equal age were divided into four groups as follows; diabetic (n=12), control (n=12), diabetic group supplemented with resveratrol (n=9), control group supplemented with resveratrol (n=12). Diabetes was induced in respective groups with single intraperitoneal streptozotocin (55 mg/kg) administration. One week after the diabetes, resveratrol was given as 20 mg/kg/day throughout 3 weeks. While changes in protein expression were determined by western blot analysis, changes in gene expression were determined by qPCR. The components of insulin signaling elements were up-regulated at gene expression levels in diabetic rat kidney tissues, and this increase in gene expression leads the protein levels to be enhanced. Resveratrol treatment decreased the sensitization of insulin signaling towards the normal levels at gene expression level. The results of this study contain the supplementary data for the molecular mechanisms of the diabetes induced changes in the kidney tissues to put forward to orient new studies searching for new drugs and gene treatments for diabetes.

Keywords: Diabetes, Kidney, Resveratrol, Insulin signaling Pathway, Gene expression, Western Blot

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Oral Presentation

Enantioselective hydrolysis of racemic naproxen methyl ester with the encapsulated lipases using calix[4]arene derivative containing piperazine

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Abstract

Naproxen, is a non-steroidal anti inflammatory drug and an important member of the 2-aryl propionic acid class of compounds. The anti-inflammatory activity of the S-form of Naproxen is 28-fold greater than that of the R form. For this reason, only the S-form of Naproxen is used as a drug for humans, and significant research efforts have been focused on the production of the S-form of Naproxen as a single enantiomer. Lipases are one of the most widely used enzymes in biotechnology, where they have been used in the organic synthesis and kinetic resolution of racemic com compounds. In particular, Candida rugosa lipase (CRL) is an important industrial lipase, and has been used in a wide variety of hydrolysis and esterification reactions. Lipases also exhibit good selectivity, which has allowed them to be used as important biocatalysts in several other applications, including the synthesis of chiral drug intermediates and nutraceutical lipids. Candida rugosa lipase has been immobilized on a variety of calix[4]arene derivatives using the sol–gel encapsulation technique, and the catalytic activities of the resulting encapsulated lipases towards the hydrolysis of p-nitrophenylpalmitate and the hydrolytic kinetic resolution of racemic Naproxen methyl ester were evaluated using standard techniques. The results revealed that the calix[4]arene-based immobilized encapsulated lipase gave higher levels of enantioselectivity and conversion than the free encapsulated lipase.

Keywords: Calix[4]arene , Candida rugosa lipase , Enantioselectivity , Naproxen , Sol–gel encapsulation

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KONYA

Oral Presentation

Investigation of the antibacterial activity and fluorescence properties of N-(2-((pyren-4-yl)methyleneamino)ethyl-5-nitropyridin-2-amine)

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Abstract

Antibiotic-resistant bacteria pose an enormous threat to the treatment of a wide range of serious infections because of their ability to develop resistance mechanisms against virtually all commonly used antibiotics. Fortunately it is now well-known that Schiff base and their derivatives have been shown to exhibit a broad range of biological activities, including antifungal, antibacterial, antimalarial, antiproliferative, anti-inflammatory, antiviral, and antipyretic properties.

Schiff bases have also been widely studied in connection with catalysis of many reactions due to the versatility of their steric and electronic properties and are promising materials for optoelectronic applications and their industrial applications. Correspondingly the aim of this study is to find the novel Schiff base and with good antibacterial activity and to investigate their fluorescence properties. Therefore, this study was carried out to investigate the fluorescence properties of N-(2-((pyren-4-yl)methyleneamino)ethyl-5-nitropyridin-2-amine). Multi-emission spectra of the novel schiff base in tetrahydrofuran were measured by changing excitation wavelengths. Then fluorescence intensities of the schiff base in excitation (λex) and emission wavelengths (λem) were determined and antibacterial activity of the Schiff base was observed by means of disc diffusion method. We studied to determine the biological activities of N-(2-((pyren-4-yl)methyleneamino)ethyl-5-nitropyridin-2-amine) against various bacteria [Staphylococcus aureus ATCC 25923, Staphylococcus aureus ATCC 43300 MRSA, Salmonella enteritidis ATCC 13076, Enterococcus faealis ATCC 29212, Pseudomonas aeruginosa ATCC 27853, Escherichia coli ATCC 25992] and the antibacterial data given for the compounds presented in this study allowed us to state that the novel antibacterial agent had a better activity on the Pseudomonas aeruginosa ATCC 27853 .

Keywords: Shiff base, antibacterial activity, fluorescence properties

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Oral Presentation

The biological ınvestigation of essential oils of some *achillea* species

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Abstract

Achillea L. (Asteraceae) is a widely distributed medicinal plant in the world and represented by 140 species in the world. *Achillea* L. species are commonly used in Turkish Traditional Medicine for the treatment of wounds, bleedings, headache, inflammation, pains, spasmodic diseases, flatulence and dyspepsia and hemorrhoids for years (1,2). The genus *Achillea* is rich in terpenoids and flavonoids, which are possible bioactive compounds. Monoterpenes were reported to be the major constituents of essential oil of the genus although high levels of sesquiterpenes were quantified (3). Among the monoterpenes 1,8-cineole, found in almost every essential oil, was reported to be the most frequently identified component. Furthermore, it was also reported to be the major compound in about one third of yarrow essential oils. Compounds having bornane skeleton such as camphor and borneol were reported to be the second and third most frequently charactarized components of *Achillea* oil and they were described several times as major compounds. Antioxidant, cytotoxic, antimicrobial, anticholinesterase, urease and tyrosinase enzymes activities of essential oils obtained by hydro-distillation method from *A. biebersteinii*, *A. wilhelmsii* subsp. *wilhelmsii*, *A. aleppica* subsp. *zederbaveri, A. vermicularis, A. monocephala, A. nobilis, A. coarctata, A. teretifolia* species were determined. It has been determined that all essential oils show low-moderate antioxidant activities in ABTS, CUPRAC and DPPH methods. In the method of butyrylcholinesterase, *A. wilhelmsii* subsp. *wilhelmsii* (collected from Niğde) (İnhibition: %77.67±1.03), in the urease method *A. vermicularis* (collected from Mardin) (İnhibition: %55.26±2.01), in the tyrosinase method *A. vermicularis* (collected from Diyarbakır) (Inhibition: 43.07% ± 1.32) was found to be more active. It was determined that all extracts tested showed high-moderate cytotoxic effects against PDF, HT29 and MCF-7 cell lines.

Keywords: Achillea, Antioxidant, Urease, Tyrosinase, Antimicrobial, Cytotoxic activity

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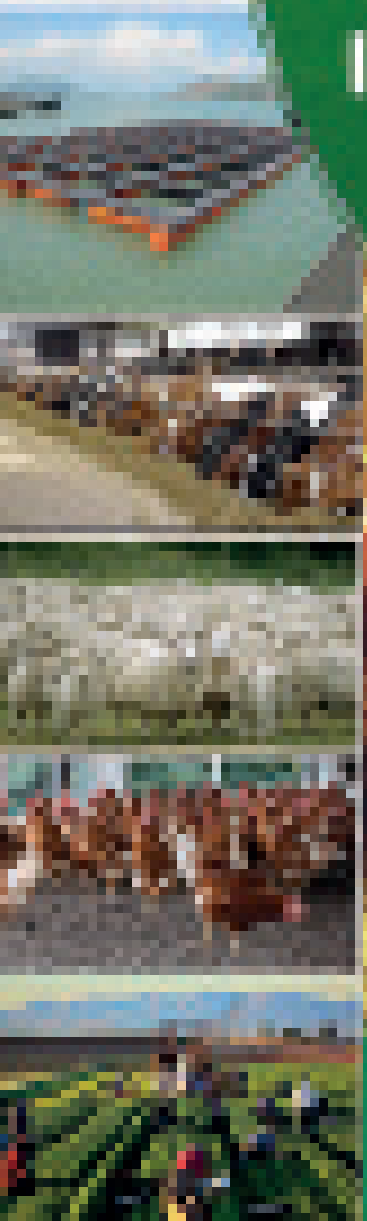

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Oral Presentation

Quantitative determination of sterols in olive oil deodorizer distillate by GC-MS and GC-FID

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Abstract

The most important by-product of edible oil refining is the deodorizer distillate (DD) obtained in the deodorization stage. Basically, deodorization is the final key step of the refining process accountable for removing targeted volatile compounds which are liable for producing unacceptable odor, color, taste and flavor in the oil. Increased use of industrial waste and by products fits the requirement of industry to fulfill with environmental rules. The replacement of natural products for synthetic materials has gained worldwide consideration in the food, pharmaceutical and other industries. Therefore, extra virgin olive oil DD (OODD) has been utilized as a natural source of FFAs, tocopherols, sterols, squalene in many fields. In this study, an automated GC-MS and GC-FID system for quantification of sterol compounds in OODD was used. It was seen that OODD has campesterol, stigmasterol and B-sitosterol in the level of 12,73 ± 0,54, 109,92 ± 2,04 and 15,76 ± 0,40 mg/kg distillate, respectively.

Keywords: Deodorizer distillate, Olive oil, Sterol

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Oral Presentation

Selective separation of acetic acid from its aqueous binary solutions with formic acid

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Abstract

Selective recovery of carboxylic acids from their mixed solutions with high efficiency is a challenging problem in bio-industry. Several methods have been tested for the purpose. Most of them were not successful or expensive due to high energy demands. One of the most advantageous methods is reactive extraction. It contains chemical extraction with physical extraction and previously shown to be successfully used in similar cases. The present study is on the selective extraction of acetic acid (AA-0.25 M) and formic acid (FA-0.25 M) from their binary solutions using a tertiary amine (tri-n-octylamine, TOA) as the extractant dissolved in various organic solvents. Effects of aqueous pH, extractant concentration and solvent type on selectivity and extraction efficiency were probed. At natural pH of the aqueous solution, the extractant is expected to prefer to react with the stronger acid (FA, pKa=3.75). This was also observed and FA was extracted preferably at pH 2.2. The separation factor (α) was about 7-8 using 0.3/0.5 M TOA in all solvents studied. However, purity was low (~58%) which is not desired. The increase in pH decreased the amount of extracted acid but increased the purity. Differently, the weaker acid (AA, pKa=4.75) was preferably extracted most probably due to the higher concentration of undissociated acid. Using 0.5 M TOA, 33% and 5% of AA and FA was extracted, respectively. At a pH of 5, the α and purity were about 10 and 87%, respectively. Therefore only 3-4 consecutive steps will provide high purity FA and AA solutions.

Keywords: Selective recovery, Acetic acid, Formic acid, Reactive extraction, Extractant

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Oral Presentation

Novel electrochemical sensor based on pillar arene for determination of histamine

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Abstract

The biogenic amine content of a variety of foods has been widely studied because of their potential toxicity. At high concentrations there is a risk of food intoxication, whereas moderate levels can lead to food intolerance. The aim of this study was to develop a modified electrode based on pillar arene for the determination of histamine which is important in food quality. For this purpose, glassy carbon electrode was modified by using pillar arene distributed in gelatin biopolymer. Scanning electron microscope which is a surface imaging technique was used for the determination of surface modification for the modified electrode. Furthermore, electrochemical behavior of the electrodes were examined utilizing cyclic voltammetry and electrochemical impedance spectroscopy techniques. Moreover, optimum working conditions, performance factors and analytical applicability of the modified electrode in real samples were investigated. Pillar-aren–based histamine electrode showed the best performance characteristics; the linear working range was 4.2×10^{-7}–4.2×10^{-5} M, sensitivity was 60 A M^{-1}, limit of detection was 1.12×10^{-7} M and relative standard deviation of the calibration graphs of repeatability was 5%.

Keywords: Modified electrode, biogenic amines in foods, electrochemical sensor

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Oral Presentation

Fig latices have cytotoxic effects on three different human cancer cell lines

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Abstract

Fig latex (FL) samples collected from *Ficus carica* cultivars Sari Lop (SL) and Bursa Black (BB) were stored at -20°C and lyophilized. Human colon cancer line HT-29 and prostate cancer line PC3 were maintained in RPMI 1460, and human pancreatic cancer line MIAPaCa-2 was maintained in DMEM. Both media were supplemented with 10% fetal bovine serum (FBS) and cells were incubated at 5% CO2 and 37°C. Lyophilized FL samples were resuspended in deionized water and filter sterilized. Cells were treated with 0-100 µg/ml of FL with deionized water as negative control for up to 72 h. Cell viabilities after the treatment were measured with MTT (3-{4,5-dimethylthiazol-2yl}-2,5-diphenyl tetrazolium bromide) assay. Experiments were performed three times in triplicates. The results were analyzed with analysis of variance test. Both FL samples showed cytotoxicity on cancer cell lines in dose- and time-dependent fashion. The BB-FL had statistically higher ($P<0.05$) cytotoxic effects on all three cell lines compared to the SL-FL. The BB-FL had statistically higher ($p<0.05$) cytotoxic effects on HT-29 cells than SL-FL at doses as low as 25 µg/ml for 24 h. However, the difference disappeared as the FL concentration increased to 100 µg/ml and the treatment time increased to 72 h. Same trend was observed on PC3 cells with almost complete cytotoxicity by 100 µg/ml BB-FL in 72 h versus 20% survival rate by 100 µg/ml SL-FL. The SL-FL at 25 µg/ml killed 40% of the MIAPaCa-2 cells while BB-FL at 25 µg/ml killed over 80% of the cells in 24 h.

Keywords: *Ficus carica*, fig latex, cancer cell line, MTT, cytotoxicity

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KONYA

Oral Presentation

A novel schiff-base based ''turn on'' fluorescent sensor for al3+ ıons

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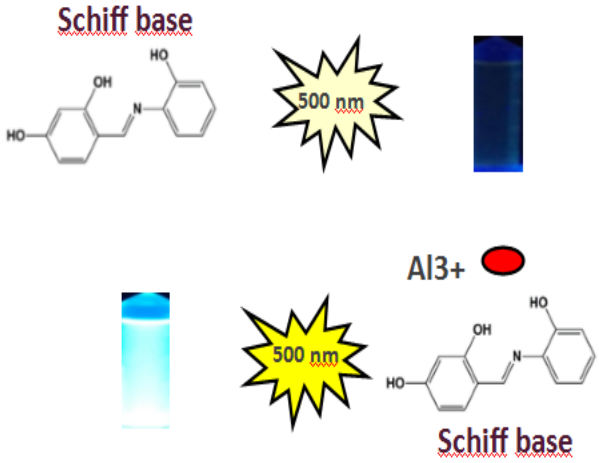
Abstract

Anexcellent chemosensor receptor is prepared by simple Schiff base type reaction and it is exhibited a ''turn on'' mode with high sensitivity in the presence of Al^{3+} ions. Upon binding of Al^{3+}, a significant fluorescence enhancement with a turn on ratio over 335-fold is triggered. But, other metal ions have no such significant effect on complexation with same receptor. From these spectroscopic data, it is concluded thatthis receptor could be used as Al^{3+} probe. This receptor can also be used as a colorimetric sensor for Al^{3+} ions under UV-light by naked eye ''from toneless to brilliant fluorescent blue''.



Keywords: Fluorescence, Schiff-base, Sensor, Aluminium ions

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Oral Presentation

Saccharomyces cerevisiae SAGA complex is a repressor of TPS1 gene

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Abstract

Trehalose is a nonreducing disaccharide, formed by two glucose units. The synthesis of trehalose is catalyzed by an UDP-glucose-dependent trehalose synthase (TPS) complex composed of catalytic and regulatory subunits. *TPS1* and *TPS2* encoded for trehalose-6-phosphate synthase and trehalose-6-phosphate phosphatase, respectively. *TPS3* and *TSL1* coded for two regulatory subunits of the TPS complex. Trehalose- 6-phosphate synthetase enzyme catalyzes the joining of glucose-6-phosphate with the glycosyl unit from UDP-glucose. *TPS1* promoter includes STRE sequences necessary for stress response, such as nutrient starvation. It is known that chromatin remodeling complexes regulate transcription. SAGA complex is a 2MDa multiprotein chromatin remodelling complex that harbors two known enzymatic modules mediating acetylation and deubiquitination of histones. In our research we tested the effect of Spt7, the subunit of the SAGA complex, on *TPS1* transcription both in normal and stress conditions. We have found that transcription of *TPS1* gene increased by at least 5-fold in *Aspt7* mutants than wild type. This result indicated that SAGA complex is essential for the regulation of *TPS1* transcription. In addition, we found that *TPS1* transcription is was constitutive during nitrogen starvation. Our results showed that SAGA chromatin remodeling complex is essential for the repression of *TPS1* gene expression.

This work was supported by Çanakkale Onsekiz Mart University The Scientific Research Coordination Unit, Project number: FDK-2018-1331.

Keywords: *TPS1*, SAGA complex, Trehalose, *Saccharomyces cerevisiae*

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Oral Presentation

Inhibition effects of phenolic compounds on biogenic amines formation by spoilage and pathogenic bacteria in ornithine decarboxylase broth

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Abstract

In this study, ornithine decarboxylase broth was prepared using phenolic compounds such as carnosic acid, kaempherol and luteolin. Spoilage bacteria in the flora of aquatic products such as *Photobacterium damselae, Proteus mirabilis, Enterobacter cloacea, Serratia liquefeciens* and *Pseudomonas luteola* and pathogenic bacteria such as *E.coli, Staphylococcus aureus, Yersinia enterocolitica, Salmonella paratyphi* A and *Enterobacter faecalis* have been investigated in ornithine decarboxylase broth. As a result of the study, significant differences were observed by bacteria in terms of ammonia and biogenic amine production ($P<0.05$). It was observed that kaempherol was more effective in the inhibition of biogenic amines than carnosic acid and luteoline in the study. The major amines produced in the ornithine broth were putrescine, cadaverine, serotonin and dopamine. The highest histamine production was achieved by *E.faecalis* supplemented with luteolin from pathogenic bacteria (10.95 mg/L). The highest putrescine production was by the control group of *P.luteola* (246.59 mg/L) and the highest cadaverine production was by the carnosic acid group of *E.faecalis* (71.86 mg /L). The highest production of tyramine and dopamine was observed by *E.cloacea* (751.96 and 156.10 mg / L, respectively), which is a spoilage bacterium. While bacterial production of histamine, putrescine, serotonin and cadaverine was significantly inhibited by kaempferol supplementation, spermine production was largely inhibited by luteolin and dopamine and agmatine production by carnosic acid supplementation.

Keywords: Phenolic compounds, histamine, ornitin, spoilage bacteria, pathogenic bacteria

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Oral Presentation

Comparison of bone marrow and adipose tissue derived mesenchymal stem cells properties in musculoskeletal tissue engineering

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Abstract

In the recent years, researchers have been searching for more effective ways of bone and cartilage defect treatments in musculoskeletal tissue regenerations. Tissue engineering is a mainly used method for this aim. Tissue engineering techniques will play an important role in the future development of artificial organs and the application of them. Mesenchymal Stem Cells (MSCs) are highly prefered in regenerative medicine due to their multi-differentiation potential, anti-inflammatory effects, safety and ease in harvesting. MSCs also possess paracrine and immune modulating effects through growth factor and cytokine release. Different sources of MSCs are used in regenerative medicine. However, this presentation is based on the usage of MSCs, isolated from human adipose tissue (ASCs) and from bone marrow (BMSCs). ASCs and BMSCs differ in some ways. There are many methods for the isolation of MSCs from bone marrow and adipose tissue. MSC isolation from ASCs has an easier procedure than BMSCs, but the cell density is the least. ASCs are possible to obtain in high amounts from lipoaspirates, have rapid cell proliferation and it has a less invasive procedure than bone marrow. Immunophenotypic and immunohistochemical characterizations should be done for the identification of MSCs. Also, their differentiation capacities into adipogenic, osteogenic, chondrogenic or fibroblastic should be investigated. Some of these studies and the main differences of these two sources of MSCs have been compiled in this presentation.

Keywords: Bone Marrow, Adipose Tissue, Mesenchymal Stem Cell, Musculoskeletal Tissue

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Oral Presentation

Investigation of the effect of methylenetetrahydrofolate reductase A1298C gene polymorphism on the development of diabetic nephropathy in patients with type 2 diabetes mellitus

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Abstract

Diabetic nephropathy (DN) is one of the microvascular complications of Type 2 diabetes mellitus (DM). Vascular damage to DN, which is not fully understood pathogenesis, is of utmost importance. Among the genes that are effective in the development of diabetic nephropathy from microvascular complications of type 2 DM are the methylenetetrahydrofolate reductase (MTHFR) gene. The human (MTHFR) gene is localized in the telomeric region of chromosome 1 (1p36.3) and encodes the enzyme MTHFR. The MTHFR A1298C gene polymorphism is characterized by a protein Glutamine/Alanine exchange in the C-terminal regulatory region of the MTHFR gene as a result of the Adenine/Cytosine substitution at position 1298 in the 7th exon. The aim of our study was to determine the association between MTHFR A1298C gene polymorphisms and the development of diabetic nephropathy in patients with Type 2 diabetes mellitus. Our study was conducted with a total of 116 people, consists of 61 DN patients and 55 healthy controls. DNA was isolated from peripheral blood, containing ethylenediamine tetraacetic acid. DNA quality was measured with a Nanodrop device at 260 and 280 nanometer wavelengths. The genotypes of MTHFR A1298C gene polymorphism were identified through usage of the Polymerase Chain Reaction (PCR) device and restriction fragment length polymorphism methods (RFLP). The MTHFR A1298C genotype distributions in patient group with diabetic nephropathy did not differ from those in control group (p>0,05) (Chi-Square test). Our study showed that MTHFR A1298C gene polymorphism are not a genetic risk factor for the development of DN.

Keywords: Type 2 DM, DN, MTHFR A1298C Gene Polymorphism, PCR, PFLP

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Oral Presentation

X-Ray diffraction study of *Scytalidium thermophilum* catalase in the complex with Aminotriazole

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Abstract

Catalases (EC 1.11.1.6) are redox enzymes responsible for the dismutation of hydrogen peroxide into water and molecular oxygen. The crystal structures of fifteen heme catalases, including one isolated from the thermophilic fungus *Scytalidium thermophilum*, have been solved at high resolution. These structures show that the heme catalases are tetramers and each of the four active sites consists of a pentacoordinated-iron protoporphyrin IX prosthetic group with a tyrosinate axial ligand. Some catalases also contain a NADPH cofactor tightly bound at the periphery of each subunit. Our previous studies have indicated that, in addition to the hydrogen peroxide degrading catalatic activity, the catalase from *S. thermophilum* (CATPO) possesses an oxidase activity. This enzymatic activity is oxygen-dependent and is inhibited by classic catalase inhibitors, including 3-amino-1,2,4-triazole (3TR). In order to better understand this oxidative reactivity, we determined the crystal structure of the enzyme-inhibitor complex of CATPO with 3TR at 1.95 Å resolution. Surprisingly, and in contrast to other structural reports of 3TR complexes with catalases, we do not observe the 3TR bound at the heme. Instead, the inhibitor occupies a surface pocket to one side of the heme. This structure has led us to hypothesize that this binding site is in fact the binding site for substrates for CATPO's oxidase activity. In addition, we propose that the oxidase activity of CATPO may represent an alternative protection strategy for catalases, where small organic molecules are used in place of NADPH.

Keywords: *S. thermophilum*, catalase, oxidase, aminotriazole, NADPH

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Oral Presentation

Assessment of ion channel activity from action potentials: skewness

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Abstract

Membrane potential recording from excitable cells by microelectrode is an essential but still mostly preferred method to determine ion channel behavior that contributes to action potentials (AP) shaping. This information is provided by analysis of AP and interpretations of some essential parameters, but remains incapable to explain some unusual situations. We aimed to investigate the availability of the skewness parameter which is used for analysis of statistical distributions for detailed examination of AP depolarization phase. For this reason, APs evoked by supramaximal stimulations were recorded from diaphragm muscle cells of adult Sprague-Dawley rats. APs recorded from diaphragm preparations that 4-aminopyridine (0.3 mM) applied to block potassium currents (4AP group, N=4) and N-Methyl-D-Glucamine (NMDG) replaced medium (NMDG group, N=4), to block sodium currents. APs recorded also from control preparations (CON, N=10) without any application. By choosing the membrane potential (mV) as an independent variable, membrane potential change (mV/ms) were plotted only for depolarization phase then the skewness value were calculated for each group. Skewness were found positive in CON which means skewed to the left, while this positivenes were found to be increased in 4AP and decreased in NMDG group. These changes were significantly different ($p<0.05$). We have shown that, with the skewness parameter which reflects the behavior of time independent but membrane potential dependent change of depolarization velocity, changes in channel kinetics can be investigated.

Keywords: Diaphragm, action potential, rat, skewness

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Oral Presentation

IBA induced shoot regeneration during rooting of lentil cultivars

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Abstract

Both rooting and shoot proliferation of lentils is a complex process and difficult during *in vitro* cultures due to leaching out of phenols, oxidative stress or injury due to interaction of plant growth regulators with the explants, ensued by necrosis, deformation, abnormal regeneration behavior etc.. This cause inhibation to growth and propagation of lentil under aseptic conditions. The main objective of the study was promote proliferation of multiple clones of the lentil genotypes Ali Dayı and Kayı 91 without involving long and complex tissue culture steps using *in vitro* regenerated shoots of the newly germinated seeds using different concentrations of (0.25, 0.5, 1.0 and 2.0 mg/l) IBA. Although the exact mechanism of IBA functions is largely unknown and is very complex; genetic evidence suggests that it converts into IAA through β-oxidation of fatty acids and promotes rooting both under *in vitro* and *ex vitro* conditions. IBA is also known to regulate different aspects of plant growth and development such as cell elongation, division and differentiation. The results showed that 0.25 mg/l IBA had high potential to induce shoots during rooting. However, the treatments with 0.50, 1.0 and 2.0 mg/l IBA were inhbitive. These shoots of both cultivars induced callus of variable size at the basal tips ensued by variable shoot regeneration. It was concluded that IBA undertake bipolar functions of rooting and shoot proliferation at lower concentrations. However, bipolarity of the IBA is lost at >0.50 mg/l concentration. This aspect of *in vitro* plant regeneration in lentil tissue culture and biotechnology provides a rapid and cost-effective plant proliferation protocol for *in vitro* studies. The protocol could facilitate biotechnological studies in effective manner for genetic transformation, genomic and proteomic studies.

Keywords: lentil, shoot induction, rooting, IBA, *in vitro*

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KONYA

Oral Presentation

Molecular analysis of elastin gene mutations in autosomal dominant cutis laxa

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Abstract

ADCL is characterized by loose and inelastic skin, pulmonary emphysema, aortic root dilation, and peripheral pulmonary aortic stenosis. Our goal was to evaluate the impact of elastin gene mutations on TGFβ signaling and molecular pathology of ADCL. Dermal fibroblasts from four patients with ELN mutations in exon 34 or exon 30 and controls were used. Increased intracellular TGFβ signaling was found in patients with exon 30 mutations, despite unchanged extracellular TGFβ activity. TGFBR1 levels were increased at the protein and the RNA level. Patients with exon 34 mutations had normal TGFβ signaling. Our results indicate mutation-specific TGFβ signaling changes in ELN-related cutis laxa patients, which may influence to disease severity. SMAD6 and SMAD7 mRNA expression levels were decreased in ADCL patients. Elastin assay showed decreased elastin deposition in ADCL cells and long-term TGFβ treatment improved elastin deposition. Semi-quantitative RT-PCR experiments showed increased expression of the mutant compared to the wild-type allele in ADCL cells under baseline conditions. Long-term TGFβ treatment normalized this allelic imbalance in expression. Therefore, we conclude that increased TGFβ signaling is a protective mechanism in ADCL at the molecular level. Uncovering the nature of connections between elastin and TGFβ may help developing treatments for cutis laxa. Our findings are relevant to complex diseases characterized by elastin degradation and TGFβ dysregulation, including aneurysms and chronic obstructive pulmonary disease that have major public health impact.

Keywords: Autosomal dominant cutis laxa, elastin, TGFβ

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Oral Presentation

Investigation of the distribution of two polymorphisms of *Hif1 Alpha* (rs11549465, rs11549467) in children with cleft palate/lips and their mothers

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Abstract

Palatogenesis is a metabolic event that occurs in the early stages of fetal life. This phenomenon involves many signaling molecules that including transcription factors. Most of the genes leading to the formation of syndromic cleft palate and lips are also found to lead to the formation of non-syndromic cleft palate/lips. It is known that environmental factors play a role in the formation of these pathogens by interacting with genetic factors. The ability of the cell to respond to changes in the oxygen pressure depends on the activation of a transcription factor family known as Hypoxia-inducible factors (HIFs). Studies have suggested that HIF activity must be induced via hypoxia for embryo and placenta development. It has been found that mouse embryos with homozygous *HIF-1 alpha* mutation can not survive and exhibit neural tube defects and cardiovascular anomalies. It has been reported that cleft lip/palate development to be associated with maternal hypoxia in humans. In this study, we aimed to determine the role of two polymorphic structure of *Hif1 alpha* (rs11549465, rs11549467) of child and mother on the development of cleft palate/lip by using the PCR-RFLP method. In G1790A polymorphic structure, we didn't observe any difference between mother and child and their controls. In C1772T, there were statistical differences in the comparison of maternal and child genotypes with control groups. In allelic comparisons, there was a statistically significant difference between mothers of cleft palate/lips children and control group. Although this was different in children, it was not as high as in mothers.

Keywords: *Hif1 alpha*, cleft palate/lip, rs11549465, rs11549467

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Oral Presentation

Interaction of nanofiber-producing amino calix[4]arene with caco-2 cell

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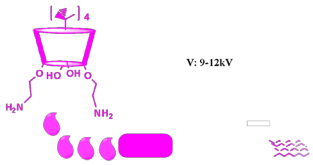
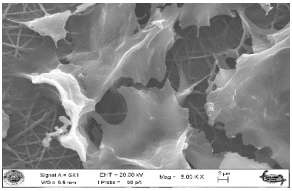
Abstract

Calixarenes, represent a third generation of supramolecular hosts. Their unlimited preparation of derivatives have provide opportunity to their use in various fields of research. They have been utilized such as ion-selective electrode, , sensor, chiral, column packing material and achiral catalyst, membrane, enzyme-mimic, ion and molecular transport and preparation of nanofibers of them by electrospinning. Due to having a cyclic structure and large surface area, calixarenes, can be functionalized easily with polar and apolar groups, be a good carrier for cations, anions and neutral molecules. Synthesis of new calixarenes nanofibers will arise innovative approaches in biomedical applications. In present study, electrospinning of p-tert-butylcalix[4]arene nanofibers with different functional groups and their cytocompatibility behaviour on one aspect of cell function: adhesion. Adhesion of anchorage-dependent cells is a necessary criteria for subsequent functions for different cell attacment. In this study, the biosynthesis of the calix [4] arene complex with the amino group of the produced amino group with the Caco-2 cancer cell is investigated by synthesizing and characterizing the calix [4] arene compound with the amino group and electrospinning this component. Cell attachment kinetics revealed that the Caco-2 attached to the nanofibers functionalized amino groups calix [4] arene at the same rate as to tissue culture plates. In this report, it was shown that 3D cultured systems designed with calixarene nanofibers provide excellent in vitro models, allowing the study of cellular responses in a setting that resembles in vivo environments.





Keywords: Calixarene; Electrospinning; Nanofiber; 3D-Cell Culture; Surface Funtionalization

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Oral Presentation

Chiral calixarene coated qcm sensor to sense alanine in aqeous media

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Abstract

Proteins are complex compounds which play vital role in human life. It is formed by smaller unit which is called Amino acids. Biosensors are analytical device which is can be investigated interaction between bioanalyte and sensing material. In biosensor application, there are various methods such as electrochemical, calorimetric, optical, acoustic. Among these methods, Quartz Crystal Microbalance (QCM) is acoustic sensor system which is used for antigen-antibody, enzyme-substrate interaction, drug carrier, detection of pollutants. QCM technique is defined as frequency change according to mass change on quartz crystal. In sensor application, there are many studies with regards to the polymeric and macromolecules materials which can be used as sensing material. Among these molecules, calixarene can be used for host-guest chemistry for construction of various receptors for charged or neutral molecules. In this study, a modified QCM sensor by means of coating a calixarene derivative onto QCM surface was used for sensing of alanine in aqueous media.

Keywords: Alanine, Chiral Calixarene, Quartz Crystal Microbalance, Sensor

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Oral Presentation

Recovery of lactic acid from aqueous solutions using an environmentally-friendly organic phase diluent and trioctylamine

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Abstract

Lactic acid (LA) is one of the most widely used low volatile carboxylic acids in the industry. Today most of the industrial demand is provided via bio-based productions. However, its recovery from fermentation broth is still a challenging problem. Reactive extraction is a promising method for the recovery of carboxylic acids, i.e., LA. It is preferred due to its high efficiency, low energy demand and process simplicity. However, use of organic solvents in the organic phase preparation is one of the main problems of the technique. To eliminate this, vegetable oils were shown to be efficient alternative to replace the toxic solvents. In this work, reactive extraction of lactic acid from aqueous solutions ([LA]0=0.1-1.5 M) using trioctylamine ([TOA]0=0.2-2.0 M) as the extractant dissolved in an environmentally-friendly solvent, safflower oil, was studied. Results showed that extraction efficiency increased with the increase in both TOA and LA concentration. Highest extraction values were obtained at pH 2, where the dissociation of LA is very low. In the ranges of the parameters studied, the highest efficiency and distribution coefficient were 83.1% and 4.9, respectively, with safflower oil. It is an acceptable value compared to the one (97%) obtained with 1-octanol, which is the state of the art organic phase diluent in the literature. Temperature negatively influenced the recovery, thus room temperature was the highest among the ones tested. This study presented how an environmentally-friendly solvent can be effectively used in the industry for the separation processes.

Keywords: Lactic acid, Reactive extraction, Safflower oil, Environmentally-friendly diluent, Trioctylamine

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Oral Presentation

Pre-yield analysis of kronos durum wheat using speed breeding technology

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Abstract

Development of a new variety takes five or six years in classical breeding. Speed breeding technology gives an opportunity to harvest five or six generations per year for spring wheat. Our aim was to evaluate pre-yield analysis of first generation of spring durum wheat cultivar Kronos (*Triticum turgidum var. durum*) grown by speed breeding technology in plant growth chamber. Seeds were sowed in 9 mm petri dishes. Germinated seeds were planted in pots including soil and torf mixture supplemented with fertilezer. Plants were incubated in plant growth chamber (24 hours light 12000 lux strength, 25+1 °C temperature and 60-70% moisture). Plants were watered by regularly and supplied with macro and micro nutrients. Tiller number, spikelets number, grain number, grain/spikelet, seed/spikelet, yield/spike and thousand grain weight were calculated for Kronos grown in speed breeding. Although average tiller number was 3, most of them did not have a seed. Spikelets number was 11.5, grain number was 18.5, seed/spikelet was 1.6, yield/spike was 0.67 g and thousand grain weight was 36.5 g for main tillers of first generation. The shorter tillers and weaker seeds were observed. As a coclusion, Kronos seeds were harvested at the 70th day after sowing instead of six months.

Keywords: Speed Breeding, Pre-yield analysis, Grain number, Durum wheat

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Oral Presentation

Isolation of bacteriorhodopsin-producing archaea from lake tuz-Turkey and their molecular ıdentification

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Abstract

Bacteriorhodopsin is one of the most valuable proteins of halophilic Archaea and acts as a proton pump. Due to its unique crystalline structure, it has a great variety of nanotechnological applications. In the present study, salt crystals collected from the shores of Lake Tuz in Turkey for isolation of halophilic archaea. The crystals dissolved in sterile water supplemented with NaCl and spread on agar plates containing Sehgal and Gibbons (SG) selective medium. The plates were incubated at 37 °C for 15 days for preparation of pure archaeal cultures. Then, each of archaeal isolates was grown in 100 ml culture medium containing 25 g NaCl, 2 g MgSO4•H2O, 0.3 g sodium citrate, 0.2 g KCl, 1 g bacteriological peptone with pH adjusted to 7.2. The cultures were shaken at 150 rpm, 37 °C under continuous illumination (40 W) for 48 h. After the incubation period, bacteriorhodopsin producing isolates were determined by purification of delipidated BR by aqueous-three-phase system from purple membranes of the isolates. According to the results, six of isolated archaea (NES-3, NES-4, NES-6, NES-8, NES-9 and NES-11) were determined as BR-producing microorganisms. 16S rRNA gene sequencing results of the isolates showed that NES-4 and NES-8 were assigned to *Haloarcula sp.*, NES-3, NES-6 and NES-11 to *Halobacterium sp.*, and NES-9 to *Halorubrum sp.* Consequently, the results of the present study contributed to widen understanding of bacteriorhodopsin-producing archaeal diversity of Lake Tuz.

Keywords: 16S rDNA, Bacteriorhodopsin, Halophilic archaea, Lake Tuz

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Oral Presentation

Structural analysis of lipid membranes with flavonoids

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Abstract

Alterations in membrane physical properties i.e. fluidity and thickness inevitably influence the membrane structure and its potential therapeutic applications. Flavonoids which are plant secondary metabolites have been shown to induce membrane lipid structure. This is of significance importance since many epidemiologic and clinical studies suggest a relationship between high flavonoid intake in diet and reduced risk of several diseases such as cardiovascular heart diseases, cancer and diabetes. One great focus of the food industry is to formulate functional foods with increased bioavailability. This is possible with understanding the details of how flavonoids interact with lipid self-assemblies and encapsulating them efficiently. Recent data regarding the influence of flavonoids on membrane structure and their encapsulation using curved membrane mesophases are presented.

Keywords: Flavonoids, phospholipids, synthetic membrane, interactions

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Oral Presentation

Fluorescent sensing of Zn2+ ions in living cells by a novel probe based Bisphenol A-Pyren

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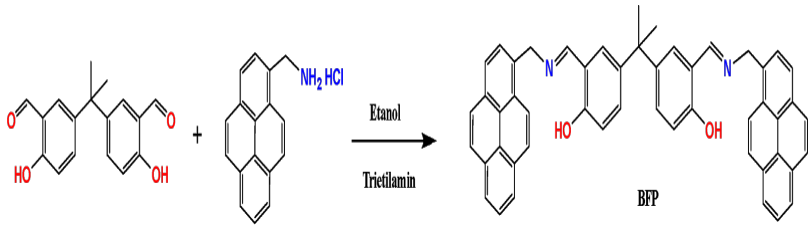
Abstract

The preparation of fluorescent sensors with high selectivity and sensitivity for heavy and transition metal ions has received noticeable attention because they play an important role in living systems. As the second most abundant metal ion, zinc is actively involved in diverse biological activities, such as structural and catalytic cofactors, neural signal transmitters or modulators, regulators of gene expression and apoptosis. Minute quantities of zinc are necessary for the living organism, but excessive amounts may damage the organism. Therefore, it is essential to discover efficient methods which can selectively and sensitively detect Zn2+. Of the many modes of detection available, fluorescence-based methods have attracted increasing attention in recent years owing to real-time detection, operational simplicity and good sensitivity.



In this study, we have designed and synthesized a novel bisphenol A-pyren (BFP) based sensor for Zn2+. The receptor BBP did not show any remarkable emission alone when the excitation wavelength was at 365 nm. But, Zn2+treatment resulted in a large increase in intensity at a wavelength of 485 nm in ethanol-water (95/5, v/v). In contrast, no fluorescence enhancement was detected after adding other metal ions. The detection limit of BFP for Zn2+ was 17.5 nM, which presented a pronounced sensitivity toward Zn2+. Also, possible utilization of BFP as bio-imaging fluorescent probe to detect Zn2+ in human prostate cancer cell lines was observed by confocal fluorescence microscopy

Keywords: Fluorescent, Sensor, Zinc, Living cell

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Oral Presentation

Pillar[5]arene based nonenzymatic tyramine sensor

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Abstract

Tyramine, which one of the best-known biogenic amine, is found in cheese, chocolate, beer, fermented foods and soya products. Because it is used as quality marker of food, analysis of tyramine is very important in food industry. In this work, nonenzymatic sensor for tyramine detection was constructed based on pillar[5] arene. The pillar[5]arene was dispersed in the gelatin (GEL) solutions and dropped on glassy carbon electrode (GCE) surface. Tyramine detection is based on the oxidation process of tyramine on the sensor surface at a 0.6 V. Surface properties of modified electrode were investigated by scanning electron microscope (SEM), atomic force microscope (AFM), electrochemical impedance spectroscopy (EIS) and cyclic voltammetry (CV). Optimum working conditions such as pH, working potential, amount of pillar[5]arene for GCE/Pillar[5]arene were examined. The linear working range of the sensor was 0.041-1.429μM with sensitivity of 7.613 nAμM-1 and limit of detection of 0.04 μM. The sensor shows good repeatability, reproducibility,stability and anti-interference property. The prepared nonenzymatic sensor was applied to determination of tyramine concentration in food samples.

Keywords: Tyramine, nonenzymatic sensor, pillar[5]arene

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Oral Presentation

Imaging of Al^{3+} ion in living cells by new fluorescent sensor based Bisphenol A-Hydroxyquinolin

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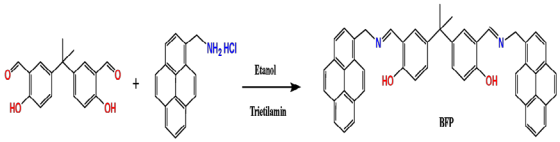
Abstract

Fluorescent probes for selective recognition of numerous biologically and environmentally relevant cations. An important natural metal element aluminum, is used widely in industrial fields for example water treatment, food additives, and medicines, naturally the production of light alloy. The toxicity of Al^{3+} induces damage of the central nervous system and is suspected in neurodegenerative diseases such as Alzheimer′s and Parkinson′s. Also, the high concentrations of aluminum appear in acidified lakes. Thus, detection of Al^{3+} is crucial in monitoring and controlling the concentration levels in the biosphere and in reducing its harmful effects on human health. Recently, great attention has been paid to the development of fluorescent and colorimetric chemosensors for the detection of Al^{3+} ion since they offer several advantages over other analytical methods from the point of high sensitivity, high selectivity, fast response times which can be used for real time monitoring, as well as non-destructive detection.



In this study, a novel fluorescent sensor based bisphenol A-hydroxyquinolin (BHQ) was synthesized and characterized by combination of 1H, 13C, APT, COSY NMR, FT-IR, and elemental analysis. The behaviours of BHQ toward different metal ions were determined by UV–vis and fluorescence spectroscopy. The fluorescence spectra changes showed that BHQ is highly selective for Al3+ over other metal ions in EtOH–H2O solution. Also, BHQ was successfully applied in fluorescence imaging of living cells and the confocal microscopy images indicated that cell-permeable BFA can visualize the changes of intracellular Al3+ in living cells.

Keywords: Fluorescent; Bisphenol A; Aluminum, living cell

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Oral Presentation

Development of antibiotic resistance in *Acinetobacter baumannii strains*

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Abstract

Acinetobacter strains have been the most frequently isolated factor in hospital infections, especially intensive care units in recent years. Increasing resistance to antimicrobial agents used in the treatment of infections due to Acinetobacter baumannii strains necessitated the search for new options for treatment. In this study, strains of Acinetobacter baumannii were isolated from samples obtained from different clinics in Amasya University Sabuncuoğlu Şerefeddin Training and Research Hospital Medical Microbiology Laboratory for 8 years (January 2010 - December 2017). Antimicrobial resistance and resistance to Acinetobacter baumannii strains have been researched for years, and it has been aimed to benefit in promoting rational antimicrobial use, in helping to identify empirical treatment options. The resistance of 1389 Acinetobacter baumannii strains against to colistin, tigecycline, amikacin, gentamycin, imipenem and meropenem were examined. The automated system VITEK2 (bioMerieux, France) was used for identification and antibiograms. Sensitivity results in suspicious cases were made with Mueller-Hinton (RTA) agar with Kirby Bauer Disk Diffusion Method and the results were evaluated according to CLSI criteria. Strains isolated from different services, high resistance was observed in carbapenem group antibiotics between 2010 and 2017, while 2% Acinetobacter baumannii was resistant to colistin on average. It is important to ensure that resistant strains are spread in the hospital environment and infection control measures are strictly adapted to prevent the transmission of antibiotic resistance to other bacterial strains. Resistance development should be monitored continuously and rational antibiotic usage policies should be applied.

Keywords: *Acinetobacter baumannii*, Antibiotic resistance, Colistin

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Oral Presentation

Genetic diversity of malus sieversii naturally growing wild apple species in Kyrgyzstan

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Abstract

There are many plant species in the Central Asian region that are endangered and must be protected. M. sieversii and M. niedzwetzkyana were reported as endangered species and were taken on the red list. These species are reported to be endangered due to loss of habitat and degradation, opening of agricultural fields and genetic erosion. It is generally thought that the origin of this apple primarily comes from M. sieversii, also known as Central Asia wild apple. The second significant contribution is thought to be supplied by M. sylvestris. In this study, genetic diversity of 22 M. sieversii genotypes collected from Kyrgyzstan were investigated. Fifteen ISSR primers were evaluated and 78 fragments were obtained. A certain level of genetic diversity has been identified among the genotypes. All genotypes except two were distinguished from each other. This study has established that the M. sieversii genotypes contain significant variation and they should be protected.

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Keywords: Central asia, endangered species, wild apple

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Oral Presentation

The inhibitory impact of *Enterococcus gallinarum* and *Lactobacillus plantarum* on bacterial growth and biogenic amine accumulation in fermented striped piggy

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Abstract

The influences of two lactic acid bacteria (LAB) strains (*Enterococcus gallinarum* and *Lactobacillus plantarum*) on bacterial growth and chemical parameters (total volatile basic nitrogen-TVB-N and biogenic amine) in fermented striped piggy (*Pomadasys stridens*) inoculated with *Photobacterium phosphoreum* were investigated in ambient temperature. Fish were divided into three groups, control group without any LAB inoculation with brine solution (4% glucose and 3% NaCl), treated groups 1 and 2 with same brine solution inoculated with *E. gallinarum* and *Lb. plantarum* at doses of 1% (108 cfu/ml), respectively. Total viable count in fermented fish reached maximum level for control group (8.6 log cfu/g) at 6 days. Initial TVB-N content of fish was 15.39 mg/100 g and significantly increased after inoculation with *P. phosphoreum*. TVB-N content of fermented fish was the lowest by *Lb. plantarum* inoculation at 6 days. Histamine content in raw striped piggy was 2.56 mg/100 g and remained below 8 mg/100g in all groups during storage. Tyramine was main amine accumulated in fish meat during fermentation. The highest tyramine production was found for control and fish inoculated with *E. gallinarum*, with respective value of 1067.55 and 1036.10 mg/100 g at 4 days. *E. gallinarum* induced lower putrescine and cadaverine accumulation at 4 days, whilst fish inoculated with *Lb. plantarum* had the lowest putrescine and cadaverine content at 6 days. LAB inoculation also significantly reduced ammonia and TMA formation. LAB used, mainly *Lb. plantarum* seemed to have inhibitory effects on bacterial growth and some of the chemical parameters of fermented fish.

Keywords: *Enterococcus gallinarum, Lactobacillus plantarum, Photobacterium phosphoreum*, Biogenic amines, Fermentation

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Oral Presentation

Cytotoxic effect of lover rim-functionalized calix[4]arene-based imidazole on the lung cancer cell line

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Abstract

Calixarenes, cyclic oligomers of phenolic units linked through the ortho positions, are a fascinating class of macrocycles. They are synthetic macrocycles readily available by condensation of p-tert-butylphenol with formaldehyde under alkaline conditions. They have generated considerable interest as useful building blocks for the synthesis of hosts for cations, anions and neutral molecules. Due to this ability to form host–guest type complexes with a variety of organic or inorganic compounds, the calixarenes have received increasing attention during the last two decades. The increasing interest in these compounds is stimulated by the simple large-scale synthesis of calixarenes, and the different ways in which they can be easily functionalized both at the phenolic OH groups (lower rim) and, after partial removal of tert-butyl groups, at the para positions of the phenol rings (upper rim). Calixarenes find applications as selective binders and carriers, as analytical sensors, as catalysts and as model structures for biomimetic studies. Especially in recent years, it has been investigated whether calixarenes can be used as drug-solubilizing agents, either as anti-cancer reactivities or as an enhancement of controlled release and water solubility of drugs via host-guest type complexation. The aim of this project is to investigate the anticarcinogenic effects of the compound imidazole-derived calix[4]arene [C-I] on human lung cells. The cytotoxic effect of [C-I] on the A-549 cell line from human lung cancer cells was evaluated using the Alamar blue test from spectrophotometric methods. The A-549 cells were treated with [C-I] at different concentrations (1-100 μM) after reaching 80% density in DMEM growth medium and the IC50 value was calculated as 31.5 μM, calculated from the sigmoidal plot resulting from the inhibitory effect on the growth curve. The compound [C-I] demonstrates that high antiproliferative effect on the cell lines.

Keywords: Calixarene, cytotoxic effect, anticarcinogenic drugs

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Oral Presentation

Pinpointing the importance of compounds in human metabolic network

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Abstract

The methods like Degree Centrality, Betweenness Centrality and Closeness Centrality provide superficial information about structure of the complex networks, moreover they are impractical for detecting important nodes. Although there are various approaches which give deep knowledge to measure the significance of nodes by combining fundamental network topology parameters such as clustering coefficient and node neighbourhoods, they fail to properly identify bridge nodes. L-value is a recently developed measure which can detect significance of nodes in complex networks based on not only local information but also considering the importance of bridge nodes. Proposed approach considers total number of triangles in network, degree of nodes and their neighbours. In light of this, we implemented aforementioned L-value method in human metabolic network to reveal significant nodes, i.e. critical compounds. Our findings has potential to provide novel and insightful aspect on gene expression profile analysis. By our method, DEG lists derived from RNA-Seq or microarray studies can be revisited in terms of their impact on key compounds.

Keywords: Metabolic network, Network topology, DEG, RNA-Seq

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Oral Presentation

Evaluation of in vitro antiviral activity of *Agaricus blazei* murril against human respiratory syncytial virus

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Abstract

This study was conducted to investigate the anti-RSV activity of crude methanol and aqueous extracts obtained from *Agaricus blazei* Murrill which is used for medicinal purpose in the World, especially in Asian countries. Extracts were tested by means of the colorimetric XTT assay. The EC50 was defined as the concentration required to achieve 50% protection against virus-induced cytopathic effects, and the selectivity index (SI) was determined as the ratio of CC50 (concentration of 50% cellular toxicity) to EC50. Results showed that methanol extract of *Agaricus blazei* (EC50: 5692.31 µg/mL and SI: 3.81) and its aqueous extract (EC50 = 4433.28 µg/mL and SI = 10.85) had anti-RSV activity in comparable rates to ribavirin (EC50 = 4.19 µg/mL, SI = 27.92) used as a positive control against RSV. The cell cytotoxicity test showed that both of the extracts tested had higher CC50 values than the EC50 values. As a result, we can say that both extracts deserve further study in order to be developed as an alternative to ribavirin, which is commonly used clinically against RSV. This is the first report on the anti-RSV activity of *A. blazei*.

*This research is a part of Hadeel Abduljabbar Abbas Al-Mafrachi's Master Thesis.

Keywords: *Agaricus blazei*, methanolic extract, aqueous extract, anti-RSV activity

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Oral Presentation

Isolation and molecular characterization of thermophilic bacteria with potency to produce enzymes which are ındustrially ımportant

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Abstract

Thermophilic organisms are the only group of microorganisms which adapt to live at high temperatures and have tolerance to extreme temperatures. Thermophilic microorganisms are naturally ocurring in hot springs, feces and in garbages. Enzymes obtained from the microorganisms resistant to extreme conditions are preferred more because they are used for a longer period of time due to their high catalytic activity. Within the scope of study, water and sludge samples were taken from the thermal facilities and isolation and identification of thermophilic bacteria groups were carried out. The bacteria identified by conventional methods were then identified by genotypic methods. For this purpose, 16S rRNA-PCR analysis was used and the bacteria were identified. Afterwards, genotypic profiling of the bacteria was carried out by rep-PCR and genotypic similarities with each other were designated. According to the sequencing results, bacteria belonging to *Bacillus licheniformis, B. paralicheniformis, Paenibacillus dentritiformis, Aeribacillus pallidus, Anoxybacillus geothermalis* species with a similarity rate of 99 % were detected in 30 samples. After obtaining the sequence data, a phylogenetic tree was drawn to determine the phylogenetic affinity of the bacteria with each other by using the MEGA Clustal W program. Subsequently, bacteria strains producing industrial essential enzymes (lipase, amylase and xylanase) were identified and it was detected that bacteria of *Bacillus lichenifırmis*, *B. paralicheniformis, Anoxybacillus geothermalis* species would be important producers of these enzymes.

Keywords: Thermophilic Bacteria, Isolation, Identification, Thermostabile Enzyme

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Oral Presentation

Preparation of nanohybrid pectin lyase (PL) from *Bacillus licheniformis* and it's clarification of fruit juices

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Abstract

Pectin lyases are widely used in many industries, especially in fruit juice industry. In this study, isolated and identification of *Bacillus licheniformis* bacteria from tomato samples using chemical and molecular methods. Chemical identification was determined by gram staining and catalase tests. Sequence analysis of 16S rRNA gene and 16S-23S rDNA intergenic spacer regions (ISR) was performed for molecular identification of the isolated bacterium. PL enzyme, which was developed in a solid-culture fermentation medium, was produced from identified bacterial and was firstly purified using three phase partitioning method (TPP). This enzyme, Chitosan / Calcium Pyrphosphate hybrid nanoflower structure was prepared. Vmax and KM values of the free and nanoflower PL enzyme were determined by using Lineweaver-Burk method for pectin, locust bean gum, chitin, substrates. Also, the effects of Ca^{2+}, Cu^{2+}, Fe^{3+}, Mg^{2+} , Zn^{2+} and Hg^{2+} metal ions on pectin lyase enzyme activities were determined. Free and nanohybrid pectin lyase enzymes was used for clarification of some fruit juices such as grapes (black), pomegranate, cranberry. It was determined that the nanohybrid PL enzyme was extremelly effectively in the yield and clarification of fruit juice compared to the control sample.

This research has been performed under the project numbered 2016/140 and supported by the Research Development Center of Ataturk University. The authors acknowledged the support of Ataturk University, Turkey for this work.

Keywords: Pectin lyase, *Bacillus licheniformis*, Three phase partitioning method, Nanoflower

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Oral Presentation

Effects of *Plagiomnium undulatum* on protein amount and antioxidant enzyme activities of wild mustard and wild oat

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Abstract

Wild oats (*Avena sterilis* L.) and wild mustard (*Sinapis arvensis* L.) are quite common in agricultural areas of our country. Biological control of such weeds is becoming increasingly important. It was aimed to determine the effect of the extracts of *Plagiomnium undulatum* (Hedw.) T.J.Kop. at different concentrations (0, 25, 50 mg. mL^{-1}) in different solvents (distilled water, ethanol, ethyl acetate) on total protein amount and antioxidant enzyme activities (SOD, PO and CAT) of *A. sterilis* and *S. Arvensis*. In total protein amount, reduction in 50 mg . mL-1 dH2O, 50 mg . mL^{-1} ethanol and 25 mg . mL^{-1} ethyl acetate treatments, increase in the others in wild mustard, decrease in 50 mg . mL^{-1} ethanol, treatments ($p<0.05$), increase in other treatments in wild oat to the control was detected. SOD activities reduced in all treatments in wild mustard ($p<0.05$), increased in ethanol, ethyl acetate and 50 mg. mL^{-1} ethanol treatments, but decreased in other treatments ($p<0.05$) in wild oat to the control. PO activity decreased in all groups except 25 mg . mL^{-1} ethyl acetate treatment in wild mustard to the control. In oats, an increase was detected in all treatment groups. CAT activity increase in the treatment of 50 mg . mL^{-1} dH2O, 50 mg . mL^{-1} ethanol, 25 mg . mL^{-1} ethyl acetate, decrease in the other groups in *S. arvensis*, while increase in all groups in at significance level in *A. sterilis*. In conclusion, it has been determined that *P. undulatum* extracts affect wild mustard and wild oat plants. Additional studies are required to be use it as organic herbicides.

Keywords: *Avena sterilis*, CAT, PO, SOD, *Sinapis arvensis*

Acknowledgment: *We are grateful to TUBITAK (Project no: 115O923) for financial support.*

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Oral Presentation

Preparation, characterization, anti-microbial, DNA binding and DNA cleavage studies of nitrogen doped graphene quantum dots (GQDs)

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Abstract

Graphene quantum dots (GQDs) as a new species nano materials have attracted great interest in recent years due to their very interesting features. GQDs have potential for use in biomedical applications because they have a smaller nano size and higher biocompatibility. Studies on biological activity and biomedical applications is quite low. It focuses more on the biosensor applications. In in this study, graphene quantum dots (GQDs) containing N atoms were synthesized using hydrothermal reaction of citric acid and 4-aminophenole. Nano materials were characterized by UV-Vis, FT-IR spectroscopy, transmission electronmicroscopy (TEM) and thermogravimetric analysis. The antimicrobial activity of the compound was investigated for its minimum inhibitory concentration (MIC) to bacteria and yeast cultures. Surprisingly, UV-Vis spectroscopy studies of the interactions between the GQDs and calf thymus DNA (CT-DNA) showed that the compound interacts with CT-DNA via both intercalative and electrostatic binding. DNA cleavage study showed that the GQDs cleaved DNA without any external agents.

Keywords: DNA binding, DNA cleavage, Graphene quantum dots (GQDs), UV-Vis

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Oral Presentation

Preparation and characterization of gelatin loaded PHEMA cryogels as dermal regeneration scaffolds

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Abstract
Cryogels are supermacroporous gel matrices that are prepared under sub-zero temperatures. Highly porous and interconnected structure of cryogels make them suitable materials for cell infiltration. Gelatin is partially denaturated form of collagen and it provides sites for cell adhesion in the structure of extracellular matrix. Thus, gelatin loaded poly(hydroxyethyl methacrylate) [PHEMA] based cryogels have the potential to create surfaces for the adherence of human dermal fibroblast cells. In this study, gelatin loaded PHEMA based cryogels were synthesized with different concentrations of gelatin and were characterized on the effect of gelatin loading in terms of percent gelation yield, swelling ratio and macroporosity. In addition, morphological analyses were taken by microtomography (mCT) and scanning electron microscopy (SEM). Cell viability of gelatin loaded PHEMA based cryogel is a crucial factor for evaluating their application in tissue engineering applications. For this purpose, mouse fibroblast cells (L929) were exposed to different amounts of gelatin loaded PHEMA cryogel for 24 h and 48 h, then the cell viability was examined by Alamar Blue assay. Due to the macroporous structure and hydrophilic nature of the gelatin loaded PHEMA based cryogel, they show biocompatibility and good-cell-tolerability. It is promising that the gelatin loaded PHEMA based cryogels can be used as wound healing materials and as scaffolds for dermal replacement studies.

Keywords: Gelatin, PHEMA, Cell Viability, Cryogel, L929 cells

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Oral Presentation

Effects of antihelminthic drugs with clinical importance on agricultural pests

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Abstract

Insecticides are used extensively in the fight against pests. The purpose of combating agricultural pests insects; to make their populations harmless. For this reason, various physical, chemical and biological methods are used to bring the populations down to a certain level. The use of dense insecticides damages the environment and non-target creatures. Therefore, alternative chemistries are being investigated using biotechnological studies. In recent years, natural enemies of pests have started to be used instead of chemical drugs. In addition; research is being carried out to investigate less toxic substances in the environment instead of conventionally used chemicals. It is important to search for antihelmintic drugs in combating harmful insects and to use them as alternative chemicals in agricultural areas. Antihelmintic drugs; is effective on parasites that infect the digestive system and respiratory system in humans and animals. Model organism *Galleria mellonella* is frequently used in these studies. *G. mellonella* is an important insect species used in agriculture to combat pests as it is easily produced in laboratory conditions. Artificial nutrients containing old dark honey pellets (broodstock) ground to grow the larvae of *G. mellonella* under laboratory conditions are widely used. Studies on *G. mellonella*; different anthelmintic drugs (oxfendazole, niklozamidine, triclabendazole, mebendazole) have been shown to have an adverse effect on the physiology and biochemical parameters of *G. mellonella*. In these studies it is important to investigate the effectiveness of antihelminthic substances in a significant group of invertebrates, a eukaryotic organism, as well as the use of insecticides in the struggle of harmful insects.

Keywords: *Galleria mellonella*, antihelmintic drugs, biotechnology

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Oral Presentation

ESR investigation of radiation induced radicals in the prednol drug

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Abstract

In this study, the effects of radiation on Prednol Tablet drug containing methylprednisolone, a corticosteroid, were investigated using Electron Spin Resonance (ESR) technique. ESR is the only spectroscopic technique that allows direct identification and analysis of radicals without damaging the material. Corticosteroids exert profound effects on almost every organ system and, because of these diverse actions, are among the most widely used classes of drugs. Radicals can be formed under the influence of radiation in the drug substance exposed to radiation for various reasons. Because of the wide range uses of corticosteroids in terms of human health, it is very important to identify and characterize the radicals formed by radiation. For this purpose, pulverized Prednol tablets were irradiated with 60Co gamma source at a dose range of 10-1100 Gy, and ESR spectra of natural and irradiated samples were recorded by JEOL JesFa-300 ESR spectrometry. Microwave and temperature dependence of the ESR signals observed in the spectral pattern were investigated and radiation induced radicals belonging to these signals were characterized. In addition, the dose-response and kinetic studies were performed to determine the radiation sensitivity and the stability of these signals. The use ability of the radiation-induced radical as an ESR dosimetry for the studied dose range has been investigated.

Keywords: Electron Spin Resonance, Prednol, Drug, Irradiation, Radical

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Oral Presentation

Peroxidase from cress (*Lepidium sativum* sub sp. sativum): Partial purification and some biochemical properties

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Abstract

Cress (*Lepidium sativum*) is an annual herb from Brassicaceae family and in some regions, is known as garden cress, garden pepper cress, pepper grass, pepperwort or poor man's pepper. Cress is an important medicinal plant in some countries. This plant has major scientific and therapeutic significance. Peroxidase (EC 1.11.1.7; donor: hydrogen peroxide oxidoreductase) is an oxidoreductase enzyme produced by a number of organisms. In this study, peroxidase enzyme was purified from Cress (*Lepidium sativum*) by ammonium sulphate precipitation gel filtration and CM-Sephadex ion-exchange chromatography. As a result of this process, cPOD was purified in 46.88 fold with 0,61% yield. Enzyme kinetics were studied using two substrates: guaiacol and hydrogen peroxide (H2O2). The enzyme has Km values of 28.79 and 0.73 mM for guaiacol/ hydrogen peroxide substrate pattern, respectively. On the other hand, the enzyme has Vmax values of 1217.1 and 727.11 EU/mL.min for each substrate, respectively. Hydrogen peroxide has a higher the Vmax/Km ratio and that's why it is the more effective substrate than guaiacol. Peroxidase had molecular mass of 44.02 kDa. The pH and temperature optima were 6.0 and 50.0 °C, respectively. Also, inhibition properties of some metal ions and CTAB on the enzyme were investigated.

Keywords: Cress (*Lepidium sativum*), Peroxidase, Purification, Characterization, Inhibition.

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Oral Presentation

The expression levels of matrix gla protein (mgp) in human lung tissue and a549 human lung cancer cell line

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Abstract

Matrix γ-carboxyglutamic acid protein (MGP) is a vitamin K-dependent extracellular matrix protein. For many years, inhibition of calcification was known as the only role of MGP. Subsequent studies have reported that MGP may be also associated with some types of cancer. Despite expressed in most vertebrate tissues, the molecular mechanism of MGP in lung cancer has not been fully elucidated. In the current study, we aimed to investigate the relationship between MGP expression levels and lung cancer. Human lung tissue RNA sample was obtained from Clontech Laboratories, Inc. A549 cells were treated with IL-1β (1, and 3 ng/ml, for 6h, and 24h). Total RNA was isolated from cell cultures. cDNA synthesis was performed from RNA samples and the expression levels of NF-κB1, MMP1, and MGP were analyzed with real time qPCR. The Gene Globe Data Analysis Center (Qiagen, online service) was used to analyze real-time PCR data. The Delta Delta Ct (ΔΔCt) method was used for data analysis. The analyzed data were expressed as the "fold-change". Our results showed that MGP gene is expressed in human lung tissue and A549 human adenocarcinoma cell line. Also, gene expressions of MGP, NF-κB1, and MMP1 can be stimulated by IL-1β. As a conclusion, our preliminary results suggest that MGP, a calcification inhibitor originally, can be a promising marker related to inflammatory pathways during tumorigenesis of lung tissue. We need further studies to understand action mechanism and role of MGP in lung cancer.

Keywords: Lung Cancer, A549, MGP, NF-κB1, MMP1

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Oral Presentation

Lab-in-a-syringe as a paper-based optical enantioselective sensor

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Abstract

Paper-based (bio)sensing platforms have increased great attention for applications in diagnostics, environmental monitoring and food safety. Herein, a lab-in-a-syringe (LIS) device using gold nanoparticles was introduced for rapid optical chiral discrimination of enantiomers. AuNPs were synthesized according to Turkevich method and AuNPs-embedded paper-based LIS device was developed as a sensing strategy. LIS was produced with two membranes: a conjugation membrane on which analyte was captured, and a detection membrane signaling the presence of the captured analyte. These two membranes were placed between plastic filter holders which are connected to a syringe. The principle of LIS assay was based on the enantioselective interaction of inherently chiral AuNPs with enantiomers in the first filter holder. This interaction resulted in aggregation of AuNPs to give a distinct color change from red to purple in solution. Finally, the aggregated AuNPs were caught at the detection membrane through sampling of syringe. AuNPs showed an enantioselective recognition response toward alanine enantiomers. The limit of detection value was determined as 0.77 mM for L-alanine. LIS sensor enabled the detection of L-alanine in human serum indicating its applicability as a promising platform for real samples.

Keywords: Gold nanoparticles, Silver nanoparticles, Paper-based sensors, Enantioselective sensors

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Oral Presentation

Protective effects of hesperidin against sodium arsenate-ınduced kidney toxicity

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Abstract

With the progress of the industrial revolution in the 21st century, the likelihood of exposure to environmental pollution and the harms of toxic agents is increasing day by day. Although sodium arsenate has widely use, it is an environmental and industrial pollutant. Arsenic-derived compounds cause dysfunction in tissues and organs. One of the most important undesirable effects is toxicity of kidney, which is the organ in which the drugs are eliminated from the body. Hesperidin is a bioflavonoid with abundant amounts of citrus fruits such as orange, lemon and grapefruit which have many pharmacological properties such as antioxidant, anti-allergic, anti-inflammatory, anti-hypertensive, anti-carcinogenic and anti-edema. In this study, protective effects of hesperidin against sodium arsenate-induced renal toxicity were investigated in rats. Sodium arsenate (10 mg/kg/day) and hesperidin (100 and 200 mg/kg/day) were administered to rats for 15 days by oral gavage. Serum creatinine and urea levels were measured to determine the protective effect of hesperidin against kidney damage caused by sodium arsenate. The antioxidant effect of hesperidin was determined by measuring glutathione and MDA levels and superoxide dismutase, glutathione peroxidase and catalase activities. In addition, TNF-α, NF-κB, and IL-1β levels were measured to determine the antiinflammatory effect of hesperidin. 8-OHdG level was determined to show oxidative DNA damage. Also, Caspase-3 was analyzed to determine antiapoptotic effect of hesperidin.

Keywords: Sodium arsenate, Hesperidin, Nephrotoxicity, Antioxidant

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Oral Presentation

Comparison of Cd(II) preconcentration by using magnetized bio-solid phase extractors and its determination in real samples

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Abstract

The immobilized *Pleurotus erygnii* and Coprinus micaceus onto γ-Fe2O3 nanoparticles were carried out for determination and preconcentration of Cd(II) in real samples. The surface structure of the magnetized *P. erygnii* and *C. micaceus* were characterized using FT-IR, SEM and EDX analyzes. The optimal process conditions were tested and determined as being a pH 4.0, 3.0 mL min-1 flow rate, 100 mg amount of biosorbent, 75 mg amount of γ-Fe2O3 nanoparticles, 5.0 mL of 1.0 mol L−1 HCl as eluent, and 400 mL of sample volume for both magnetized fungus. The biosorption capacity of magnetized *P. erygnii* and *C. micaceus* for Cd(II) were found as 25.2 mg g-1 and 28.3 mg g-1, respectively. The limit of detection, limit of quantitation, and preconcentration factor were also determined. The developed methods were validated and applied for quantification recovery of Cd(II) in different real samples.

Keywords: *Pleurotus erygnii, Coprinus micaceus*, Cadmium, Preconcentration, Biosorbent, Magnetic solid phase extraction

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Oral Presentation

Use of transaminase enzymes as oxidative damage ındicators in tissue and cell damage

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Abstract

Oxidative stress in living organisms; creating changes to many biomolecules such as proteins, lipids, and DNA, it causes cell damage. Transaminase enzymes such as aspartate aminotransferase (AST), alanine aminotransferase (ALT) and gamma glutamyl transaminase (GGT) are used as biomarkers when cell damage is detected in vertebrate and invertebrate organisms. Only the ALT enzyme is found in the cell cytoplasm. However, AST is present in 20% of cytoplasm, 80% in mitochondria. Its clinical significance; zone-3 (cells near the central venules) in the liver are rich in mitochondria because they are in hypoxic environments. These cells are more susceptible to ischemia and toxic damage. The activities of transaminase enzymes are widely used to test organ functions in mammals and to detect functional defects if present. However, these tests have been used in recent years by researchers who are particularly interested in the environmental effects of biological and environmental pollutants. In general, chemical substances and biological agents cause tissue damage leading to the release of cellular enzymes and consequently to an increase in serum enzyme concentrations. Both enzymes release from damaged cells due to increased permeability in the cell membrane or cell necrosis. The most important biomarkers of progressive tissue and cell damage are altered in ALT and AST activity of aminotransferase enzymes. GGT is responsible for extracellular catabolism of glutathione (GSH), an important antioxidant in mammalian cells. GGT hydrolyzes the gamma glutamyl linkage between glutamic acid and cysteine, the first step in extracellular hydrolysis of GSH, which acts as an important antioxidant in cells, thereby providing the cysteine formation necessary for resynthesis of GSH in the cell. Recent studies have reported that GGT-associated extracellular metabolism of GSH is also associated with the process related to tumor cell biology. Determination of the activities of transaminase enzymes is used as an important indicator in cell and tissue damage. At the same time, these enzymes are of clinical importance because they are used in tumor cell biology.

Keywords: Aspartate aminotransferase, Alanine aminotransferase, Gamma glutamyl transaminase, Cell damage

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Oral Presentation

Molecular characterization of cellulolytic bacteria from rumen samples

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Abstract

Photosynthetic reactions are crucial in the lifecycle and in this process, the plants whose basic structure formed by cellulose play a substantial role. The most essential parts of the carbon cycle are the microbial biotypes found in the soil and in the animal rumens. The cellulose production in biosphere by microorganisms is very vital in terms of carbon cycle. Therefore, as the microbial cellulose is the main food source for ruminants, the consumption of microbial cellulose is increasing in the ecosystem. As a result of the biological functions of these organisms, such as anaerobic digestion and composting, it becomes possible for cellulose which is an important contaminant agent, to take part in the nutrient cycle. In this study, isolation, identification and molecular characterization of total 11 strains belonging to Bacillus, Brevibacillus, Paenibacillus, Paleobacter, Enterococcus, Lactococcus and Lactobacillus showing cellulolytic properties were performed with rumen samples taken from the slaughter houses in Erzurum. Salt, pH and temperature requirements of the bacteria which thought to be different from each other and showing cellulolytic properties were determined. These isolated bacterial strains were determined as they could grow in 2-10% salt ratio, 3-10 pH value and 10- 45°C temperature. Additionally, sequence analysis of 16S rRNA gene regions of all the isolates was performed. According to these sequencing results, 98,5% similarity of OZK5 strain to Bacillus oceanisediminis was shown to have the potential to be a new species of these strains. Following the sequence results, the phylogenetic tree of the isolates was drawn using the neighbor-joining method.

Keywords: Rumen bacteria, Cellulase, Molecular characterization

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Oral Presentation

Tetraoxocalix[2]arene[2]triazine-based organocatalyst with (R)-1,2,3,4-Tetrahydro-1-naphthylamine for asymmetric Michael addition

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Abstract

Nature is a master of asymmetric synthesis and enzymes are highly efficient biocatalysts in living systems. Besides enzymes and transition-metal complexes, organocatalysis is now renowned as a third powerful tool for the synthesis of potentially important optically active compounds. There are many advantages to using small chiral molecules to catalyze asymmetric reactions: they are often inexpensive and readily available from natural resources (e.g., amino acids, alkaloids), stable in air and water, robust, and more importantly, they are environmentally friendly. The conjugate (Michael) addition is one of the most efficient and powerful atom-economical carbon–carbon bond forming reactions in synthetic chemistry. Organocatalytic conjugate addition is one of the most important strategies and broadly applicable asymmetric carbon–carbon bond forming reactions, with a wide variety of donors and acceptors, can be employed. In recent years, many methods have been developed for the direct asymmetric Michael additions of unmodified carbonyl compounds to nitroalkenes to produce enantiomerically enriched nitroalkanes. Among these reactions, the Michael addition of a, a-disubstituted aldehydes to b-nitrostyrenes is of particular interest due to the all-carbon quaternary stereocenter possessed by the Michael products. The synthesis of quaternary stereogenic centers is considered a challenging task in asymmetric synthesis. The design and synthesis of a readily accessible, highly stereoselective, and tunable catalyst is always desirable for asymmetric catalysis. We synthesized chiral tetraoxocalix[2]arene[2]triazine (R)-1,2,3,4-Tetrahydro-1-naphthylamine for use in Michael addition.The structure of the chiral catalyst were analyzed by FTIR, NMR and elemental analysis techniques.

Keywords: Asymmetric synthesis, NMR, Organocatalyst, Tetraoxocalix[2]arene[2]triazine

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Oral Presentation

Nuclear magnetic resonance and electron paramagnetic resonance study of salbutamol molecule with density functional theory

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Abstract

Salbutamol is involved in a group of drugs known as the β2 adrenergic receptor agonist. This group is effective in short-term relief of bronchospasm in conditions such as asthma and chronic obstructive pulmonary disease. Salbutamol is marketed as Ventolin. The aim of this study, define the molecular structure and the possible radicals of salbutamol molecule with theoretical calculations. Conformation analysis of salbutamol molecule was performed with Molecular Mecanics Force Field (MMFF) method. The most stable structure was determined with optimization calculations for each of conformer using the Density Functional Theory (DFT). Nuclear Magnetic Resonance (NMR) parameters (1H and 13C chemical shifts) of salbutamol molecule were calculated using the DFT method. Possible radicals were modeled with DFT calculations using the most stable structure. The Electron Paramagnetic Resonance (EPR) parameters (g value and hyperfine coupling constants) of salbutamol molecule were calculated with DFT method.

Keywords: Salbutamol, Nuclear Magnetic Resonance, Electron Paramagnetic Resonance, Density Functional Theory

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Oral Presentation

Bioproduction of extracellular melanin pigment by Streptomyces spp. and determination of antioxidant activity via CUPRAC method

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Abstract

Melanin is a pigment produced by the oxidation and polymerization of tyrosine amino acid by tyrosinase enzyme. This biopolymer, which has a high molecular weight and hydrophobic structure, is formed by the oxidative polymerization of phenolic and indolic compounds. This pigment, which is widely found in plants and animals, is also produced by various microorganisms. Melanin pigment gives advantage for microorganisms under various adverse environmental conditions and thus increase the chances of survival of microorganisms. Melanins play an important role in protecting microorganisms from various environmental stresses such as UV radiation, heavy metals, desiccation, temperature fluctuations and hydrolytic enzymes and digestion. Melanins are known to have many important biological activities such as antiinflammatory, antioxidant, antimicrobial, antiviral, antitumor, antivenin and liver protective activity. This pigment is widely used in the fields of medicine and pharmacology due to its important properties. In addition, this important biopolymer is also used in the production of sunscreens in cosmetic industry due to its UV absorptive properties. In this present study, the extracellular melanin pigment production of Streptomyces strains isolated from different sources was qualitatively determined and the antioxidant property of pigment obtained from melanin producing strains was determined by CUPRAC method. The structure of the isolated melanin was elucidated by detailed analysis via two different spectroscopic techniques (FT-IR, GC-MS). The results have shown that extracellular melanin pigment obtained from Streptomyces strains has high phenolic content and high antioxidant capacity.

Keywords: Melanin, Bioproduction, Streptomyces, Antioxidant, CUPRAC Assay

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Oral Presentation

Determination of antigenotoxic properties of baicalin by comet assay

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Abstract

Baicalin (7-glucuronic acid,5,6-dihydroxyflavone; molecular weight= 446.36), is a natural flavonoid isolated from the medicinal herb Radix Scutellariae derived from Scutellaria baicalensis Georgi (Lamiaceae) which is a Chinese traditional medicinal herb, is widely used as an anti-inflammatory, antibacterial, and hepatoprotective drug. It has been reported that BA has anti-inflammatory, antibacterial and anti-diarrheal effects; therefore, it is widely used for the treatment of various diseases such as hepatitis, pneumonia, allergies, diabetes, and cancer. The purpose of the present study is determined the antigenotoxic and antioxidative effects of Baicalin against carbon tetrachloride (CCL4) in the human lymphocytes cell. For the study, the Comet assay was used. In recent years, Comet assay has been widely used in human observation studies; a sensitive genotoxicity test used in the detection of many DNA damages, such as single and double strand breaks, abasic regions, unfinished DNA repair sites, and structural changes in genomic DNA. In addition, biochemical analysis including superoxide dismutase (SOD), catalase (CAT) activities and malondialdehyde (MDA) level, were performed. According to the obtained results; when the concentrations were evaluated in terms of reducing the level of DNA damage, it was observed that Baicalin gave the best results in the applications of 100 μM concentration. In conclusion, Baicalin was observed to exhibit antigenotoxic activity by virtue of its antioxidant potential, which is the genotoxic effect caused by (CCL4). Baicalin, an important compound for clinical applications and known to have a short half-life; more successful results can be obtained in treatment with high concentrations and repeated applications.

Keywords: Baicalin, Comet assay, Genotoxicity

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Oral Presentation

CBMN (Cytokinesis Blocked Micronucleus) method for the early type cancer

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Abstract

Canser is the second highest cause of mortality around the World. Most common cancers are caused by radiation, tobacco use, environmental pollutants, carcinogenic agents in food and drinks etc. Process of the cancer development is the result of serial mutations over many years. DNA damage at the chromosome level is an essential part of genetic toxicology. There is generally a close relationship between genotoxicity and cytotoxicity. There is a hypothesis of a direct association between the frequency of micronucleus and cancer development. An increase of MN (MicroNucleus) frequency indicates genomic instability. CBMN technique measure chromosome damage (chromosome loss or breakage) cytogenetically. The cytokinesis-blocked cells that may be scored for MN frequency should have the following characteristics; the cells should be binucleated, MNi are not linked or connected to the main nuclei, may touch but not overlap the main nuclei, have the same staining intensity as the main nuclei etc. In order to calculate MN frequency, blood samples from patients are taken and peripheral blood cell incubate for 72h in 37oC. The cytochalasin-B add 44th h. Cyt.B allow cytokinesis but inhibit cell division. Binucleated cells stain with Giemsa. Micronucleus score at least 1000 Binucleated cells. CBMN method is cheap, rapid, reliable and easily for the early type of cancer patients.

Keywords: Micronucleus, Genetic instability, Cancer

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Oral Presentation

Steered molecular dynamics (SMD) simulations to unravel the binding mechanism of different peptides to HLA-B*51, an Antigen associated with Behcet's disease

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Abstract

Human Leukocyte Antigens (HLA) is the human version of the major histocompatibility complex (MHC), which is a key role in the recognition and presentation of peptide antigens to the host immune system. Having a multifactorial pathogenesis, BD is a multiaspect inflammatory disorder of unknown aetiology which affects anti viral function of organs systems in the body. HLA-B5/51* is a protein that has been recognized as the strongest genetic risk factor for BD1. HLA-B*51:01 leads to Behcet disease that is widely seen in our country. The peptide-binding region of HLA-B*51 are located between the α1 and α2 domains (Figure 1). While being a potential informative clue to the pathogenesis role of HLA-B*51, unbinding mechanism of the peptides dependent to the protein, still remains unknown. The change in the free energy of the system as a result of peptide unbinding, is measurable from the potential of mean force (PMF) and PMF could be reconstructed from the SMD simulation. To understand the unbinding mechanism, the HLA-B*51 protein/peptide complex is investigated for mechanical response of the system, by using steered molecular dynamic (MD) at different temperatures of 310 K. We approached this problem by employing 191.3 ns simulations. The Jarzynski's equation were used to obtain the binding mechanism. Then, the calculated values for all the peptides are compared with the experimental binding free energies (Difference between results experimental and theoretical may be caused from the unfavorable conformational changes occurring during SMD simulations in protein-peptide complex.

Keywords: Steered molecular Dynamics, protein, peptide, binding affinity, MHC Class I

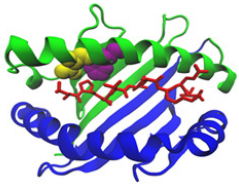

Figure 1: The α1 and α2 domains of HLA-B*51, which form the peptide-binding Groove, are shown in green and blue respectively.

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Oral Presentation

Determination of uric acid by organic-ınorganic hybrid nanoflowers-modified glassy carbon electrode

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Abstract

Uric acid (UA) is the primary and final product of purine metabolism, which is present in biological fluids including urine and blood. Abnormal concentrations in the human body are symptoms of many diseases, such as gout, hyperuricemia, and Lesch–Nyhan syndrome. Therefore, it is important to accurately determine uric acid in biological fluids. Although many methods have been developed for the determination of UA, electrochemical methods have attracted much attention from clinical diagnostic perspectives because of their easy operation, low cost, rapid response, high sensitivity and good selectivity. During the last few decades, various modified electrodes based on nanomaterials have been proposed in the attempt to achieve determination of UA. Nanoflowers among these nanomaterials have attracted significant attention in the quest to achieve determination because of the excellent electron transfer ability, large electrochemically active surface area, and stability of these species. In the present work, an effective electrochemical sensor for the rapid and selective determination of UA based on a glassy carbon electrode (GCE) modified with organic-inorganic hybrid nanoflowers (DopNFs) using copper (II) ions as the inorganic component and dopamine as the organic component was applied.

Keywords: Nanoflowers, uric acid, electrochemical sensor

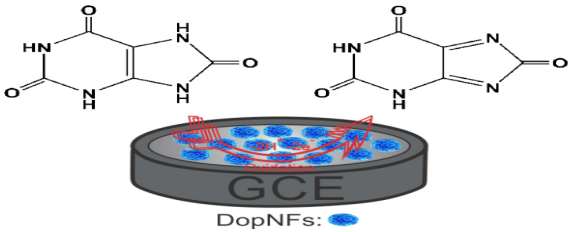

Figure 1. The electrooxidation mechanism of UA at the surface of the DopNFs@GCE

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Oral Presentation

In vitro correction of HBB V6G mutation in lymphocyte cells of patients with sickle cell anemia using genome-editing CRISPR / Cas9 technique

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Abstract

Sickle-cell disease (SCD), also known as sickle-cell anemia, is a hereditary blood disorder characterized by the presence of abnormal hemoglobin, the oxygen-carrying protein found in red blood cells. Sickle-cell anemia is caused by a mutant form of hemoglobin, the protein that transports oxygen from the lungs to cells in the body. Hemoglobin is a composite molecule made up of two different polypeptides, a-globin and b globin , In sickle-cell anemia, a mutation in the gene encoding b-globin causes an amino acid substitution in 1 of the 146 amino acids in the protein.. Notice that the mutation in sickle-cell anemia consists of a change in one DNA nucleotide, which leads to a change in codon 6 in mRNA from GAG to GUG, which in turn changes amino acid number 6 in b-globin from glutamic acid to valine. This devastating hematologic disease affects millions of children worldwide. Genome editing technologies have improved significantly in the last few years. Currently, The commonly applied genome editing Technology is Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR). CRISPR utilizes guide RNAs and Cas9 to targeted the genomic location. By using the CRISPR / Cas9 technique in our project, we aimed to knock out the V6G mutation that causes sickle cell anemia. In our project, we used the lymphocyte containing the V6G mutation obtained in the sickle cell anemia. For this, we first designed the region-specific guide RNA we are targeting. After transferring this guide RNA sequence (gRNA) to the vector, we propagated the vector in the E. coli bacterial cell. After plasmid isolation from bacterial culture, we transfect the vector by Polyethyleneimine(PEI) into the lymphocyte cells. The cell culture continued for one or two more weeks in sterile conditions. After DNA isolation from the cells, Real-time PCR analysis performed to confirm the knockout. MTT assay is performed to quantify live cells.

Keywords: Sickle cell anemia, CRISPR/Cas9, genome editing

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Oral Presentation

Bleaching herbicide: An alternative way of herbicide resistance in cotton

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Abstract

Carotenoid biosynthesis enzymes are potential sites for safe and plant based herbicide resistance. For the first time, plant based environment friendly genes (mutated pds gene) has been introduced into higher plants. Herbicide resistant transgenic cotton was developd against bleaching herbicide like Norflurazon. Transformation of mutated pds (Phytoene desaturase) from Hydrilla verticillata at position Arg304 was done in cotton, which has been reported to cause resistance against bleaching herbicides. An Agrobacterium tumefaciens strain LB4404 was used for transformation. In constructs pds gene of Hydrilla verticillata mutated at Arg 304 position (Threonine – Thr, Cysteine – Cys) were cloned in pCAMBIA 1303 vector under CaMV35S promoter. Successful transformation of ppdCYS1303 and ppdTHR1303 was obtained in Gossypium hirsutum variety with transformation efficiency of 1.31%. The screening of putative transgenic plants was done first by hygromycin in growth medium and then by PCR using gene specific primers. Expression of the gene was also taken at mRNA level by Real Time PCR with an efficiency of 95% with GAPDH as internal gene for normalization. Results showed 1.5 to 7 folds higher expression level of transgene pds in transgenic plants as compared to the control plants. Use of bleaching herbicides can be an alternative to many other herbicides already being used. Established successfully, the mutated pds in higher plants will also prove to be an excellent marker as it will surpass the need of antibiotic selection markers for selection of transgenic plants with a site of action that is not present in animal systems.

Keywords: Bleaching Herbicide, Phytoene desaturase, selection Marker, Transformation, Environmental Safety

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Oral Presentation

Heat shock proteins gene expression and physiological responses in durum wheat under salt stress

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Abstract

The aim of this study was to investigate the effect of NaCl stress on growth, biochemical responses, and gene expression of heath shock proteins of three Jordanian landraces of Triticum durum. Plants grown on Petri-dishes or soil in the greenhouse were irrigated with tap water |(control groups) and under 75 and 150 mM NaCl concentrations (stressed groups). Germination percentage, lengths of shoots and roots, plants heights, number of leaves and spikes, and number and weight of seeds, leaf structure, levels of proline and lipid peroxidation and the expression of some heat shock proteins genes (HSP70, HSP26.3, HSP17.8) were examined. The wheat landrace T11 showed the highest germination percentage, shoot and root lengths, number of spikes and seeds, weight of seeds and the lowest levels of lipid peroxidation and proline. The landrace R15 showed moderate growth and biochemical responses followed by D4 under increasing salt stress. Transcript levels of HSP70, HSP26.3, and HSP17.8 were enhanced significantly by NaCl treatment in all landraces. These transcripts were highest in T11 and corresponded, respectively, to increases of 433%, 475%, and 479% (relative to control). In conclusion, our results indicate that salinity caused significant reduction in several growth parameters and compactness of the mesophyll tissue and leaf thickness, enhanced degree of lipid peroxidation and proline content and expression levels of heat shock proteins for all studied wheat landraces. T11 was the most tolerant landrace in growth parameters, leaf structure, and expression of heat shock proteins.

Keywords: Wheat, RT-PCR, HSP

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Oral Presentation

The increasing of ıncıdenc in end stage renal disease in the polog region in period from 2012-2017

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Abstract

End-stage renal disease, also called end-stage kidney disease, occurs when chronic kidney disease-the gradual loss of kidney function-reaches an advanced state. Chronic kidney disease (CKD) is a global health burden with a high economic cost to health systems and is an independent risk factor for cardiovascular disease (CVD). All stages of CKD are associated with increased risks of cardiovascular morbidity, premature mortality, and/or decreased quality of life.Kidney diseases in Polog region in reent years includes a serious problem especially when there are cases when number of patients with terminal kidney sickness with insufficience and should be threated with chronic dialysis.ESRD is a social and ecconomic problem in the population. Proof incidences and prevalence is known, above all in term of stopping the spread and progres of renal disease in patients insufficiences region organism Polog and the best in center for Nephrology and haemodialysis in this problem in social crysis. In this work we insist to conclude a retrospective analysis of the increasing number of patients with ESRD in the period from 2012-2017 in the region and cause Polog(Tetova) that patients cone ESRD property rights.Key words: esrd,polog region.

Oral Presentation

Transformation and expression of virus (clcuv), insects and weeds resistant genes in cotton variety VH-289

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Abstract

There are many threats to cotton such as insect, weeds and viruses. To overcome the problem of cotton crop, development of transgenic cotton and the expression of transgenes in adequate quantity is the need of time. Transgenic cotton variety VH-289 was developed through Agrobacterium mediated transformation of GTG, pk2Ac and NIBI plasmids, containing GTG, (Cry1Ac, Cry2A) and (GroEL, Zinc finger AZP and G5) genes respectively. Evaluation of integration and expression of these transgenes was done through molecular analysis in T0 and T1 generation. In T0 and T1 generation transgenic cotton plants with six genes were confirmed through molecular analysis like ELISA and PCR which determined that nine plants were positive for the presence of three genes i-e Cry2A, Cry1A and GTG while out of these nine plants six were found to be positive for the presence of all six genes i-e Cry1AC, Cry2A, GTG, GroEL, Zinc finger AZP and G5. Protein quantification by ELISA for Cry1AC and Cry2A gene was determined. After the glyphosate assay the survival of cotton plants confirmed the presence of GTG gene. In all categorised plants, based on CLCuV symptoms, no significant difference was observed in DNA-A quantity and the quantity of DNA-A was also found to be very low compared to the copies of Betasatellite. High copies of Betasatellite were observed in virus susceptible plants than virus moderately resistant plants and least quantity was observed in virus resistant plant and vice versa for G5 mRNA expression. Negative correlation was found between virus resistant gene G5 and Betasatellite.

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Oral Presentation

HPLC-PDA determination of Dapoxetine in Formulation Using Design of Experiments

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Abstract

Dapoxetine (DAP) is chemically "(+)-(S)-N,N-dimethyl-3-(naphthalen-4-yloxy)-1-phenylpropan-1-amine hydrochloride" is a selective serotonin (5-HT) reuptake inhibitor (SSRI). An economical, simple, rapid, precise, accurate and stability-indicating high performance liquid chromatographic method was developed, optimized and validated for the determination of Dapoxetine (DAP) in pharmaceutical dosage forms and dissolution studies. Central composite design (CCD) was used to facilitate method development and optimization. Factorial design experiments were carried out to study the robustness of the method. DAP was separated isocratically on Hypersil-Gold C18 column (150 mm × 4.6 mm, Particle size - 5 µm) with a mobile phase consisting of 28.5% methanol, 34.5% acetonitrile and 37 % water (containing 0.25 ml/L triethylamine, final pH was adjusted to 4.5 ± 0.1 with orthophosphoric acid), at 25 ± 2 ˚C. Retention time of the drug was less than 4 min. The eluted compounds were monitored (200-300nm), identified and quantities using Photo Diode-Array detector (PDA) at 230 nm. The linearity of the method was excellent (r2 > 0.9999) over the concentration range of 0.6 - 36 µg/ml; the limit of detection (LOD) and limit of quantitation (LOQ) were 0.01 µg/ml and 0.04 µg/ml respectively. The overall precision (RSD) was less than 2 %. The tailing factor of analytes was less than 1.22, which was optimized using design of experiment. Mean recovery of DAP was more than 99.2 %, no interference was found from the other ingredient or component present in the preparation. The result of stability studies indicates that the drug was stable when exposed to direct sunlight or UV light. The drug gives oxidative products on exposure to hydrogen peroxide (oxidative stress), which are separated from the DAP with high resolution. The peak purity of analytes was monitored using PDA detector. The method was successfully validated in accordance to ICH guidelines acceptance criteria for specificity, linearity, accuracy, precision, robustness, system suitability and stress studies. The proposed method was successfully applied for the quantitative analysis of DAP in formulation and dissolution studies, which will help to improve QC and contribute to stability and dissolution studies of dosage form. Analysis of Dapoxetine in combination with tadalafil will also be discussed.

Keywords: Dapoxetine, HPLC-PDA, development, optimization, validation, ICH, Central composite design, Design of experiments, AqbD

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Oral Presentation

The effects of voltage, depth dimensions, tilt to high resolution on biological, metal, organic and coated surfaces

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Abstract

Scanning electron microscopy have used to identify and display surface structures in many areas such as chemicals, biological materials, and biomedical instruments. In the conditions used to determine the surface structures, the amount of voltage is very important. Particularly the details to be obtained in illuminating the surface structures of biological materials are valuable to work. Voltage allows electrons to penetrate the sample. Correctly, the higher the voltage, the more electrons penetrate the sample. The reflection from the electrons reaching the deep stratum causes the surface morphology to be mistaken. The lower the surface voltage, the electron penetrates so deep into the sample, and the resulting image gives more consistent information about the surface morphology. This hypothesis on biological samples is inconsistent. In general, a voltage between 5-30 kV is used. In this study, at the same magnification, biological, metal, organic and nanostructured samples were imaged using different voltages. Resolutions between high and low voltage; clear surface structures, less edge effect, less charge-up, Less beam damage criteria.

Keywords: SEM, Voltage, Resolution, Magnification, Clear Surface

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Oral Presentation

Development of glyphosate tolerant potato lines expressing mutant version of EPSP synthase

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Abstract

Weeds incur significant losses to crop plants including potato. Glyphosate, a non-selective herbicide, is used to control weeds in crop plants that prevents the plants from making certain proteins needed for growth and development. The present research work was conducted to introduce herbicide reistance trait in five potato cultivars Lady Olympia, Agria, Granola, Innovator and Desiree via Agrobacterium mediated transformation. Earlier, mutant version of EPSP synthase (isolated from CP4 strain of Agrobacterium) was cloned in pCAMBIA1301 by excising hygromycin (remained as pCAMHE-EPSPS) and further electroporated in LBA4404 strain of *Agrobacterium tumefaciens*. Furthermore, leaf and internodal explants of all cultivars were with Agrobacterium harboring pCAMHE-EPSPS. The plasmid contained CP4-EPSPS gene under the control of 35S promoter and nos terminator. The presence of gusA gene with in T-DNA region facilitated earlier screening of primary transformants. The primary transformants were evaluated for gene integration and expression using standard molecular techniques ie. PCR, real time, southern blot etc. The efficacy of transgenic plants against roundup ready was evaluated by glyphosate application assays using recommended dose. The transgenic plants showed enhanced tolerance against glyphosate applications. The developed transgenic lines can be used as a germplasm in potato breeding programme.

Keywords: Glyphosate tolerance, potato lines, weed management

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Oral Presentation

Salicylic acid mediated gene regulation and external excretion for mineral toxicity tolerance in poplar

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Abstract

Boron (B) toxicity is a nutritional disorder for plant production in many parts of the world. This study explored genetic factors associated with B tolerance in poplar through an integrated transcriptomic approach. Variation in B uptake and tolerance was firstly evaluated by screening several poplar species under toxic B conditions (0-160 ppm B), followed by microarray based transcriptome study. In the study, B uptake and accumulation rates were significantly varied between *P.nigra* and *P.alba*. Hyperaccumulator *P.nigra* clones uptake more than threefold B in their leaf and stem tissues compared to *P.alba* clones. Transcriptome comparison among the two species indicated that salicylic acid (SA) production (salicylic acid binding protein 2) and SA-dependent gene regulation (PR proteins, WRKYs, chitinases, proteases, lipases and protease inhibitors) strongly induced specifically in *P.alba* tissues with B toxicity. Furthermore, endogenous increase in SA content with a soil B concentration-dependent manner was measured in the roots and leaves of *P.alba* while there was no significant alteration in concentration of the same hormone for *P.nigra*. Therefore, increase in endogenous SA concentration was strongly attributed to lower B uptake and B toxicity tolerance in P.alba. On the other hand, P.nigra specifically induced several membrane transport proteins as well as glutathione S transferases and metallochaperones indicating an internal excretion of excess B in *P.nigra* that could be related with much higher B uptake from roots, directional transport into leaves and its detoxification under toxic conditions. This is first study indicating transcriptomic and hormonal control of a mineral toxicity.

Keywords: *P.nigra, P.alba*, Boron toxicity, microarray, transcriptome

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Poster Presentation

The development of *in vitro* regenration method of *Brassica juncea* for gene transformation

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Abstract

The use of metal accumulator plants to remediate heavy metal-contaminated soils is becoming a popular, environmentally friendly and inexpensive technique for environmentalists. Hyper accumulator plants have been proven to accumulate heavy metals in large amounts and majority of these plant species belong to the Brassicaceae family. *Brassica juncea* is one of the important oil seed crops in *Brassicaceae* and is also being used for phytoremediation of heavy metals from polluted soils. In this study, we used *B. juncea*,Tomcot for micropropagation. *B. juncea* seeds were sterilized using 0.05% HgCl2 (mercury chloride), the seeds were sown in MS medium containing 50 µl Bap, 100 µl Bap, 200 µl Bap, 300 µl Bap and 400 µl Bap. After about 4 weeks of germination callus formation began and the best callus formation was observed in 200 µl Bap containg medium. After shoot formation the regenrated plants were transfered in different MS media containing MS+ 0.0 mg IBA or MS + 1.0 mg l-1 IBA or MS + 2.0 mg l-1 IBA for root formation. The best root scoring were observed in MS + 1.0 mg l-1 medium. The detail of plant regeneration techniques will be discussed in poster presentation.

Keywords: *Brassica juncea, in vitro* regenaration, callus formation

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Poster Presentation

Determination of mRNA expression in the leukocytes of coronary artery and cerebrovascular patients

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Abstract

The purpose of this study is to determine the gene expression profiles of catalase (CAT), glutathion-S-transferase (GST) and Presenilin 1 (PSEN1) genes in patients with coronary artery disease (CAD) and cerebrovascular disease (CVD). For this purpose, we performed with three groups including 18 cerebrovascular patients (9 male and 9 female, mean age 71.34), 20 coronary artery patients (11 male and 9 female, mean age 72.34) and 23 (12 male and 11 female, mean age 70.06) healthy adults. After sampling, RNA extraction from leukocytes isolated was performed. cDNA was synthesized by reverse transcription PCR (RT - PCR) method. mRNA levels were quantitatively determined by Real-Time PCR. Statistical differences were considered significant at $p < 0.05$. CAT expression level in coronary artery group was significantly lower than control group ($p < 0.05$). When compared to control, GST expression level in the cerebrovascular ($p < 0.05$) and coronary artery groups ($p < 0.01$) was significantly higher (almost 2-times). Expression of PSEN1 was significantly about twice as high as that of the control group and coronary artery group in patients with cerebrovascular disease ($p < 0.01$). As a result, significant changes in the expression of antioxidant enzyme genes and PSEN1 gene can be seen as a marker of oxidative stress in patients with coronary artery disease (CAD) and cerebrovascular disease (CVD).

Keywords: mRNA expression, catalase, coronary artery, Presenilin 1

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Poster Presentation

A geographic variation assessment for dwarf Lizard's mediterranean populations

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Abstract

Parvilacerta parva (dwarf lizard) was first identified as a new species based on a female specimen collected from Kayseri, Turkey (Boulenger, 1887). In later studies, the distribution of this species was extended to include all of Anatolia and the Caucasian region. Therefore, it is clear that this species is endemic to the Anatolian peninsula and Transcaucasia. Although the study about morphological description of *P. parva*, including the analysis of the intra-populational variability, was carried out by Peters (1962), who compared several Anatolian and Armenian specimens from different populations by ignoring sub-Anatolian geographic regions. After that there are some local populations morphological properties have been examined, the questions for evaluating the species under a geographic variation hypothesis is still unclear. Here, our aim is to determine the dwarf lizard's Mediterranean populations' morphological parameters for evaluating cumulative perspective in this region and its morphometric comparison with previously collected specimens and relevant literature. Morphometric parameters, such as median gularia, supraciliar granule and head-body length are major characters that reflects relatively mean regional values. However, the number of ventral plates and 4th subdigital lamellae changes between Southern Anatolia and the other regions, but these are not statistically significant. Moreover, dorsal plates and femoral openings vary independent of any geographic rule. After all, especially number of supraciliar granules that represents a latitudinal decrease by gradually is a key indicator morphological parameter for this species. To understand the population interactions between Anatolian sub-populations beyond a shadow of a doubt, genetic analysis for this species is recommended.

Keywords: *Parvilacerta parva*, lizard, southern Anatolia, geographic variation

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Poster Presentation

Improving the oxidative stability of NAD+- dependent formate dehydrogenase from plant *Gossypium hirsutum*

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Abstract

The NAD+-dependent formate dehydrogenases (FDH, EC 1.2.1.2) are important industrial enzymes in the regeneration of NAD(P)H which is an expensive coenzyme used in the synthesis of chiral molecules requested to be optically pure, and the reduction of CO2 to formic acid which is a commodity chemical and a stabilized form of H2. To improve the stability of NAD+- dependent FDHs is one of the prominent research area. Therefore, we aimed to increase the oxidative stability of NAD+-dependent FDH from plant *Gossypium hirsutum* (GhFDH) by the substitution of surface Met residues, which are susceptible to oxidation due to the presence of sulfur groups, to non-oxidative Leu amino acid. Surface methionine residues can easily be converted to methionine sulfoxide by reactive oxygen species. That's why they are critical regions for protein conformational change and loss of activity. GhFDH in the size of 38.65 kD contains 9 methionine amino acids, including M126, M214, M225, M234, M243, M258, M294, M299, M321 residues. Among them, mutations M225L, M234L and M243L were selected by using Swiss-Model homology modelling based on the *Arabidopsis thaliana* (AtFDH) crystal structures which has 87 % identity with GhFDH. Mutants were constructed by the usage of PCR based "Gene-Art Site-Directed Mutagenesis System".

Keywords: Formate Dehydrogenases, *Gossypium hirsutum*, Site Directed Mutagenesis, Homology Modelling

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Poster Presentation

Removal of copper (II) ions from heavy metals with sporopollenin of Lycopodium clavatum; isotherm and thermodynamic studies

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Abstract

With the rapid increase of the world population, energy and nutrient insufficiency, irregular urbanization, excessive consumption and environmental pollution has increased significantly. There are heavy metal containing organizations in the wastewater, at the forefront of the industrial establishments which increase environmental pollution and play an important role in the degradation of ecological balance. There are many methods for removing heavy metals. Especially, the method of removing heavy metals by adsorption method by modifying the sporopollenin obtained from plant walls is remarkable. In this study, firstly mono layer was modifying 3-chloropropyltrimetoxysilane compound to the surface of sporopollenin. 4,4' - ((1 Z, 11Z) -2,5,8,11-tetraazadodeca-1,8-dien-1,11-diil) difenol was immobilized to sporopollenin. Newly synthesized substance was characterized with infrared spectroscopy method. Adsorbtion of Cu(II) metal ions on immobilized sporopollenin were evaluated at different parameters like different amount of adsorbent , pH, interaction time, metal solution concentration and temperature. Langmuir, Freundlich and Dubinin-Radushkevich adsorption isotherms were calculated. For adsorbent, thermodynamic parameters were calculated. ΔH0, ΔS0 and ΔG0 values were estimated.

Keywords: Sporopollenin, Immobilization, Adsorption, Adsorption Isotherms, Thermodynamic

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Poster Presentation

Quantitative determination of tocopherols and tocotrienols in olive oil deodorizer distillate by HPLC-FLD

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Abstract

The most important by-product of edible oil refining is the deodorizer distillate (DD) obtained in the deodorization stage. Basically, deodorization is the final key step of the refining process accountable for removing targeted volatile compounds which are liable for producing unacceptable odor, color, taste and flavor in the oil. Increased use of industrial waste and by products fits the requirement of industry to fulfill with environmental rules. The replacement of natural products for synthetic materials has gained worldwide consideration in the food, pharmaceutical and other industries. Therefore, extra virgin olive oil DD (OODD) has been utilized as a natural source of FFAs, tocopherols, sterols, squalene in many fields. In this study, an automated HPLC-FLD system for quantification of tocopherols and tocotrienols in OODD was used. It was seen that OODD has total tocopherol in the level of 32.086,07 ± 335,47 mg/kg distillate. But tocotrienol species has been couldn't found as we expected.

Keywords: Deodorizer distillate, Olive oil, Tocopherol, Tocotrienol

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Poster Presentation

Antimicrobial activity of nanoemulsion based on different plant oil against fish spoilage bacteri

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Abstract

Polymerase chain reaction (PCR) was used for rapid detection and identification of fish spoilage bacteria from spoiled fish. A selected PCR band from each of isolates was sequenced. Identified bacterial strains were *Vibrio vulnificus*, *Photobacterium damselae*, *Proteus mirabilis*, *Serratia liquefaciens* and *Pseudomonas luteola*. Antimicrobial activity of nanoemulsion based on different plant oil (sage tea, laurel and rosemary) against identified fish spoilage bacteria were performed using the disc difusion method. Bacterial strains were more sensitive to sage tea and laurel nanoemulsion than naoemulsion based on rosemary oil. Laurel nanoemulsion had the highest entimicrobial activity against *V. vulnificus* and *Phot. damselae* with diameter zone of 1.5 and 1.35 mm, whilst the poorest effect was observed for Pseu. luteola (0.72 mm). Antimicrobial effect of laurel against *Pro. mirabilis* and *Ser. liquefaciens* were similar (0.8 mm). The least susceptible organisms to rosemary nanoemulsions were *Pro. microbilis* and *Phot. damselae*, although nanoemulsion based on sage tea was the most effective against these bacteria (diameter zones 1.2 vs 1.06 mm). The highest inhibition of rosemary nanoemulsion was found for *Pseu. luteola* with diameter zone of 0.8 mm.

Keywords: Moleculer techniques, Fish spoilage bacteria, Nanoemulsions, Plant oil

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Poster Presentation

Physical properties of microencapsulated anchovy fish oil with discard fish protein ısolate

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Abstract

Fish oil being a valuable source of polyunsaturated fatty acids is highly sensitive for oxidation. The microencapsulation method makes it possible transforming oil into a solid ingredient where the small droplets of oil are surrounded by a dry matrix of proteins and/or carbohydrates. A number of coating materials including caseinate, maltodextrin, whey protein and milk protein have been reported to protect fish oils against oxidation. In this study, the proteins of discard fish (*Equulites klunzingeri*) were extracted by using pH shifting process and used for microencapsulation of anchovy oil as a coating material. In order to investigate the usage of fish protein isolate (FPI) as a coating material in microencapsulation of fish oil, discard fish protein isolate were added instead of sodium caseinate at a ratio of 5% (5%FPI) and 10% (10%FPI). Then, scanning electron microscopy measurements were performed in order to observe the morphology of the microcapsules. The colour changes of microencapsulated fish oils were also monitored for 7 weeks at 25oC. Lightness value of SC, 5%FPI and 10%FPI groups were found as 91.00, 88.08 and 82.46, respectively. The lightness value of the all groups declined at the end of storage (76.07-82.91). Generally, no significant changes in "a" values were determined in all groups during storage. Although there were no significant changes of "b" values were observed in SC group throughout the storage period, significant changes were observed between 5%FPI and 10%FPI groups. Consequently, physical properties of microencapsulated fish oils were changed by the addition of discard fish protein.

Keywords: Scanning electron microscopy, microencapsulation, fish oil, fish protein isolate, colour

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Poster Presentation

Detection of *Alicyclobacillus acidoterrestris* in apple juice by a PCR-based technique

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Abstract

Alicyclobacillus species cause spoilage in highly acidic foods, especially those protected by pasteurization, such as fruit juices. Apple juice is the most important economical commodity among the fruit and vegetable juices in worldwide. *Alicyclobacillus acidoterrestris* creates unpleasant odor in apple juice and concentrates which causes considerable economic loss in apple juice industry. Conventionally Alicyclobacillus species can be identified by chromatography and conventional microbiological methods. Identification of *Alicyclobacillus acidoterrestris* by classical microbiological methods are time consuming and sometimes not capable of objective determination. In this study, a PCR-based identification method was established by species-specific DNA probes with high sensitivity and accuracy. Comparing with the classical methods, PCR-based methodology is capable of identifying *Alicyclobacillus acidoterrestris* in apple juices within a day which is very good advantage whereas conventional protocols take more than a week. The newly developed methodology presented in this work is very promising for Alicyclobacillus species identification in acidic beverages.

Keywords: Fruit juice, microbial contamination, microorganism detection

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Poster Presentation

Resolving ınterspecific relationships in plants: Universal sequences vs organelle genomes

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Abstract

Universal sequences in organelle genomes were adapted to molecular phylogenetics long before, thus, interspecific comparisons of such sequences (e.g. *rbcL, coxI*) became the standard approach to determine taxonomic relationships based on molecular data. While the conventional approach that employs a relatively limited number of substitutions present in a given universal sequence proved sufficient to resolve interspecific relationships in most cases, it is feasible now to perform genome-wide comparisons among taxa thanks to advances in next generation sequencing technologies. In the present study, the widely accepted standard sequence, the mitochondrial *coxI* gene, encoding cytochrome oxidase subunit I, was utilized to resolve relationships among a set of plant species including members of Solanaceae and Poaceae families. Entire mitochondrial genomes of the relevant species were also utilized in parallel analysis. Results of both approaches were comparatively evaluated in order to interpret the effect of sequence length and aid establishing standard approaches for plant phylogenetics.

Keywords: *rbcL, coxI,* organelle genome, mitochondrial genome

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Poster Presentation

Molecular modelling of biologically active toab compound and docking calculation on DNA-Toab ınteractions

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Abstract

Tetraoctylammonium bromide (TOAB) is a quaternary ammonium salt generally used as a phase transfer catalyst between an aqueous and an organic solution. TOAB is synthesized by refluxing trioctyl amine and n-octyl bromide in acetonitrile for 24 hours; the product is purified by recrystallization by adding ether and petroleum ether after dissolution in dichloromethane. Studies in the literature have reported that the synthesized tetraalkyl ammonium salts and quaternary ammonium based ionic liquids possess antimicrobial properties. In this study, the optimized molecular structure of TOAB molecule was determined by DFT method. The structure of this molecule was elucidated spectroscopically by comparing the experimental IR, ^{1}H-NMR ve ^{13}C-NMR spectra with the theoretical IR, ^{1}H-NMR ve ^{13}C-NMR spectra. It is considered that tetraoctylammonium bromide belonging to tetraalkylammonium bromide class is bound to DNA coil during heating. For this reason, the active region in which TOAB molecule can be found in DNA and the orientation of TOAB molecule were determined depending on the interaction of the ligand TOAB molecule with the receptor DNA in this study.

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Poster Presentation

Identification of novel hydrolases from Armutlu thermal springs, Turkey

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Abstract

Hydrolases are important and valuable enzymes due to their utilization of nearly every area of the industry for various aims. Efficient yield changes can be made by exploring new types of hydrolases from extremophiles. Armutlu, a coastal town which is a district of Yalova, Turkey, has been the main topic of various studies due to the geological activity of Armutlu peninsula. It is also famous for its hot springs. However, no information about the microbial community of these thermal springs exists. After sampling of sediments and water from the different parts of the thermal vents, samples were cultured at 60°C and genomic DNA isolates were utilized for 16S rDNA PCR method. The evaluation of the results of Sanger sequencing suggests that the microbial habitat of the Armutlu hot springs consists of mostly Geobacillus sp. Meanwhile, these samples have been screened for different types of hydrolases (e.g. amylase, lipase, protease) for the catalytic activity.

Keywords: Thermophiles, hydrolase, hot spring, Geobacillus, 16S rDNA

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Poster Presentation

Investigation of RYBP and MDM2 gene expression levels in colorectal cancer

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Abstract

Colorectal cancer is known as a major cause of morbidity and mortality throughout the world and the incidence of colorectal cancer is increasing in developing countries including Turkey. Murine double minute 2 (MDM2) oncogene which is a critical negative regulator of the tumor suppressor p53, playing a key role in controlling its transcriptional activity, protein stability, and nuclear localization. Ring1 and YY1 binding protein (RYBP) which is a member of the Polycomb group (PcG) proteins and regulates cell growth through both PcG-dependent and -independent mechanisms. The aim of this study was to investigate relationship between colorectal cancer and RYBP and MDM2 mRNA expression levels. Ethics committee approval required for the study was obtained from the Gaziantep University Medical Faculty Local Ethics Committee. Normal and tumor tissue samples were obtained from 43 patients who were diagnosed with colorectal cancer. MDM2 and RYBP mRNA expressions were analyzed by real time-PCR. In the result of study,there was no significantly significant difference in both RYBP and MDM2 mRNA expression between tumor tissues and normal tissues of colorectal cancer patients ($p<0.05$).

This study was supported by the Scientific Research Projects Department of Gaziantep University (Project No: FEF.YLT.17.13).

Keywords: Colorectal cancer, MDM2, RYBP, expression, real time pcr

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Poster Presentation

Screening of vegetable oils for the reactive extraction of lactic acid with tertiary amine extractant

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Abstract

Lately, reactive extraction is shown to be the most advantageous method to be used to recover carboxylic acids from fermentation media. A significant advantage of the method is the ability to be used in situ production/separation processes. The technique has several advantages; however toxicity of the organic phase members should be eliminated or at least reduced with the use of appropriate environmentally-friendly chemicals/biochemicals. The candidates should also provide an appropriate medium for the reaction between the extractant and target molecule. Recently, vegetable oils were shown to be utilized as a diluent in the organic phases. The high efficiencies have attracted the attentions. In this study, eight different vegetable oils (Hazelnut oil, sunflower oil, corn oil, almond oil, canola oil, safflower oil, soy oil, sesame oil) were tested as a diluent for the reactive extraction of lactic acid (LA) from aqueous solutions. The tertiary amine extractant (TAE) was dissolved in these oils at a concentration of 0.6 M and LA amount was varied between 0.2 and 1.0 M. Sesame oil gave the highest recovery value as 49% in these ranges of the parameters. Acid concentration positively influenced the extraction efficiency. Three oils giving the highest efficiencies were investigated in detail. Highest recovery percentages were 82.6%, 80.2% and 83.1% with sesame, sunflower and safflower oils, respectively; when initial LA concentration was 1.5 M and that of TAE was 2.0 M. Thus, all these vegetable oils can be used as organic phase diluent in reactive extraction of LA depends on their costs.

Keywords: Vegetable oils, Lactic acid, Reactive extraction, Tertiary amines

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Poster Presentation

Monitoring of *Alternaria* spore and alt a 1 allergen in Ankara

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Abstract

Airborne fungal spores are of great interest in not only in aerobiology but also in human health because of their impact on causing allergy. *Alternaria alternata* is one of the most important allergenic fungi in the atmosphere. Fungal allergens are produced by both spores and hyphae. The hyphal fragments are much smaller than the spores so they may reach the lower respiratory tract easily. In this study we aimed to examine a correlation between spore counts and the allergens by monitoring the spores and Alt a 1 allergens in Ankara province. Spores were collected from Burkard pollen and spore trap and counted daily. Alt a 1 sampling was carried out between June-October during 2015 by using BGI900 Cascade High Volume Air Sampler (900L/min.). The ambient air was sampled on polyurethane filters (PUF) which retain particles that their size is between 10>PM>2.5 were analyzed. PUF's were extracted in ammonium carbonate buffer, aliquoted, lyophilized and stored at -20^{0}C until use. Concentrations of Alt a 1 were measured by ELISA. The sum of seasonal *Alternaria* spore were 5598 spore/m3. Total allergen levels were measured as 29.31 pg/m3. The highest allergen concentration was measured on 25/08/2015 with 5.59 pg/m3. The correlation between daily levels of *Alternaria* spores and Alt a 1 were statistically significant ($r=0.259^{**}$; $p<0.05$). The correlation is not so high. This could be indicator of that Alt a 1 originated from fungal mycelium is as important as *Alternaria* spore to represent fungi allergen load in the air.(Project No: BAP 16L0430006)

Keywords: Alt a 1, *Alternaria*, spore, fungi, allergy, cascade air sampler

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Poster Presentation

Cell growth ınhibitory potential of *Craterellus cornucopioides* (*L.*) pers. together with antioxidant and antimicrobial properties

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Abstract

Craterellus cornucopioides (*L.*) Pers which is also known as trumpet of death or horn of plenty, is a wild edible macrofungus. This study was conducted to elucidate the potential health beneficial properties of *C. cornucopioides* grown in Karaman province. Bioactive ingredients (phenolics, flavonoids, β-carotene and lycopene) and DPPH radical scavenging activities were determined. Additionally, cell growth inhibitory effects on HepG2 cells together with some bacteria were evaluated. Accordingly, water and methanol extracts contains 37,71 ±1,42 µg/mg and 13,78 ±1,60 µg/mg phenolic contents, respectively. Similarly, methanolic extracts have higher β-caroten and lycopene content as compared to aqueous extracts. In parallel with these antioxidants, methanolic extracts have also higher DPPH scavenging activity (IC_{50}: 5,26± 0,67 mg/ml). Besides, water extracts have higher flavonoid contents (2,13±0,06 µg/mg) then the methanolic extracts. *C. cornucopioides* has also an important cell growth inhibitory effects on HepG2 cells (IC_{50}: 18,41 ±1,10 mg/ml for aqueous extracts and IC_{50}: 3,14 ±1,07 mg/ml for methanolic extracts). Moreover, both extracts were effective on six different bacteria tested. As a result, this study indicates that *C. cornucopioides* would reduce the cellular oxidative stress because of its high antioxidant ingredients, inhibit the growth of pathogen microrganisms and have some degree of cell growth inhibitory potential at least to the HepG2 cells.

Keywords: *Craterellus cornucopioides,* antioxidant, antibacterial, cytotoxicity, HepG2

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Poster Presentation

Evaluation of Vegetable Oils for the Reactive Extraction of Tartaric Acid with Trioctylamine

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Abstract

Due to the sharp increases in petroleum-based production costs, manufacture of large volumes of industrial chemicals such as carboxylic acids have started to be carried out by fermentation technique. Tartaric acid (TA) is a weak dicarboxylic acid and widely used in the food processing, chemical and pharmaceutical industries. Reactive extraction is shown to be one of the most suitable methods for its recovery from aqueous based production media. Use of toxic chemicals in organic phases is the main problem of the method. Their replacement with environmentally-friendly and also efficient biochemicals in the separation process would help commercialization and wider usage of the technique and the acid. In this work, four different vegetable oils (safflower, canola, sunflower and corn oils) were evaluated for the reactive extraction of TA. Trioctylamine (TOA) was used as the extractant. Both TA and TOA concentrations were varied between 0.2 and 1.0 M. The distribution coefficient was observed to increase with the increase in TOA amount and decrease in TA concentration. Highest extraction efficiency was obtained with corn oil as 92.2% when TA concentration was 0.4 M while TOA amount was 1.0 M. It was followed by sunflower, canola and corn oils. The recovery values were 91%, 89.4 % and 89.2% with these vegetable oils, respectively. The results showed that all the vegetable oils tested in this work can serve as an organic phase diluent during the reactive extraction of TA. Cost of the vegetable oil would be the critical parameter during the selection.

Keywords: Vegetable oils, Tartaric acid, Reactive extraction, Trioctylamine

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Poster Presentation

Use of non-toxic organic solvents and N,N-Dioctyl-1-octanamine for the recovery of tartaric acid from aqueous solutions

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Abstract

Recently several types of biochemicals have been produced by biological techniques instead of chemical syntheses. For example, several carboxylic acids are produced by fermentation today. Moreover, they are also found in industrial wastewaters. Tartaric acid (TA) is present at in grapes and this makes the wastewaters of the related industries has high amount of TA. Due to its hydrophilic and relatively polar nature, it is difficult to separate TA from aqueous solutions. Reactive extraction has been favored over the other techniques due to its high efficiency, ease of operation and low energy demand. However, toxic and expensive solvents used in the organic phases are the critical problem of the method. In this study, reactive extraction of tartaric acid from aqueous solutions using N,N-Dioctyl-1-octanamine in non-toxic diluents (vegetable oils) was investigated. The results were compared with 1-octanol. Initial concentration of TA and the extractant were between 0.2 and 1.0 M. Extraction efficiency was observed to increase with the increase in extractant amount while decrease in LA concentration. Highest extraction values with the non-toxic diluent, sunflower oil, were obtained at its natural pH value about 2 and where initial TA concentration was 0.4 M and that of the extractant were 0.8 and 1.0 M as about 91%. At the similar conditions, the recovery efficiency obtained with 1-octanol, which is the state of the art organic phase diluent in the literature, as 97%. The present work showed that a non-toxic natural solvent can be utilized in the separation processes of the industries.

Keywords: Tartaric acid, Sunflower oil, Recovery, Non-toxic diluent, Tertiary amine

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Poster Presentation

Development of a non-enzymatic electrochemical quantitative analyzing method for cadaverine

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Abstract

Biogenic amines, which play an important role in the biological functions of humans and animals, can exert toxic effects when consumed in foods in excess. Diamines such as cadaverine are regarded as mutagenic precursors because of their susceptibility to react with nitrites. These amines convert to pyrrolidine and piperidine by bringing nitrosopyrrolidine and nitrozopiperidine to the well. Therefore, the cooking is increased in the raw product with free nitrozamine. The aim of this work is to develop a non-enzymatic electrode that has been modified with pillar[5]arene for the identification of the cadaverine, which is important in food quality. For this purpose, the glassy carbon electrode has been modified using pillar[5]arene dispersed in the gelatin biopolymer. Morphology and electrochemical properties of modified electrode surface were investigated scanning electron microscope (SEM), atomic force microscope (AFM), cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS). CV ve EIS results showed that pillar[5]arene increases electroactive surface area and provides a good electron transfer pathway at the solution-electron interface. Optimum experimental conditions and performance factors of modified electrode was examined. Linear working ranges were found to be 0.08-0.91 μM and 1.65-20.8 μM with detection limit of 0.06 μM. The prepared modified electrode was applied to detection of cadaverine amount in cheese and sausage samples.

Keywords: Cadaverine, non-enzymatic electrode, pillar[5]arene

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Poster Presentation

Thymus revolutus Célak essential oil affected the activities of antioxidant enzymes in different cancer cells

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Abstract

Thymus species are well known as medicinal plants because of their biological and pharmacological properties. *Thymus revolutus* Celak is an endemic species in Turkey. The intracellular redox potential, which is determined by the level of oxidants and reductants, has been shown to play an important role in the regulation of cell growth. The principal intracellular reductant is nicotinamide adenine dinucleotide phosphate (NADPH), which is mainly produced by the pentose phosphate pathway through the actions of glucose-6-phosphate dehydrogenase (G6PD). Another important reductant is glutathione (GSH). Oxidative stress generated by oxidants leads to cell death. Antioxidant enzymes such as glutathione reductase (GRx) and glutathione peroxidase (GPx) can protect the cells from the effects of oxidative stress. The purpose of this study was to compare the antioxidant enzyme activities in different types of lung cancer cells such as H1299 (parental nonsmall-cell lung cancer cells), drug-resistant H1299 (epirubicin-HCl resistant nonsmall-cell lung cancer cells), A549 (alveolar epithelial cells derived from human lung carcinoma), and A431 (human epidermoid carcinoma) after treatments of IC50 and IC70 concentrations of *Thymus revolutus* Célak essential oil and its two main components p-cymene (32.57%) and γ-terpinene (17.18%). After incubation, increased GRx in all cells due to decreasing reduced glutathione amount in the cells, were observed. Increased GPx and GST activities, especially after IC70 treatment of cells, as well as increased G6PD levels were seen. Enzyme activities of cells depended on concentrations and antioxidant capacities of the cells.

Keywords: *Thymus revolutus* Célak, p-Cymene, γ-Terpinene, Antioxidant enzyme activities

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Poster Presentation

Lack of association of monoamine oxidase-B gene A644G variant with schizophrenia and/or nicotine dependence

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Abstract

Schizophrenia (Sch) is a severe and chronic mental illness. Smoking prevalence is higher in patients with Sch than general population. Monoamine oxidase B (MAO-B) is one of the primary enzymes regulating metabolism of neurotransmitters such as dopamine. Several studies suggest that MAO-B gene may be implicated in the susceptibility to Sch.This study aimed to evaluate whether MAO-B A644G variant play any role in nicotine dependence (ND) and/orSch+ND etiopathogenesis. Since the MAO-B gene is located on the X chromosome, the case-control association study was done separately for female and male. Present study included 161 individuals with ND, 223 patients with Sch+ND, and 91 healthy controls. MAO-B A644G variant was analyzed using the polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) method. Allele and genotype data were analyzed for significance of differences between cases and controls using the Chi-square ($\chi(2)$) test. No significant differences were observed between groups for the MAO-B A644G genotype and allele frequencies both in females and males($p > 0.05$). The present study demonstrated thatthere is nosignificantrelationship between MAO-B gene A644G variant and ND and/or Sch in this population. However, the mechanisms contributing to the association between MAO-B gene and Sch and/or ND risk still require further study.

Keywords: Schizophrenia, nicotine dependence, Monoamine oxidase B, A644G, variant

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Poster Presentation

Lipase ımmobilization on magnetic calix[4]arene bearing ımino-dicarboxylic/phosphonic acid complexes

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Abstract

In this study, iron oxide magnetite nanoparticles, prepared through a co-precipitation method, were coated with phosphonic acid or iminodicarboxylic acid derivatives of calix[4]arene to modulate their surfaces with different acidic groups. *Candida rugosa* lipase was then directly immobilized onto the modified nanoparticles through sol–gel encapsulation. The catalytic activities and enantioselectivities of the two encapsulated lipases in the hydrolysis reaction of (R/S)-naproxen methyl ester and (R/S)-2-phenoxypropionic acid methyl ester were assessed. The results showed that the activity and enantioselectivity of the lipase were improved when the lipase was encapsulated in the presence of calixarene-based additives; the encapsulated lipase with the phosphonic acid derivative of calix[4]arene had an excellent rate of enantioselectivity against the (R/S)-naproxen methyl and (R/S)-2- phenoxypropionic acid methyl esters, with E = 350 and 246, respectively, compared to the free enzyme. The encapsulated lipases (Fe-Calix-N(COOH)) and (Fe-Calix–P) showed good loading ability and little loss of enzyme activity, and the stability of the catalyst was very good; they only lost 6–11% of the enzyme's activity after five batches.

Keywords: Calix[4]arene, Magnetite nanoparticles, Lipase immobilization, Enantioselective

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Poster Presentation

Mechanical behaviour of antimicrobial Titanium-Niobium alloys produced by high energy ball milling as a function of alloying composition

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Abstract

Pure Ti and Ti alloys are useable for biomedical implant materials due to their properties such as low elastic modulus, super biocompatibility and good corrosion resistance. Titanium alloys used as biomaterials should not contain cytotoxic elements due to the health problems that they cause in human body. The aim of this study is to prepare titanium base alloys with the addition of niobium, tin and tantalum and investigate the mechanical properties as a function of alloying compositions and consider antimicrobial activities. Niobium, tin and tantalum are chosen because of their good biocompatibility which do not cause a negative tissue reaction. In this study, titanium alloys of different compositions were produced by mechanical alloying. After the milling was complete, as-milled titanium alloys were consolidated using an unaxial pressing and sintered at different temperatures up to 1150 ºC. Microstructural characterization was performed using Scanning Electron Microscope (SEM). Antimicrobial activity of samples against Staphylococcus aureus (ATCC 25923) were investigated by using the ASTM E2149-13a standard. The overnight cultures were centrifuged at 3,600g for 10 minutes at 5°C, washed twice, re-suspended in Sorensen's phosphate buffer, and the cell density of suspensions was adjusted to the 1.5×10^5 colony forming units (cfu)/mL. In brief, samples were sterilized by UV treatment and added to screwcap tubes containing 1 mL of working bacterial suspensions. The numbers of viable bacteria in suspensions before (time 0) and after exposure (at 220 rpm and 37 °C for 90 minutes) were determined by plate count technique. According to the results, antibacterial activity of the samples against S. aureus, may be considered as Ti24Nb 6Ta> Ti24Nb 6 Sn > Ti24Nb 6Sn 1Ta in spite of the fact that there was no significant antibacterial activity of three samples. Further, a more rigorous evaluation of antibacterial activity for both gram positive and gram negative and cytotoxic activity against human cell lines of the samples is needed in order to determine their biocompatibility.

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Keywords: Mechanical Alloying, Biocompatible, Titanium Alloys, Cytotoxic

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Poster Presentation

Neuroprotective effect of morin on rats exposed to doxorubicin

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Abstract

Flavonoids are ubiquitous compounds and are a family of phenolic compounds found in the components of many fruits, vegetables, juices and herbal dietary supplements and some of them are free radical extinguishing and antioxidant properties. Morin (3,5,7,2 ‘, 4’-pentahydroxyflavone) is a natural bioflavonoid which has been reported to exhibit antioxidant, anti-inflammatory, antidiabetic, anti-carcinogenic, neuroprotective, and antiproliferative effects in vivo and in vitro. It is first isolated from the *Moraceae* family and is found in most plants, fruits and wine. Doxorubicin (DOX) is an anticancer anticancer belongs to the family of anthracycline and was first isolated from *Streptomyces peucetius* in the 1960s. In the study, control group, morin hydrate (100 mg/kg), DOX (40 mg/kg), DOX + morin hydrate (50 mg/kg), DOX + morin hydrate (100 mg/kg) groups were formed to determine the neuroprotective effect of morin, a natural antioxidant against DOX-induced toxicity in brain tissue. At the end of the 10th day, experimental application was terminated and rat brain tissues were taken. A histopathological examination of the tissues was performed to determine the damage caused by DOX in the brain and the healing effect of morin against this injury. To determine the contribution of morinin to the antioxidant defense system in the brain tissue in response to oxidative damage resulting from DOX exposure, reduced glutathione and MDA levels and superoxide dismutase, catalase, glutathione peroxidase enzyme activities were determined. In addition, NF-κB, TNF-α and IL-1β levels were determined with the aim of determining the anti-inflammatory effect of morin. Anti-apoptotic protein Bcl-2 level was examined for antiapoptotic effect. AChE level were also determined to elucidate the curative effect on neurotransmission.

Keywords: Morin, Doxorubicin, Flavonoid, Neuroprotective effect

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Poster Presentation

Exposure of 1800MHz cell phone radiation may be effect the DRD2 gene expression levels in rat brain tissue

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Abstract

Development of electronic technologies, the public concern about the potential health hazards induced by radiofrequency electromagnetic fields (RF-EMF) has been grown. Brain is the most exposed tissue from the cell phones RF-EMF. Scientist concern about this exposure may be cause brain tumours, psychiatric disorders and neurodegenerative disease. Discoidin domain receptors (DDRs), including DRD1 and DRD2, are members of the receptor tyrosine kinase (RTK) family. DRD1 and DRD2 genes demonstrated significant association with schizophrenia, Alzheimer and Parkinson. Also associated with some cancers development including colorectal cancer, breast cancer and adenocarsinom. In this study we determined the expression levels of DRD1 and DRD2 genes in the rat's brain tissue exposed with 1800 MHz RF-EMF. Twenty-two female wistar albino rats were divided into three groups. Experiment group was exposed 1800Mhz RF-EMF 2h/day along 8 weeks. Control group was kept in their own conditions. Sham group was kept in experiment conditions without RF-EMF exposure. Immediately end of the 8 weeks the rats were sacrified and removed their brain, stored at -80oC. RNA isolation was performed from tissue homogenate. DRD1 and DRD2 genes expression levels was determined with TaqMan assays. Analyses showed that DRD2 gene expression level was significantly different from the sham and exposed groups according to the control group (p=0,021). Also DRD1 gene expression level was not significantly different between the groups (p=0,510). Cell phone use may be stimulate the neurodegenerative diseases. Further studies should be performed.

Keywords: Cell phone radiation, Brain tissue, DRD1, DRD2 Gene expression, Neurodegenerative diseases

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Poster Presentation

A study on antimicrobial activity of water-soluble calixarene derivatives

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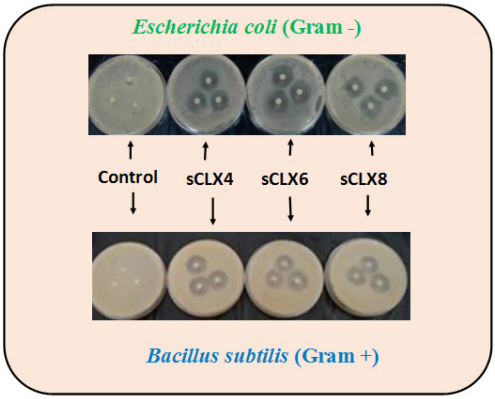
Abstract

A series of water soluble calixarene derivatives with sulphonated groups were synthesized and characterized by FT-IR and NMR. The antimicrobial activity of water-soluble calixarene compounds were investigated towards *Bacillus subtilis* (*B. subtilis*) and *Escherichia coli* (*E.coli*) by using disk diffusion method. From the antimicrobial test, it was seen that the growth of Gram-positive (*B. subtilis*) and Gram-negative (E. coli) bacteria were inhibited by calixarene derivatives (sCLX4-6-8). After incubation, the diametre of obtained zones for sCLX4, sCLX6 and sCLX8 were measured as 11,13,10 mm toward B. subtilis and 14,13,14 mm toward E. coli, respectively.

Keywords: Sulphonated calix[n]arene, *Escherichia coli*, *Bacillus subtilis*, Disk diffusion



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Poster Presentation

Cytotoxicity of PVA/PAA/Nanopomegranate seed nanocomposites

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Abstract

Poly (vinyl) alcohol (PVA) is one of the most frequent and the oldest synthetic polymer used in hydrogels because of its good biocompatibility. However, PVA has insufficient elastic and low hydrophilicity characteristics which restrict its use alone as a wound dressing material. Therefore, in this study poly(acrylic) acid (PAA) was used with PVA and nanopomegranate seed (nPS) was used as a filler material. In order to test the cytotoxicities of the synthesized hydrogels MTS assay was used. PVA/PAA and PVA/PAA/nPS (1 wt. %) samples showed 15.2 % decreases with respect to negative control after 24 hours of incubation and these decreases were found as statistically significant ($P<0.05$). On the other hand, PVA/PAA/nPS (2.5 wt. %) and PVA/PAA/nPS (5 wt. %) samples showed 14.75 and 11.12 % decreases respectively and these were statistically significant ($P<0.05$). After 48 hours of incubation, a dramatic decrease (21.44 wt. %) in cell viability was observed with PVA/PAA samples ($P<0.05$), while the other hydrogels showed increased absorbances with increasing concentrations of pomegranate seed. In conclusion, it is clear that the hydrogel nanocomposites prepared with pomegranate seeds decreased the cytotoxicity of pure polymers on healthy human lymphocytes.

Keywords: PVA, PAA, Nanopomegranate seed, Nanocomposite, Cytotoxicity

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Poster Presentation

Cytotoxicity of intercalated kaolinite nanoclays

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Abstract

Nanoclays that are naturally occurred layered silicates have been used with biopolymers for various biomedical applications with its important properties. The aim of this study is to determine the cytotoxic effects of kaolinite nanoclays intercalated with DMSO and DMSO/ Glutamic acid on human lymphocytes. In order to test cytotoxicity, nanoclay treated mediums were added into the cell cultures after 24 h of incubation of isolated lymphocytes. Then the samples were incubated for 48 h at 37°C (5% CO2). At the end of each 24 hour, 100 µL of cells were treated with 20 µL of MTS reagent. Cell viabilities were analyzed measuring the absorbances at 490 nm, after 4 hours of incubation at 37°C. According to our MTS assay results, kaolinite nanoclays modified with DMSO didn't show significant change in cell viability until its maximum concentration (500 µg/mL). In addition, viabilities didn't decrease significantly with DMSO/Glutamic acid modified kaolinite samples for 24 h but only decreased at 500 µg/mL for 48 h ($p<0.05$). As a result, we concluded that kaolinite samples modified with DMSO and DMSO/ Glutamic acid were nontoxic to the lymphocyte cells in a dose dependent manner.

Keywords: Kaolinite, Nanoclay, Cytotoxicity, Lymphocytes

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Poster Presentation

The evaluation of relationship between obesity and cardiac markers

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Abstract

Obesity increases the risk of sickness in many systems of the organism. Obesity is the major risk factor of cardiovascular disease and the mortality related with cardiovascular disease. In this study, it was investigated the relationship between obesity and cardiac markers. The obese group consisted of 124 female aged of 12-72 and 9 male aged of 15-64 (mean age: 48.2 ± 6.5) obese individuals, while the control group consisted of 97 female aged of 15-61 and 29 male aged of 15-62 (mean age: 46.2 ± 8.9) healthy individuals. Statistical results of analysed blood samples revealed that HDL-cholesterol levels of both groups was not statistically significant ($p > 0.256$); while Total cholesterol ($p < 0.009$), LDL-cholesterol ($p < 0.033$), Triglyceride ($p < 0.002$), CK-MB and Cardiac Troponin I ($p < 0.001$) levels were significantly increased in obese individuals when compared with control group. Any correlation was not detected between analysed biochemical parameters and body mass index.

Keywords: Obesity, cardiac markers, blood lipid parameters

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Poster Presentation

Effects of zebularine on life cycle of model organism galleria mellonella L. (Lepidoptera: Pyralidae)

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Abstract

Due to recent developments in epigenetics, DNA methylation has become more intriguing in last decades. DNA methylation is a chemical reaction has a pivotal role in gene expression and development. Alterations in DNA methylation may cause to cancer, developmental disorders and inaccurate cell differantiations. Zebularine is an inhibitory agent of DNA methylation which commonly used as atumor supressive in cancer treatments. Further researchs on model organisms have importance to obtain detailed information about effect of zebularine. Model organism greater wax moth Galleria mellonella was used for determination of effects of zebularine on development. During the study period to rare G. mellonella 25±2°C temperature and 60±5% relative humidity and 12:12 h light:dark conditions was provided. In order to determine the effects on pupation period, emerging period, adult life time, weight and lenght different doses (0,25mg/mL-32mg/mL) of zebularine injected into larvae from left hind leg. As a result of study, zebularine did not affect pupationan demerging periods. Adult life time prolongedas dose increased, except 4mg/mL which cause of short life time. While adult weights were not affected by any doses, 1 mg/mL doses caused to shortness of height. Determination of effects of zebularine on different organisms may contribute to understanding of gene expression mechanisms, cell differantiations, threatments of cancer and developmental disorders.

Keywords: Development, DNA methylation, Galleria mellonella, Zebularine

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Poster Presentation

The determination of cytotoxic effects of N-(3 oxododecanoyl)-L-homoserine lactone belonging to Pseudomonas aeruginosa in a human colorectal adenocarcinoma cell line

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Abstract

The intestinal epithelium plays a very important role to provide barrier integrity. This integrity can be disrupted a number of agents. Bacterial virulence factors are one of these agents. N-(3 oxododecanoyl)-L-homoserine lactone (3-oxo-C12-HSL) quorum sensing signal molecule is involved in the regulation of virulence gene expression in Pseudomonas aeruginosa. There is a few studies about the effects of quorum sensing signaling molecules on epithelial cells. Here, we investigated the cytotoxic effect of 3-oxo-C12-HSL signal molecule on human epithelial colorectal adenocarcinoma DLD-1 cells. For this purpose, DLD-1 cells were grown in RPMI 1640 medium supplemented with 10% heat-inactivated fetal bovine serum, 0.15 mM sodium bicarbonate, and %1 penicillin/streptomycin at 37°C in a humidified incubator with 5% CO2 and 95% air in a humidified atmosphere. The viability of cells treated with a set of concentartions of 3-oxo-C12-HSL (12.5, 25, 50 and 75 µM) was determined by MTT (3-(4,5 dimethylthiazol2yl)-2,5 diphenyl-tetrazolium bromide) methods in vitro. the morphology of cells were observed under an inverted microscope and a light microscope after staining with Giemsa. According to the results of MTT, 3-oxo-C12-HSL was found to be cytotoxic on DLD 1 cells with an IC50 value of 75 µM compared to control cells treated with 0.1 %DMSO as a solvent. The cells lost their epithelial like morphology and showed more rounded smaller shape after 24 hours treatment with 3-oxo-C12-HSL compared with the control cells. Since the tissue specificity is an important parameter in *P. aeruginosa* infections, we suggest that researches might be focused on the cytotoxic activities in a combination with the determination of host-bacterial relationships in DLD-1 cells.

Keywords: *Pseudomonas aeruginosa*, 3-oxo-C12-HSL signal molecule, MTT

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Poster Presentation

Synergistic effect of *Bacillus pumilus* ameliorates cadmium and zinc stress in wheat roots

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Abstract

Plant remains in close interaction with soil microbes. Generally, these microbes are mutualistic and beneficial for plants. Bacterial associations with plants have been well studied and known that communication between interacting partners involves physiological and molecular processes. Bacteria help plants directly by promoting growth via nitrogen fixation, nutrient channelization by solubilizing in absorbable forms, growth hormones production, production of 1- aminocyclopropane, 1- carboxylate (ACC) deaminase, and indirectly by producing siderophores, chitinases, fluorescent pigment molecules, antibiotics, β-1-3-glucanase and sometimes also by some poisonous compounds like cyanide. The effects of 150 µM $CdCl_2$ and 10 mM $ZnSO_4$ on the activities of antioxidant enzymes (superoxide dismutase (SOD), catalase (CAT), peroxidase (POX), ascorbate peroxidase (APX) and glutathione reductase (GR)), proline content (Pro), hydrogen peroxide content (H_2O_2) and lipid peroxidation (TBARS) evaluated in wheat roots (*Triticum aestivum* L.) growing in media with and without an amendment of *Bacillus pumilus* (PGPR) application for 7 days. 150 µM Cd and 10 mM Zn exposure, a significant decrease in activities of SOD, CAT, APX and GR began after the first day of stress in wheat roots. Ψ_{Π} and Pro decreased after both Cd and Zn stresses during the experimental period. Both stress caused an increase in H_2O_2 and TBARS as from the first day of stress. However, in stressed wheat roots, bacteria application resulted an alleviation on antioxidant enzyme activities, Pro, and a decline in H_2O_2 content. It could be concluded that exogenous bacteria may have the application possibility for a future practical trial of stress reduction leading to mitigate heavy metal toxicity and improve the water content and the antioxidant enzyme activities in wheat roots.

Keywords: *Bacillus pumilus*, Cadmium, PGPR, Antioxidant enzymes, *Triticum aestivum* L., Zinc

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Poster Presentation

Oxidative stress in women of severe acne vulgaris

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Abstract

Acne vulgaris is a common dermatological problem in women. Several etiological factors such as genetics, hormonal, ultraviolet radiation, microorganisms, cosmetics and stress are believed to be responsible for acne vulgaris. In our study, we aimed to assess the oxidative status in women with severe acne vulgaris. Malondialdehyde (MDA) is a naturally occurring product of lipid peroxidation after exposure to reactive oxygen species and free radicals and it may be used to evaluate oxidative damage by measuring of serum Thiobarbituric acid reactive substances (TBARS) levels. This study was performed on 92 women, 60 women with severe acne vulgaris and 32 healthy women. The principle was based on the spectrophotometric measurement of the color occurring during the reaction to TBARS with MDA. A portion of serum was mixed with 2mL of a solution containing 15% trichloroacetic acid, 0.38% thiobarbituric acid and 0.25N of hydrochloric acid. The mixture was heated at 100ºC for 30 minutes and, after centrifugation, the absorbance was measured at 532 nm. The total MDA content of the serum samples was determined by the difference in absorbance between test and standard samples using a solution of MDA as standard. The results were expressed as µmol/L. We observed a significant increase in the serum MDA levels in women with severe acne vulgaris as compared to healthy women ($p < 0.05$). In conclusion, this study revealed oxidative mechanisms may play an important role in etiogenesis and progression of the severe acne vulgaris, but there is a need to work more on this.

Keywords: Acne vulgaris, oxidative stress, malondialdehyde

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Poster Presentation

Promoter (-107T/C) polymorphism of paraoxonase 1 (PON1 and its relation to the risk of pseudoexfoliative glaucoma

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Abstract

Pseudoexfoliative glaucoma (PEG) is an ageing-related condition that occurs due to accumulation of pseudoexfoliation material in the anterior chamber of the eye, which blocks the normal functioning of the trabecular meshwork, leading to increased intraocular pressure and damaging the optic nerve. Early recognition and appropriate management of PEG is important in the prevention of glaucoma related blindness. However, the etiology of this disorder has not been clearly understood. Pathogenesis of pseudoexfoliation material formation was suggested to include oxidative stress. Paraoxonase 1 (PON1) is an important anti-oxidant enzyme of the plasma, which can also be found in ocular tissues, as well as in the aqueous humour. Expression level of this enzyme is affected by the promoter region genetic polymorphism -107T/C. The aim of this study was to evaluate the role of PON1 -107T/C (rs705379) single nucleotide polymorphism (SNP) in PEG risk. The study population consisted of 150 PEG patients and 150 control subjects. Blood samples were obtained from Gülhane Education and Research Hospital, Ophthalmology Unit, Ankara, Turkey. Genomic DNAs were isolated from whole blood samples and the genotypes were determined by PCR-RFLP analysis. The frequency of -107C allele frequency was not significantly different between the patient and control groups. C allele frequency was 0.473 in PEG patients and 0.429 in controls (P=0.461). Distribution of genotypes also did not differ significantly and were as follows: TT: 30%, TC: 45.3%, CC: 24.7% in PEG patients; TT: 29.3%, TC: 52.7%, CC: 18% in controls. The results of this study did not show any association between PON1 -107T/C SNP and PEG risk in the studied Turkish population.

Acknowledgment: This study was supported by TUBITAK (315S190)

Keywords: Glaucoma; Polymorphism; PON1; Promoter; Pseudoexfoliation; SNP

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Poster Presentation

Anti-glycation study of hydro-alcohol and aqueous extracts of Moroccan plant species

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Abstract

Inhibition of AGEs and free radicals generated during diabetes represents a major therapeutic target in the prevention and treatment of diabetic complications. *In vitro* study of the anti-glycation and radical scavenging activities of hydro-alcohol and aqueous extracts of Moroccan plant species. Anti-glycation effect of nine plant species used in traditional medicine, has been evaluated after extraction by hot (EAC) or cold (EAF) maceration and by ethanol (EE). Anti-glycation activity performed on BSA-Methylglyoxal system was measured by fluorescence and native electrophoresis. Total phenolic and flavonoid contents were assessed as well. With the exception of *S. indicum,* all the species studied had an average effect. The higher effect was recorded in *Laurus nobilis* and was dose dependent, inhibiting both formations of Amadori products and fluorescent AGEs. HPLC analysis revealed a richness of *L. nobilis* EE in flavonoids, with the presence of quercetin, vanillin and gallic acid. Extracts of *L. sativum, N. sativa, O. europaea* and *R. tinctorum* acted only as inhibitors of the fluorescent AGEs formation. A strong correlation was registered between antioxidant power and phenolic/flavonoid content. In contrast, there was no correlation between antioxidant and anti-glycation power. Phenolic and flavonoid compounds were strongly involved in the observed effect. While, the anti-glycation activity is probably attributed to non-antioxidant compounds.

Keywords: Anti-glycation, antioxidant, polyphenols, water extracts, ethanol extracts

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Poster Presentation

Mechanical characterization of 3D modelled cortical and cancellous bone properties

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Abstract

The structure of bone is anisotropic. Due to that, , there is a mechanical difference in the cortical and cancellous parts of the long bones. In this study, it is aimed to improve the basic parameters that the mechanical properties of bone tissue. Cross sectional dimensions of femur in CT were examined. Based on the mean morphometric properties of the femur longitudinal sections, the cortical thicknesses were determined to be 1.5 mm / 2.4 mm. In the same way, the scaffold is formed with filling rate of cancellous part as 15% and 30%. We created scaffolds using PLA with FDM (Fused Deposit Manufacturing) method. Mechanical tests were carried out with an electromechanical tester . Axial loads were applied at a speed of 10mm / min. A linear increase was observed in thick cortical subtrochanteric scaffolds with the comparison of 1000N - 2000N - 3000N. When the thickness of the cortex is examined alone, it is seen that the thickened cortex in the subtrochanteric region is less displaced than the thin cortex.As a result, we can show that, bone cortex and porosity are important in the mechanical properties of the bone, also the structure of bone varies with the segment of bone. At last but not least, we assume that 3D printers and modelling studies will give a chance to mimic the bone structure in the near future.

Keywords: 3d printing, cortical bone, cancellous bone

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Poster Presentation

Determination of yield and quality of fresh bean under deficit ırrigation in a semiarid climate

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Abstract

In the Konya region, green bean require frequent irrigation due to high evaporation and low precipitation during the growing season. However the drought in recent years at Turkey, especially in Konya plain has been one of the most important abiotic stress factor affecting the green bean production. The ways to reduce yield losses are deficit irrigation practices, to improve and disseminate the varieties that are tolerant to water stress. In this research, the response of two green bean varieties one of which was improved by Horticultural Department of Selcuk University Agricultural Faculty (S3) and a commercial variety existing in Turkey market (Nazende) to different irrigation water levels under drip irrigation has been investigated. The irrigation treatments included four irrigation water level according the amount of water evaporated from Class A Pan within 7 days period and based on 4 different pan coefficient (kcp1= 1.25; kcp2=1.00, kcp3=0.75 and kcp4=0.50). The results showed that while there was significant differences in pod length, pod width, no significant differences were observed in yield, pod per plant among varieties. It was found that significant differences in yield, pod length pod per plant among irrigation levels. The highest yield were obtained in kpc2 treatment with 3762.1 kg ha-1 for S3 and kpc1 treatment with 3525.1 kg ha-1 for Nazende. It was not observed significant differences in yield between kcp1; kcp2, kcp3 treatment for both varieties. It was concluded that the reduction in irrigation water quantity without lowering green bean yield can be expected in Konya.

Acknowledgement: This study is a part of MsC Thesis of Noor Muqdad Hussein Hussein

Keywords: Bean varieties, deficit irrigation, Konya

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Poster Presentation

Comparison of femur supracondylar and subtrochanteric mechanical properties

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Abstract

The structure of bone is anisotropic. Due to that, there is a mechanical difference in the cortical and cancellous parts of the long bones. It is aimed to improve the basic parameters of bone tissue. The purpose of the present study was to compare the structural properties of the fourth-generation composite femur with a different bone segment and cortical thickness/porosity. This study was carried out in order to reveal different mechanical properties in the subtrochanteric and supracondylar region of the femur. For this purpose, an average of eight longitudinal section subtrochanteric and supracondylar region of femur cross-sectional dimensions are taken from computerized tomography.Data processed with Solidworks to create a solid model. The study has been carried out with scaffolds by a cortical thickness of 2.4 / 1.5mm and a filling rate of 15% and 30%. Also, the section thicknesses were taken as 10 mm. Mechanical tests were carried out with an electromechanical tester (Shimadzu). Axial loads were applied at a speed of 10mm / min. At 1000N - 2000N - 3000N, the data were taken simultaneously. The subtrochanteric structures with same cortical thicknesses, it has a greater displacement in the larger porosity. However, no significant difference in smaller porosity. In comparison, under similar loads, sawbones and the scaffolds were found closer to the structure with 1.5mm of cortical thickness and the cancellous part with higher porosity. As a result, cortical thickness and porosity are important in the mechanical properties of the bone, also the structure of bone varies with the segment of bone.

Keywords: Mechanical properties, bone modelling, femur

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Poster Presentation

Analysis of antioxidant and cytotoxic potential of *Platismatia glauca* using human lymphocytes

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Abstract

All multicellular organisms try to protect themselves against harmful microorganisms that can cause disease. Immunity is a general term that describes the reaction and response of an organism to an agent that can cause all kinds of diseases such as bacteria, viruses, fungi. Lymphocytes are important cells of the acquired immune system that are antigen receptors. For this reason, protecting lymphocytes is of great importance for human health. Drugs developed with herbal products are important elements to strengthen the immune system. Lichens that have many medical features also have an important place in this area. Considering all these characteristics, the present study aimed to measure the cytotoxic and antioxidant capacity of methanol extract obtained from *Platismatia glauca* (L.) W.L.Culb. & C.F.Culb. on human lymphocytes. For this aim, 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT), total antioxidant capacity (TAC) and total oxidative status (TOS) analyzes were in the tested cells. Median *inhibitory concentration* (IC50) value was 84.02 mg/L. Cell viability decreased in a concentration-dependent manner. High and low concentration applications of the extract showed lower TAC values. In addition to this, it was reflected in the results of the study in which the extract applications increased TAC in cells statistically ($p < 0.05$) compared to negative control. Moreover, TOS experiments revealed that all applications had statistically different and lower values than positive control. All these results showed that methanol extract of *P. glauca* contained antioxidant capacity enhancing components on lymphocytes.

Keywords: Antioxidant, Cytotoxicity, Lichen, Lymphocyte, MTT

Acknowledgment: We would like to thank Karamanoğlu Mehmetbey University for granting us to conduct this study (BAP/07-M-16).

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Poster Presentation

The effect of hypercholesterolemia on biomarkers of kidney injuries in rabbit kidney tissue

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Abstract

Hypercholesterolemia plays an important role especially in cardiovascular diseases, chronic kidney diseases, obesity, metabolic syndrome and neurodegenerative diseases. As a result of increased LDL levels could trigger oxidative stress, foam cell formation, platelet activation/aggregation, endothelial dysfunction, apoptosis, inflammation and fibrosis. Chronic kidney disease (CKD) develops as a result of damage in the glomerular, tubular, and/or renal vascular structures and this inflammatory process is a chronic duration. Neutrophil gelatinase-associated lipocalin (NGAL), tissue inhibitor of metalloproteinases-2 (TIMP-2), monocyte chemoattractant protein-1 (MCP-1) and liver-type fatty acid binding protein (L-FABP) are emerging as new biomarkers of renal failure. The aim of our work; is to investigate if high cholesterol diet effects new biomarkers of kidney injuries in rabbit model. The first group of rabbits was only fed with diet. The second group was fed with diet containing 2% cholesterol, third group diet and received injections of 50 mg/kg/day of vitamin E intramuscularly and the rabbits in the fourth group were fed with diet containing 2% cholesterol and received injections of 50 mg/kg/day of vitamin E intramuscularly. After 8 weeks, we have measured lipid profile and vitamin E levels in rabbit serum samples by autoanalyzer and HPLC. Also, mRNA expressions of NGAL, TIMP-2, MCP-1 and L-FABP were measured by qPCR. We observed that neither high cholesterol diet nor Vitamin E supplementation had any significant change on mRNA expressions of NGAL, TIMP-2, MCP-1 and L-FABP in kidney tissue. Our other histologic results which were similarly observed glomerulosclerosis and interstitial fibrosis in all groups support this situation.

Keywords: Hypercholesterolemia, Kidney injuries, NGAL, TIMP2

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Poster Presentation

Secondary metabolite studies of wild and micropropagated *Taraxacum officinale* Linn.

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Abstract

In this study, the metabolite contents of the clonally propagated and naturally collected samples of the medicinally important *Taraxacum officinalis* plant were investigated. For the clonal studies, one leaf were isolated from one seedling and used as explants. The leaf explant was cut into 2 cm2 segments and transferred on MS medium supplemented with 2 mg L-1 benzyl amino purine (BAP) and 2 mg L-1 naphthalene acetic acid (NAA). The same procedure was applied every four weeks, and the plants were harvested at the end of the eighth week. For metabolite studies, dried and grounded samples were stirred in 60% of methanol over 3 hours at room temperature. After drying the crude extracts, they were separated into two fractions with C18 reversed-phase column chromatography using 10% and then with 100% of methanol. The metabolites of the samples were analyzed with Q-TOF LC-MS/MS in negative ion mode. Seed germination of *T. officinale* was observed in 10 days. Adventitious shoot regeneration was obtained at the end of the third week. After 8 weeks the shoots were harvested and dried for metabolite studies. More than 10 metabolites were characterized from natural and cloned *T. officinale*. The presence of the same metabolites in both natural and cloned plant extracts showed that the micropropagation of *T. officinale* can be potentially used as a new protocol for the production of beneficial secondary metabolites for pharmaceutical and supplemental food industries.

Keywords: Adventitious shoot, Clonal propagation, Plant growth regulators, Q-TOF LC-MS/MS, *Taraxacum officinale*

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Poster Presentation

Effect of silver nanoparticles in plant tissue culture media on seed germination and seedling growth in black carrot

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Abstract

It has been known since ancient times that silver has an antimicrobial effect on a wide range of microorganisms. Because of this property, there are many studies on the use of silver particles which is called nanoparticle as antimicrobials. The silver in the nano scale exhibits unusual physical, chemical and biological properties. It is an important feature of nanoparticles with excellent functional durability, heat resistance, ease of application, wide application area, environmentally friendly and non-toxic, broad scale antimicrobial spectrum, cost effective production process. Due to the advantages mentioned in recent years, there is growing interest in exploring the use of nano silver in plant tissue culture applications. In this study, the antimicrobial effect of silver nanoparticles was investigated in surface sterilization processes, which is the most important step of plant tissue culture applications. In order to assay the efficiency of nanosilver in sterilizing plant seeds an important medicinal and industrial plant, black carrot seeds were used as explant in this study. In the experiment, black carrot seeds were soaked in 3 different concentrations (0, 10 and 20 ppm) of nano silver with 2 different (5 and 10 min) exposure times, and then were transferred onto the Murashige and Skoog medium. As a result, there was a decrease in contaminations due to the increased concentration of nano silver. It has been determined that nano silver acts as an antimicrobial agent and does not negatively affect germination.

Keywords: Antimicrobial, Black carrot, Germination, Murashige and Skoog, Nano silver

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Poster Presentation

Metal ion modified montmorillonite catalysts on the degradation of selected pesticide

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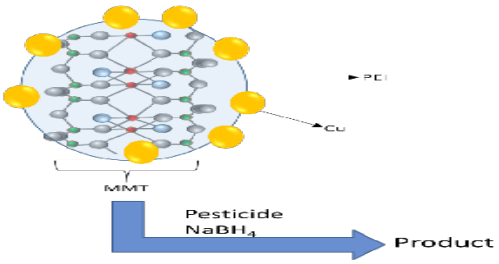
Abstract

Conventional water control approaches is not enough which the detection and removal of pesticides residual and other hazardous organic compounds in drinking water. The exponential growth of intensive agriculture in the Mediterranean region result uncontrolled use of pesticides has caused important pollution of water resources during last 20. century. Therefore, some efficient methods has been developed for the removal of various harmful pesticides from wastewater resources. Some of these methods are physical, chemical and biological methods involving adsorption, oxidation, catalytic degradation, membrane filtration and biological treatment. By means of unique properties (e.g. large specific surface area, small diffusion resistance, higher adsorption capacity, and faster adsorption equilibrium) nanomaterials have used for the removal of various contaminants from wastewater resources. Clay is an important clay mineral which a unique structure related its functional properties. Many studies have reported the application of catalysis on various clays and their modified forms. Montmorillonite has been selected a potential catalysis toward pesticides many times. In the present work, synthesis of a Cu/montmorillonite and its catalytic activity were reported. The prepared material was characterized by X-ray diffraction (XRD), scanning electron microscopy with Energy Dispersive Analysis (SEM–EDS), transmission electron microscopy (TEM) and UV–Visible diffuse reflectance spectrophotometry (UV–Visible). The synthesized metallic nanoparticles was used as catalyst in the degradation of a selected pesticide.



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Poster Presentation

Effect of dried jujube fruit on some properties of cookies

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Abstract

Jujube (*Zizyphus jujuba* Mill.) is a major fruit which is a member of Rhamnaceae family. The fruit is a tasty and highly nutritious. Jujube fruit is suitable enrichment material for food and food products with high mineral and vitamin contents. Also, jujube has significant levels of antioxidant activity and it contains many medicinal properties. In this study, the use of dried jujube fruit (DJF) instead of wheat flour (WF) in cookies was investigated. DJF was used in cookie samples at different five levels (0%, 5%, 10%, 15%, and 20%). Afterwards, physical (diameter, thickness, spread ratio and color values) and sensory (color, taste, odor, appearance and overall acceptability) properties of cookie samples were investigated. The use of DJF led to an increase in diameter and thickness values of the cookie samples. Also, cookie samples containing DJF showed the darkest color. Moreover, DJF affected the scores of sensory properties of cookie. As a result, DJF at a level of 10-15% can be used in cookie formulation for nutritional enrichment.

Keywords: Jujube fruit, cookie, health, nutrition

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Poster Presentation

Combination effect of I-BET762 and sorafenib in MDA-MB-231 breast cancer cell line

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Abstract

Breast cancer is the second considering most common cancer-related mortality in women. I-BET762 is inhibitor of bromodomain and extra terminal protein (BET) which is important in cell proliferation. Sorafenib is a multiple kinase inhibitor used in the treatment of cancer. Aim of this study was to investigate combination effect of I-BET762 and sorafenib on apoptosis in MDA-MB-231 breast cancer cell line. Cell viability was determined by using XTT method after the treatment with I-BET762, sorafenib and combination of both. Total RNA isolations of control and dose groups were conducted using TRIzol Reagent. Expressions of important genes in apoptosis including *CASP3, CASP7, CASP8, CASP9, BCL2, BAX, CYCS, FAS* and *P53* were investigated in control and dose groups by qPCR. According to XTT results, IC50 doses for 48 h of I-BET762 (7.01 μM) and sorafenib (5.62 μM) were determined in MDA-MB-23 using CompuSyn version 1.0 software. Combination index of I-BET762 and sorafenib was calculated 0.62 using 3.09 μM doses for both agents. Combination index <1 has indicated synergistic effect. Combination of I-BET762 and sorafenib significantly increased expression of *CASP7, CASP9* and *BAX* genes with higher fold change compared with other groups. Findings showed that I-BET762 can be effective of the combination with sorafenib in breast cancer therapy.

Keywords: Breast cancer, I-BET762, sorafenib

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Poster Presentation

Creating standard curves with 16S rRNA and denitrification functional gene regions for use in Real-time PCR absolute quantification

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Abstract

Real-time PCR (qPCR) is a commonly used method in microbial community analysis, allowing the quantification of the number of target genes in a community. Recently, the standard-curve technique of absolute quantification is widely used for these types of analysis. Plasmids containing cloned target sequences are commonly used as standards in absolute quantification. The aim of the present study was to calculate the mass of plasmid templates that correspond to copy numbers of target nucleic acid sequences. We amplified to nine different gene regions (16S rRNA 193 and 200 bp, nosZ clad I 1 and 2, nosZ clad II, nirK 165 and 514 bp, nirS 413 and 425 bp) by PCR, after a standart PCR reaction, the products were quickly purified and then ligated with the pGEM-T vector. The ligation mix was then transformed and blue/white screening was used to identify positive transformants. The positive colonies were selected for 9 gene regions and plasmid isolation was performed. PCR was performed with the T7-SP6 primer to confirm whether the clone was transferred, followed by sequence analysis. The all sequences were screened in Blast (NCBI) and the gene regions were confirmed. The 260/280 nanodrop measurements were made for standards, and gene copy numbers were determined and 10-1 – 10-8 serial dilutions were made. All qPCR analyses were performed on a Light Cycler 1.0 (Roche). After each qPCR run, melting curve analysis was performed to verify the presence of the desired amplicon. The study found that the 16S rRNA 200 bp for total bacteria abundant and nosZ clad I 1, nosZ clad II, nirK 165 bp and nirS 413 bp for denitrification functional gene regions could be successfully used primarily in qPCR absolute quantifications.

Acknowledgments: This research has been supported by Ankara University Scientific Research Project Coordination Unit. Project Number: 17L04300004, 2017-2018.

Keywords: qPCR, Standard Curve, Cloning, Copy number, Absolute quantification

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Poster Presentation

High variabiliy of D-loop characteristic of Eurasian perch *Perca fluviatilis* and roach *Rutillus rutilus*

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Abstract

Investigation into population-genetic structure of Eurasian perch *Perca fluviatilis* based on D-loop sequences analysis revealed phylogeographic patterns of this species in the Eastern Baltic region being unique and highly variable in comparison to perch samples collected in Scandinavian countries and some other Western and |Southern parts of the Europe. The obtained results indicate that the colonization of water basins by perch was complex in the eastern part of the Baltic Sea Region due to the past changes of connections between different water basins that forced formation of river systems and lakes during the last deglaciation period. High variability of partial MtDNA sequences was also detected among representatives of the roache (*Rutillus rutilus*) and this suggest application of D-loop as neutral and informative genetic markers for both fish species not only in population genetic analysis and phylogeographic studies but also it could be sencitive enaugh to reflect signals and illustrate long term influence of anthropogenic pollution of freshwater ecosystems

Keywords: *Perca fluviatilis, Rutillus rutilus*, D-loop, genetic variability

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Poster Presentation

New lines ın carcinogenesis: Long non-coding RNAs

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Abstract

Although more than 75% of the human genome is selectively transcribed, only a small portion of the transcripts are converted into final protein products. The rest of transcripts that do not have protein coding capacity are called non-coding RNA (ncRNA). These non-coding RNAs are divided into two major categories as small non-coding RNAs (sncRNA) and long non-coding RNAs (lncRNA), depending on their length. LncRNAs are a group of non-coding RNAs of > 200 nucleotides. They function through molecular and biochemical mechanisms, including -cis and -trans regulation of gene expression, epigenetic modulation of the nucleus and post-transcriptional control in the cytoplasm. LncRNAs may localize to part such as cytoplasm, nucleus, and mitochondria in the cell, and may alter their function depending on where they are localized. They have the ability to interact with various chromatin modifying complexes to modulate the chromatin state. The ability of collect and bind to chromatin to these complexes of lncRNAs can control gene expression by altering epigenetic structure. Recent studies have shown that lncRNAs may be an oncogenic or tumor suppressor function; suggesting that lncRNAs play an important role in the development and progression of cancer. LncRNAs play an important role in many types of cancer, and they may represent potential therapeutic targets because they can be used as biomarkers to predict recurrence and prognosis. In this review, will refer to the general characteristics, localizations, functions of lncRNAs, and cancer-related lncRNAs.

Keywords: Long non-coding RNAs, gene expression, cancer

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Poster Presentation

NBO and DFT/TD-DFT computational analysis of 2-amino-5-chlorobenzoic acid

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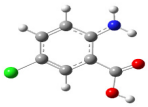
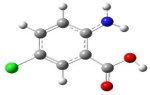
Abstract

Benzoic acid derivatives extremely important component of the vitamin B-complex. They widely found in plants and animals tissues and used in production of pharmaceuticals. Therefore, these molecules deserve to investigate with all details. In this work, conformational geometries of 2-amino-5-Chlorobenzoic acid (2A5ClBA) were studied using density functional theory (DFT) at the B3LYP/6-311++G(d,p) level of theory. First most stable conformer in the ground electronic state was calculated to be the being more stable than the other three conformers by ca.12.3, 29.1 and 38.0 kJ mol^{-1} (Fig. 1). The relative stability of the conformers was explained using the natural bond orbital (NBO) method. The barrier to conformational isomerization in S0 was calculated for all conformers. Energies of the low-energy excited states were calculated using the time-dependent density functional theory (TD-DFT).



$\Delta E(0) = 0.0$ kJmol^{-1}



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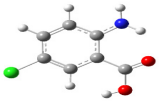
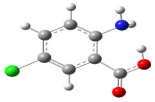


$\Delta E(0) = 29.1$ kJmol^{-1}



$\Delta E(0) = 38.0$ kJmol^{-1}

Figure 1. Conformers of 2A5ClBA with relative energies calculated by using DFT/B3LYP++G(d,p) level of theory.

Acknowledgement: This work was supported by Anadolu University Commission of Scientic Research Project under Grant no. 1705F407.

Keywords: 2-Amino-5-Chlorobenzoic Acid (2A5ClBA), DFT, TD-DFT, NBO

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Poster Presentation

I-BET762 and sunitinib demonstrate synergistic effect on breast cancer cells

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Abstract

Bromodomain and extracellular domain protein family (BET) inhibitors are one of the therapeutic agents used in the inhibition of enzymes and proteins have a role in the epigenetic mechanisms of cancer development. The aim of this study is to investigate the synergistic effect of I-BET762, a BET inhibitor, and sunitinib, a receptor tyrosine kinases inhibitor, on human breast cancer cells. The XTT method was used to assess the cytotoxic effects of I-BET762, sunitinib and combination of them. The combination effects were determined by calculating the combination index (CI) using the CompuSyn Version 1.0 software. This program is based on the median-effect analysis and synergy is defined as CI < 1. The IC50 doses of I-BET762 and sunitinib were found to be 13.94 μM and 36.24 μM, and 7.01 μM and 28.97 μM in MCF-7 and MDA-MB-231 cells for 48 h, respectively. The combination doses of I-BET762 and sunitinib were applied to the cells in ratios of 1:2.5 and 1:4 in MCF-7 and MDA-MB-231 cells, respectively. According to results, I-BET762 and sunitinib illustrated a synergistic effect on breast cancer cells at the combination doses inhibited 50% of cell viability (CI=0.61 in MCF-7; CI=0.49 in MDA-MB-231). Results indicated that I-BET762 and sunitinib can be an effective part of combination strategies in breast cancer.

Keywords: Breast cancer, I-BET762, sunitinib

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Poster Presentation

Gas phase study on molecular structure and EPR of three-furancarboxylic acid by DFT

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Abstract

To obtain molecular structure, conformational analysis of Three-furancarboxylic acid was performed and 5 conformers were determined. Geometry optimizations were performed with Becke's three-parameter hybrid-exchange functional combined with the Lee–Yang–Parr correlation functional (B3LYP) method and the standard 6-311++G(d,p) basis set. The optimizations were performed without any constraints (full optimization). Dipole moment and energy of the lowest energy conformer calculated as 1.469 Debye and -418.725 Hartree respectively. Molecular structure and spectroscopic properties of Three-furancarboxylic acid are an important tool to understand the interactions with other chemicals. The calculated molecular geometry parameters, molecular electrostatic potentials (MEPs), some thermodynamic parameters, were also given for further researchers. Furthermore, for these conformations 23 possible radicals were modelled by using density functional theory (DFT) computations with respect to molecular structure. Electron Paramagnetic Resonance parameters of these model radicals were calculated and then they were compared with the experimental ones.

Keywords: Molecular Modeling, DFT; Conformational Analysis , Radical models, Three-furancarboxylic acid

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Poster Presentation

DFT study on molecule and radical structures of ethyl alcohol

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Abstract

Ethyl alcohol is probably the most widely abused drug and has great impact on the practice of emergency medicine. Besides, ethyl alcohol is the principal type of alcohol found in alcoholic beverages. It is a volatile, flammable and colorless. People are consuming alcohol although alcohol consuming is very dangerous for human being. On account of clinical reports, both the teratogenic and fetotoxic effects were appeared to be related to the amount of alcohol consumed. In this study, conformational analysis of ethyl alcohol was performed by Spartan 08 program. Consequently, two conformers have been obtained. Then geometry optimizations calculations were performed in water. Thanks to geometry optimizations calculations, conformations energies were obtained. And stable conformer was detected. For this conformation, eleven possible radicals were modelled by using density functional theory (DFT) computations with respect to molecular structure. And then Electron Paramagnetic Resonance (EPR) parameters were calculated for these modeled radicals using the DFT/B3LYP method TZVP basis set. EPR parameters which were obtained from liquid phase experiment of ethyl alcohol were taken from literature. g parameters of model radical 8 is 2.00266. Experimental g value is good agreement with model radical 8. However, experimentally hyperfine coupling constants (hfcc) are not exactly agreement with theoretical models. Even so hfcc of model radical 8 are partly matched.

Keywords: DFT; EPR; Molecular modelling, Radical models, Ethyl Alcohol

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Poster Presentation

Relationship with gamma-aminobutyric acid b receptor 2 (gabbr2) gene polymorphism between migraine with aura

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Abstract

Migraine is the reason of the majority of the complaints made by the patients to the doctors. Familial tendency is rather common in terms of migraine. Even though there are lots and lots of theories put forward related to the cause of this disease; its mechanism is still a mystery today. Our study is carried out with the patients who have applied to the Medical Genetics and Neurology polyclinic. 108 patients with migraine with aura and 107 healthy people are included in the study. The migraine with aura is diagnosed according to the 2004 Migraine diagnosis criteria by the International Headache Association. Specially designed primers, real-time PCR method and the genotypes of the samples are examined. As consequence of our study, we have confirmed by both our literature scan and our study that genetic GABA receptor gene polymorphisms take place among the several pathophysiologic mechanisms which can cause migraine such as extreme excitability of the cerebral cortex, cortical depression, sterile neurovascular inflammation of the blood vessels, peripheral and central sensitivity of the trigeminovascular system. The significant outcome that we detect in our study can clinically explain that migraine with aura attacks can be prevented by the benzodiazepines which function as stimulating only GABAA receptors for some individuals. Despite all the theories put forward, there is no certain treatment for migraine. Symptomatically, none of the approaches can be applied for all the patients. In this case, it is not uncommon that most of the patients who undergo a migraine treatment are not content with the treatment and that they abandon the treatment most of the time. Therefore, pharm genetic examinations—in other words personal treatment—can be the future of migraine treatment. The detection of genetic differences among the patients can be an answer for the clinicians to the question; why some medicines are better for some patients and worse for others. Defining the polymorphisms and genetic biomarkers can make great contributions to the understanding of migraine pathophysiology. In parallel to all these, we consider that more extensive studies to be performed with GABA physiology and GABA modulators will shed light to migraine pathogenesis and treatment.

Keywords: Aura, GABA, Genetic, Migraine, Polymorphism

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Poster Presentation

Determination of erythromycin in aqueous media by calixarene coated QCM sensor

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Abstract

Recently, the use of antibiotics is increased. The presence of antibiotics in aqueous media causes water pollution, and also it is harmful for human life and wildlife. Bacteria gain resistance towards antibiotics because of drinking water which is include antibiotic. Erythromycin is an antibiotic which is used for treatment bacterial diseases because it shows ability to prevent to activities of gram-positive and gram-negative bacteria. Most farmers used it to protect animals and agricultural crops from bacteria. Accordingly, it causes antibiotics residues in animal and agricultural products. It can b affected human life directly. Quartz Crystal Microbalance (QCM) is a sensor device which is simple, easy-to-use, and can be used in gaseous and aqueous media. Detection process occurs with transform mass change on quartz surface to electrical signal. There are many studies about polymeric and macromolecules as sensing material. Among macromolecues, calixarene are macrocyclic which have three dimensional structure and unlimited derivatization possibilities. It can be synthesized by condensation of p-tert-butylphenol with formaldehyde under base condition. In this study, a modified QCM sensor by means of coating a calixarene derivative onto QCM surface was used for sensing of erythromycin in aqueous media.

Keywords: Biosensor, Calixarene, Erythromycin, Quartz Crystal Microbalance

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Poster Presentation

Synthesis and characterization of new thiazolidinone derivatives and evaluation of their genotoxic potentials

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Abstract

The thiazolidinone ring system has been widely employed in the investigation of pharmacologically active heterocyclic compounds. These heterocycles display diverse biological activities such as tuberculostatic, anticonvulsant, anti-arthritic, anti-inflammatory, antiviral, antidiabetic, antithyroidal, fungicidal, bactericidal, insecticidal and pesticidal. As a result of these valuable bioactivities, thiazolidinone derivatives are in a close relationship with living organisms and the environment, which rises the public concerns and necessitates preforming safety evaluations before their commercialization. In this regard, the present work was conducted to synthesize and characterize new thiazolidinone derivatives in order to provide new bioactive raw materials for pharmaceutical and medicinal researches. According to results, six compounds (C1-C6) were successfully synthesized and they were characterized as C1: 3-(4-butylphenyl)-2-(phenylimino)-5-(thiophen-2-ylmethylidene)-1,3-thiazolidin-4-one, C2:2-[(4-butylphenyl)imino]-3-phenyl-5-(thiophen-2-ylmethylidene)-1,3-thiazolidin-4-one,C3:2-[(4-chlorophenyl)imino]-3-(4-butylphenyl)-5-(thiophen-2-yl methylidene)-1,3-thiazolidin-4-one,C4:3-(4-chlorophenyl)-2-[(4-butylphenyl)imino]-5-(thiophen-2-yl methylidene)-1,3-thiazolidin-4-one,C5:3-(4-butylphenyl)-2-[(4-methylphenyl)imino]-5-(thiophen-2-yl methylidene)-1,3-thiazolidin-4-one, and C6:2-[(4-butylphenyl)imino]-3-(4-methylphenyl)-5-(thiophen-2-yl methylidene)-1,3-thiazolidin-4-one. Additionally, genotoxic potential of the synthesized products was also evaluated for decreasing the concerns on the public health and environmental safety issues. For this aim, the *Escherichia coli* WP2 bacterial reverse mutation assay was performed with the mutant tester strain *E. coli* WP2uvrA and N-Methyl-N'-nitro-N-nitrosoguanidine was chosen as positive control. According to the results, the synthesized thiazolidinone derivatives did not show any mutagenic effect on the tester strain up to 1 mM/plate. The revertant numbers were insignificant when compared to the control groups. In conclusion, the products of the present study can be considered as genotoxically safe at the tested concentrations and the findings reported here are valuable for further more complicated pharmaceutical studies.

Keywords: *E. coli* WP2 Assay, Genotoxicity, Thizolidinones

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Poster Presentation

Determination of amylase enzyme production potentials of thermophilic bacteria ısolated from hot water springs

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Abstract

Amylases are among the hydrolytic enzymes breaking down starch molecules by performing hydrolysis to smaller products such as dextrin, oligosaccharide and glucose and have a prominent place in biotechnological applications. Although amylase enzymes can be obtained from many sources such as plants, animals and microorganisms, microbial-derived enzymes are preferred more in industrial applications. The main advantages of usage of microorganisms for amylase production would be economically large production capacity and the desirable characteristics of the enzymes in these organisms. In this study, amylase enzyme production potentials of 12 thermophilic bacteria isolated and identified as molecular from hot water springs were determined spectrophotometrically and by using disc diffusion method. As a result of the studies performed, isolates of O12 and A4 demonstrated the highest amylase enzyme activity and there was no amylase enzyme activity observed in O5, O6 and O11 isolates.

Keywords: Amylase, Disc diffusion, Biotecnology, Enzyme

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Poster Presentation

Determination of lipase enzyme production potentials of thermophilic bacteria isolated from hot water springs

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Abstract

Lipase enzymes are triacylglycerol hydrolase enzymes which catalyse the hydrolysis of many water-insoluble free fatty acids and glycerols and catalyse many chemical reactions and have great prominence due to their widespread usage in the industry. Lipases are produced by microorganisms (bacteria and fungi), plants and animals. Moreover, lipases synthesized particularly in microbial organisms are of great industrial importance since they are more tolerant to changes in ambient conditions such as pH, temperature, salt concentration, and because their substrate spesificities are high. Some of these enzymes are widely used in the production of food, detergents, pharmaceuticals and various chemical substances. In this study, lipase enzyme production potentials of 12 thermophilic bacteria isolated and identified as molecular from hot water springs were determined spectrophotometrically and by using disc diffusion method. As a consequence of the studies performed, isolates of O9 and A4 demonstrated the highest lipase enzyme activity and there was no lipase enzyme activity observed in O5, O6 and O11 isolates.

Keywords: Lipase, Disc diffusion, Biotecnology, Enzyme

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Poster Presentation

Effect of Co-substrates on decolorization of reactive yellow-2 by the photosyntetic bacterium Rhodopseudomonas palustris strain 51ATA

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Abstract

Great major of the industrial dyes used in textile industry, have been discharged into the water during the dyeing phase. These dyes and their intermediate yields have affected negatively human health and the environment. Removal of these harmful compounds from waste water, has been one of the crucial problems of the textile industry. In this study, the decolorization of the dye Reactive Yellow-2" mediated glucose, sodium acetate and molasses as co-substrate by *Rhodopseudomonas palustris* ATA51 was investigated. Final dye concentration (100mg/L) were added into the growth media including co-substrates individually. The decolorization of dyes were measured spectrophotometrically (ʎ404) for periods. The findings have shown that the best co-substrate for decolorization was sodium acetate. However, the best medium for the bacterial growth or biomass was sodium acetate medium.

Keywords: Wastewater treatment, textile dye, Reactive yellow-2, *Rhodopseudomonas palustris*

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Poster Presentation

Morphological and molecular characterization of some hypogeous edible fungi of Niğde region

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Abstract

Hypogeous edible fungi are mycorrhizal fungi which have high nutritional and economic value. They are also known as truffles. Morphological characterization among relative species can be misleading and take much time. Thus, molecular studies on truffles take more attention among scientists due to their importance in both biotechnology and plant growth as well as taxonomy in recent years. Molecular characterization of truffles is based on comparison of sequenced Internal Transcribed Spacer (ITS) regions on rDNA. In this study some hypogeous edible fungi were collected from different locations in Niğde,Türkiye. Their morphological and molecular characterization were performed. Samples were first classified due to shape of fruiting body, colour of gleba, shape and number of spors in ascus. After nucleic acid isolation, ITS regions on rDNA were amplified by Polymerase Chain Reaction (PCR) using ITS1 and ITS4 primers. PCR products were sequenced and then data were compared with the database by GeneBank submission. All samples were identified as *Terfezia claveryi* Chatin.

Keywords: Truffle, ITS, *Terfezia claveryi*, mycorrhiza

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Poster Presentation

Preparation of calix[4]arene-ımmobilized biopolymers in the lipase-catalyzed enantioselective reactions

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Abstract

The study describes preparation of new calixarene biopolymers consisting of the immobilization of convenience calixarene derivative onto cellulose and chitosan biopolymers, and the encapsulation of these calixarene biopolymers with *Candida rugosa* lipase within a chemical inert sol–gel supported by polycondensation with tetraethoxysilane and octyltriethoxysilane. The catalytic properties of immobilized lipase were evaluated into model reactions employing the hydrolysis of p-nitrophenylpalmitate and the enantioselective hydrolysis of naproxen methyl esters from racemic prodrugs in aqueous buffer solution/isooctane reaction system. The resolution studies using sol–gel support have observed more improvement in the enantioselectivity of naproxen E=300 with Cel-Calix-E than with encapsulated lipase without calixarene-based materials. Furthermore, the encapsulated lipase (Cel-Calix-E) was still retained about 39%of their conversion ratios after the fifth reuse in the enantioselective reaction.

Keywords: Lipase, Calixarene, Biopolymer, Enantioselectivity, Naproxen

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Poster Presentation

Molecular and agro-morphological diversity assessment of cowpea (*Vigna unguiculata* L.)

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Abstract

Cowpea (*Vigna unguiculata* L.) consider as one of the highly popular pulse crops for thousands of people around the world. High tolerance to drought and salt environment and other harsh condition, its nutritional value, further as annual plant it's considered as good and fast resource for food to human and fodder for animal. In this study, three parameters were used to assess the degree of similarity and differentiation between nineteen cowpea landraces collected from Jordan. First parameter was inter-simple sequence repeat (ISSR) genetic marker, which shows a high degree of polymorphic ratio between these landraces. Also, sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE) analyses of these nineteen landraces showed high degree of differences. Finally, agromorphological traits including number of days to first mature pod, flowering duration, height to first pod and color of the pods, number of node on main stem, leaf color, plant height and number of main branch were studied and support the molecular data.

Keywords: *Vigna unguiculata*, ISSR, SDS-PAGE

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Poster Presentation

Effects of brewing time and decoction on antioxidant capacity, total phenolic and flavonoid contents of yarrow (*Achillea millefolium*)

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Abstract

The objective of this study was to determine the effects of different infusion times and decoction on total phenolic contents, flavonoid content and antioxidant activity of yarrow (*Achillea millefolium*) which are traditionally used as medicinal herbal tea. The herbal teas are widely used as prevention or remedy of diseases because of their high antioxidant activity and valuable compound contents. It is important to determine the appropriate duration of infusion and methods in order to make the best utilization of yarrow. One gram of yarrow was brewed in 50 ml of water at 100 oC for 4, 8, and 16 minutes. Also, another group of samples were boiled for 5 minutes. The antioxidant activity of samples was evaluated by measuring 1,1-diphenyl-2-picrylhydrazyl (DPPH.) and ferric reducing antioxidant power (FRAP). Total phenolic and flavonoid contents were determined by Folin-Ciocalteu and aluminium chloride methods, respectively. Total phenolic content of the extracts ranged from 4,86 to 19,88 mg GAE (Gallic acid) /g DW (dry weight). The extract obtained from boiling had the highest phenolic compound content, flavonoids content and antioxidant activity. The flavonoid contents of the extracts ranged from 1,567 to 7,432 mg QUA (quercetin)/g DW. The activity of DPPH and FRAP were found to be IC50= 149,10 µg /ml and 231,46 µmol TE (Trolox) / g DW in boiling extraction, respectively. The total phenolic content, flavonoid content and antioxidant activity increased significantly with increasing brewing duration.

Keywords: *Achillea millefolium*, DPPH, Phenolic compound, Flavonoid, FRAP, Herbal tea

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Poster Presentation

A napthaldeyde-bearing Bodipy dye in biochemical applications: synthesis, characterization and photophysical properties for practical application

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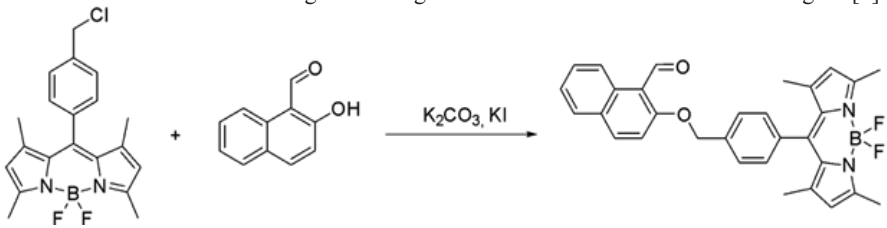
Abstract

4,4-difluoro-4-bora-3a,4a-diaza-s-indacene is more famous as Bodipy. Bodipy dyes can be served as perspective fluorescent sensors and chemosensors in a vast range of biochemical and medical applications. They have high emission intensity, tuneable excitation, longer wavelengths, high quantum yield, sharp absorption profile, high chemical photochemical stability and high solubility in many organic solvents..Nowadays, sensor researchers have taken advantage of the versatility of the synthesis of BODIPY to design sophisticated objects. The combination of these qualities makes BODIPY fluorophore an important tool in a variety of imaging and sensor applications. The design and development of novel fluoroionophores remain an active area of research, and various fluoroionophores exhibiting fluorescence enhancement (“turn-on”) or fluorescence quenching (“turn-off”) for heavy metal ions have been reported [1].By the functionalization the core of Bodipy, can be improved to extend the emission wavelength covering from the visible to the near infrared region [2].



Napthaldeyde-bearing Bodipy derivative was herein synthesized. The compound was characterized by NMR, FT-IR and melting point. The photophysical properties as absorption and emission were investigated by fluorescence spectroscopy and UV-vis spectroscopy. The energy transfer mechanism was examined depending on these photophysical measurements. Moreover, the prepared compound can be derived from aldehyde terminal for new sensor studies. The mechanisms of interaction with biomolecules and accompanying spectral behaviour of Bodipy are of major interest for fundamental science and practical applications. Bodipy’s derived from 8-aryl position were found to have high fluorescent respond upon the addition of amino acid derivatives.

Keywords: Biochemical, Napthaldeyde, Bodipy, synthesis, absorption, emission

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Poster Presentation

Calixarene coated QCM sensor for sensing of paracetamol in aqueous media

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Abstract

Paracetamol is widely used antipyretic and analgesic drug. Generally, it does not present any harmful side effect. But excess paracetamol make cause formation of nephrotoxic metabolites. Using of paracetamol in children who is younger than year, may cause an increasing in rhinoconjunctivitis, asthma and eczema [1]. Biosensors are analytical device which is can be used for biological sensing. In biosensor application, there are various methods such as electrochemical, calorimetric, optical, acoustic [2]. Among these methods, Quartz Crystal Microbalance (QCM) is acoustic sensor system which is used for gaseous and aqueous media. QCM technique is defined as frequency change according to mass change on quartz crystal. In sensor application, macromolecules can be used as sensing material. Among these molecules, calixarenes can be used for sensing of various analyte molecules as a host in host-guest chemistry [3]. In this study, a modified QCM sensor by means of coating a calixarene derivative onto QCM surface was used for sensing of paracetamol in aqueous media.

Keywords: Calixarene, Paracetamol, Quartz Crystal Microbalance, Sensor

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Poster Presentation

Association between EPHX2 gene promoter polymorphisms and preeclampsia

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Abstract

Preeclampsia is a pregnancy condition in which 140 mm Hg or higher systolic or 90 mm Hg or higher diastolic blood pressure and protein in the urine develop after the 20th week of pregnancy. Preeclampsia is a disease that complicates pregnancy, increases the maternal morbidity and mortality and its etiology is not yet understood. Epoxyeicosatrienoicacids (EETs) are arachidonicacid metabolites which have vasodilatator effects. Soluble epoxide hydrolase is encoded by EPHX2 gene and this enzyme catalyses the degradation of EETs to inactive diols or dihydroxy eicosatrienoicacids. Some stidies determined polymorphic sites in EPHX2 gene that cause individual differences in soluble epoxide hydrolase activity. sEH expression and its association with some diseases, such as hypertension and stroke have been investigated in several researches. These studies revealed an influence of EPHX2 gene expression on blood pressure by altering the sEH enzyme activity and/or EET levels. It has been known that promoter mutations can cause alterations in gene expression. Therefore,the aim of this study is to investigate the mutations in the EPHX2 promoter sequence and the association of these mutations with preeklampsia. In conclusion, rs62504268, rs72473923, rs4149232, rs4149235, 73227309, rs55763328, rs142408287, rs71220597 and rs772408666 polymorphisms in promoter region of EPHX2 were associated with preeclampsia. sEH enzyme may play a role in the pathogenesis of preeclampsia by contributing to reduction of the vasodilatator, anti-hypertensive and anti-inflammatory effects of EETs by rapid degradation of these molecules.

Keywords: Solubleepoxidehydrolase, Genetic Polymorphism, Epoxyeicosatrienoicacids

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Poster Presentation

Zoogeographical evaluation on Buprestidae (Coleoptera) biodiversity of Turkey

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Abstract

The family Buprestidae is called as Jewel beetles or metallic wood boring beetles. It is one of the biggest family of order Coleoptera including 2430 species in Palaearctic and 11.500-16.000 species in the World. Buprestidae fauna of Turkey composes of 404 species. The purpose of this study is understanding zoogeographical composition of Buprestidae (Coleoptera) biodiversity of Turkey according to present literature. We divided Palaearctic region to subregions (Southern Europe, Western Europe, Northern Europe and Eastern Europe, Siberia, Middle East, Middle Asia and Far Eastern Asian, North Africa) and compared Turkish Buprestidae fauna with these subregions and other zoogeographical regions of the World. Evaluation of data exhibited that, 90 species are endemic to Turkey. Turkish fauna shares most of species with the Asia part (Middle Asia, the Middle East, Siberia and the Far East) (265 species) of Palaearctic region. In addition, Neotropical Region (2 species), Afrotropical Region (2 species), Nearctic Region (8 species), Australian Region (1 species) shares less species with Turkey. *Agrilus viridis*, which is present in Turkey, distributes in whole Palearctic region. These kind of evaluations could make contributions to species conservation of this family by understanding their distributional patterns, and set off more detailed zoogeographical and phylogeographical studies on this family.

Keywords: Coleoptera, Buprestidae, Zoogeography, Biodiversity, Turkey

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Poster Presentation

Genetic analysis of resistance against fusarium oxysporum F. Sp. cubense

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Abstract

Fusarium wilt, a fungal disease caused by *Fusarium oxysporum* f. sp. cubense (Foc), is one of the most disastrous diseases of banana, causing an estimated annual yield loss of 60 to 90%. Attempts to control Foc using chemical, cultural and biological methods have not been very effective. Host plant resistance found in wild bananas (diploids) is the most appropriate and cost effective intervention to control Foc because it is durable and environmentally friendly . NARO-Uganda and IITA have already successfully utilised wild bananas to improve susceptible triploid *Musa acuminata* 'Matooke'. Conventional breeding in Musa is hampered by many factors, key of which is low number or complete absence of seeds in fruits, size of the plants, the crop's long life cycles, the long breeding cycle (10-12 yrs) coupled with limited knowledge of the genetics of resistance to diseases such as Foc. Understanding genetics of resistance to Foc and application of marker assisted selection (MAS) in breeding will aid in shortening the banana breeding cycle for resistance to Foc in Musa. This study aims at elucidating the genetics of Foc resistance in at least 2 diploid banana populations and mapping Quantitative Trait Loci (QTL) associated with resistance, as a first step towards marker assisted selection for Foc in banana. Preliminary results show that Screening of the 13 parents resulted in identification of parents resistant and susceptible to Foc. Parental combinations of Monyet x Kokopo, and Calcutta 4 x Mshare were chosen as potential parents of the mapping populations. Currently F1 (Monyet x Kokopo) lines are being screened in a pot experiments. Preliminary results of genotyping the Monyet and Kokopo parents and their 13F1's, Mshale and Calcutta4 and their F1's and 45 OP *Malaccensis* plants using 10 IRAP, 49 ISSR and 30 SSR markers revealed important polymorphism that could be used linkage studies to locate Foc QTL.

Keywords: Fusarium wilt, Molecular markers, banana population, genetics

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Poster Presentation

Prediction of swelling and degradation values of pva/starch scaffolds with regression models

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Abstract

Porous scaffolds fabricated by cryogelation method for tissue engineering applications mimic the native extracellular matrix in terms of characteristic properties. In this study, polyvinyl alcohol (PVA)/Starch scaffolds were produced with cryogelation technique. Various PVA/Starch ratios (90:10, 70:30 and 50:50, w:w) and crosslinking methods have been used to prepare cryogels. Chemically crosslinked cryogels were synthesized using glutaraldehyde as a crosslinking agent. For the physically crosslinked cryogels, sodium dodecyl sulfate (SDS) was used during cryogelation as the foaming agent. Swelling and degradation profiles of cryogels were determined. Chemically and physically crosslinked cryogels' swelling and degradation profiles were estimated with appropriate regression method on Statistical Package for the Social Sciences (IBM SPSS statistics 21). The aim of this study is to predict theoretically swelling and degradation values of PVA/Starch scaffolds with different ratios by using swelling and degradation data with appropriate regression models. Curve estimations have been calculated for all possible regression models (Linear, Logarithmic, Inverse, Quadratic, Cubic, Compound, Power, S-Curve, Growth, Exponential, Logistic) and best R-squared (R2) for each model is selected as an estimation model. Hereby, swelling and degradation data of PVA/Starch scaffolds prepared with different ratios and methods can be predicted by using equations for appropriate parameters.

Keywords: Prediction, swelling ratio, degradation rate, regression models, polyvinyl alcohol, starch

Acknowledgement: This work was supported by The Scientific Research Projects Unit of Mersin University (2018-1-TP3-2731).

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Poster Presentation

Physiolocial evaluation of iron deficiency reactions of different commercial stawberry genotypes

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Abstract

Iron deficiency is a serious problem that is widespread in many parts of the world, especially in calcareous soils with high pH in arid and semi-arid regions. While nearly 60% of our country's agricultural land has high lime content and 85% has high pH, almost all of the agricultural land in Central Anatolia has these characteristics. This situation causes iron deficiency chlorosis to occur especially in species susceptible to iron deficiency. The incidence of iron deficiency in plants varies from species to species and even from genotype to genotype. In recent years strawberry has become the most popular fruit crop for Turkish farmers due to its high nutritional value and can adapt to different soil climatic conditions. However, due to the lack of Fe in the soil, crop loss is a factor every year. In this study, 12 varieties of strawberries in the cultivation under greenhouse conditions in Turkey and Their activity against Fe deficiency was tested by Fe and Fe-free fertilization method. Varieties that are effective against Fe deficiency due to thier physiological and morphological mechanisms, were supported by resutls form various physiological and elemental analyzes. As a result, strawberry varieties which are resistant to iron deficiency and yield the most was determined.This study aimed to decrease the usage of Fe fertilizer in strawberry cultivation by determining resistant strawberry varieties.

Keywords: Strawberry, Variety, Iron, Iron Deficiency

Acknowledgement: This study is supported by Selcuk University and the Agrobiotechnology Laboratory

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Poster Presentation

Study the gene expression of blaOXA23 and blaOXA24 genes in Imipenem resistant *Acinetobacter baumannii* isolated from burn wounds

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Abstract

The aim of this study was to identify changes in the gene expression of blaOXA genes in *Acinetobacter baumannii*, isolated from burn wounds, in response to subinhibitory concentrations of Imipenem. The gene expression of blaOXA genes was conducted by using real-time quantitative PCR assay. Ten isolates were chosen which had high resistance to Imipenem with minimum inhibitory concentrations (MICs) from 16 to >256 µg/ml and also contained the two blaOXA genes 23 and 24. It was found that the highest value of gene expression fold was recorded for the gene blaOXA23 (6.96) in the local isolate K5 in contrast with the Imipenem untreated samples, while the highest value of fold for blaOXA24 gene was 3.68. It was obvious there was a direct proportion between MICs values and folds of gene expression, therefore the increase of antibiotic concentration in the growth medium led to increase of gene expression. The results of 16S rRNA gene expression, which was used as a reference gene, demonstrated that this gene was well suited as housekeeping gene because of the minimal variations of expression of this gene whether in Imipenem treated and untreated samples. It was concluded that the resistance of A. baumannii to Imipenem was related to the genes blaOXA23 and blaOXA24 but the main role may be due to blaOXA23. The presence of both genes increases the resistance of this species to Imipenem.

Keywords: *Acinetobacter baumannii*, gene expression, blaOXA

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Poster Presentation

Effects of pesticides on antioxidant defense mechanisms and lipid peroxidation products of insects

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Abstract

Agrochemicals, one of the most important environmental pollutants, cause a variety of toxic effects on living organisms. Antioxidant defense mechanisms have been developed in response to these toxic effects. There are enzymatic and nonenzymatic antioxidant mechanisms against oxidative damage in tissues. Antioxidant enzyme systems; two superoxide dismutase (CuZnSOD and MnSOD), catalase (CAT) and glutathione peroxidase (GPx) enzymes. One of the most important non-enzymatic endogenous antioxidants is glutathione (GSH). In the event that antioxidants are inadequate against free radicals in the organism, oxidative stress occurs. Many insecticides have been shown to cause oxidative damage by suppressing insect antioxidant enzymes. Insecticides; especially lipid peroxidation by acting on unsaturated fatty acids in the cell membrane. Lipid peroxidation begins with the removal of a hydrogen atom from the chain of fatty acids in the membrane structure initiated by free radicals. Lipid peroxidation; It is a chemical chain reaction that damages the cell by changing lipid structure and producing reactive aldehydes. One of the most important indicators of lipid peroxidation by cleavage of polyunsaturated fatty acids is molondialdehyde (MDA), a dialdehyde with three carbons. MDA formed; deformation, ion transport, enzyme activity and aggregation of cell surface components. Lipid peroxidation was measured by measuring the amount of the resulting MDA; the oxidative effect of insecticides on insects can be determined. In addition, measuring the amount of MDA plays an important role in the search for new chemicals that are alternative to insecticides.

Keywords: Malondialdehyde, Oxidative damage, Insecticides, Antioxidant

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Poster Presentation

A new magnetite-cross-linked enzyme aggregates (CLEAs) of peroxidase for decolorization of methylene blue

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Abstract

The peroxidase enzyme catalyze oxidation of many organic compounds, by means of action of H2O2 or organic hydroperoxides. The biocatalysts stability and reusability are the problems of the enzyme bioremediation processes that allow an effective biotransformation of organic contaminant at different reaction conditions. The Fe3O4 magnetic nanoparticles (MNPs) were prepared by coprecipitation method. The two methods which used to immobilize peroxidase on TA-MNPs were simple, economic, and produce magnetic biocatalyst shows an improved stability and keeps the magnetic conduct typical of MNPs, which allows for easy separation and reusability in successive catalytic cycles. The prepared TA-MNPs-CLEAs-starch-peroxidase was characterized by XRD, SEM, VSM, FTIR. In the present work the thermodynamic of the thermos-stable free and immobilized enzyme were also determined and discussed. Lastly reusability and storage stability of the immobilized peroxidase were verified to show the improvement of immobilized peroxidase. The starch was used as a co feeder to preparing TA-MNPs-CLEAs-peroxidase and applied to decolorize the methylene blue. The effect of different parameters such as loading amount of hydrogen peroxide, temperature, pH and dye concentration on the process of de-colorization were investigated. The little amount of TA-MNPs-CLEAs-starch-peroxidase was able to remove a higher content of methylene blue (93.18%) compared to the free enzyme. This suggests that TA-MNPs-CLEAs-starch-peroxidase has the possible of application in environmental biotechnology especially wastewater treatment.

Keywords: Fe3O4 MNPs, Tannic acid, TA-MNPs-CLEAs, Coprecipitation method, Methylene blue, Wastewater treatment

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Poster Presentation

Injectable molecularly imprinted microcryogels for bovine serum albumin delivery

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Abstract

Implantable delivery systems for therapeutic agents including from small drug molecules to hormones have been studied. Due to the risks and trauma of the surgical implantation, minimally invasive procedures have recently become important. Most of the injectable materials are administrated in sol-gel form in which solution form during injecting and gelation after injection. However, solution form can leak into other tissues and may cause lack of proper gelation at tissues. Hence, in this study, molecularly imprinted microcryogels (MIMs) were designed which can flow through a catheter or a small-bore needle in solid form while keeping its mechanical strength. Synthesis, characterization and *in vitro* release profiles of injectable MIMs were described for an application of protein delivery systems. Bovine serum albumin (BSA) was used as a model protein to investigate the release behaviors of the MIMs. A polymerizable derivative of L-tryptophan, i.e., N-methacryloyl-L-tryptophan (MATrp) was synthesized, and MATrp-BSA complex was prepared. BSA imprinted 2-hydroxyethyl methacrylate (HEMA) based MIMs were produced in the presence of MATrp-BSA complex. MIMs were characterized by swelling, surface area and macroporosity measurements and scanning electron microscopy (SEM). *In vitro* release studies were applied to examine the effects of cross-linker ratio and protein loading on release rate of BSA in delivery medium. Kinetic studies were also performed to analyze the release mechanisms of the MIMs.

Keywords: Albumin delivery, Injectable, Microcryogels, Molecular imprinting

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Poster Presentation

Exogenous cysteine alleviates mercury stress by promoting antioxidant defense in maize (*Zea mays* L.) seedlings

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Abstract

Mercury (Hg) is one of the most important environmental pollutant negatively affects plant growth and development. Cysteine plays an important role in plant response to various environmental stress factors. In the present study, the alleviation of Hg stress through exogenous cysteine treatment to maize seedlings were evaluated by using some biochemical and molecular parameters. For this purpose, a hydroponic experiment was set up to investigate the effect of Hg alone (100 µM) and in combination with cysteine (200 µM) on reactive oxygen species, antioxidant enzyme activities and mRNA expression levels of some antioxidant genes in maize seedlings. The results showed that Hg treatment alone significantly increased the malondialdhyde (MDA), hydrogen peroxide (H2O2) and superoxide levels (O2.-) in maize seedlings. After treatment with 200 µM exogenous cysteine combined with 100 µM HgCl2, the concentration of MDA, H2O2, O2.- in seedlings notably decreased and catalase (CAT), glutathione reductase (GR), superoxide dismutase (SOD) and peroxidase (POD) activities in seedlings increased significantly. Furthermore, RT-PCR results showed that the mRNA levels of CAT, GR and SOD genes were up-regulated at Hg+cys treatment groups compared to the Hg treatment alone. The results of the study indicated that exogenous cysteine improved resistance to Hg-stress in maize seedlings by activating antioxidant defense system.

Keywords: Antioxidant, Cysteine, Gene expression, Malondialdhyde, Mercury

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Poster Presentation

Stimuli responsive polymers for biomedical applications

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Abstract

Smart polymers that respond with a property change to a variation in the environmental conditions are an attractive class of materials for advanced applications. A wide variety of responsive polymer materials have been reported that respond to various external parameters, such as temperature, pH, mechanical stress, ionic strength, electric field and so on. These polymers are also variously referred to as "environmentally-sensitive", "smart" or "intelligent" polymers. Over the past 25 years, many interesting biomedical uses have been proposed for stimuli-responsive polymers, including uses in diagnostics, drug delivery, tissue engineering (regenerative medicine), and cell culture. When used as "smart biomaterials" they may be (i) dissolved in or phase separated out of aqueous solutions, (ii) adsorbed on or (iii) chemically grafted onto aqueous-solid interfaces, or the smart polymer molecules may be chemically cross-linked, H-bonded, and/or physically entangled in the form of (iv) hydrogels. This study briefly overviews the field of stimuli-responsive polymers and describes some biomedical applications to date of such "smart" polymers.

Keywords: Stimuli-responsive, biomaterials, polymers, biomedical applications, drug delivery

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Poster Presentation

Determination of the cytotoxic and apoptotic effects of zerumbone on A172 and U87MG human glioblastoma multiforme cell lines

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Abstract

Glioblastoma multiforme (GBM) is a malignant and aggressive primary neuroepithelial brain tumor affecting the central nervous system. Many studies have been done to diagnose and treat the tumor. Current treatment strategies are based on open surgery, chemotherapy, and radiotherapy. Moreover, the studies continue regarding therapeutic approaches for its treatment. The anticancer properties of the zerumbone (ZER) material isolated from the *Zingiber zerumbet* plant have been shown in many studies. In our study, we investigated the cytotoxic effect of ZER in GBM cell lines and the changes in expression levels of some genes related to apoptosis. A172 and U87MG GBM cell lines were cultured and treated with ZER at variable doses. At the end of the study, it was determined the optimum amount of ZER dose for the IC50 value and the duration of application. Significant differences were also found in apoptotic gene expressions. In the light of the results obtained, the study is thought to be the source of future work related to the subject.

Keywords: Glioblastoma multiforme, Zerumbone, Apoptosis

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Poster Presentation

Simple and fast determination of caffeine in soft drinks by a spectrophotometric method

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Abstract

Caffeine is a naturally occurring substance found in leaves, seeds or fruits of plants, contained in many soft drinks and foods, and is a part of a group of compounds known as methylxanthines. Caffeine is widely consumed as coffee itself but caffeine intake is not limited to direct incept from coffee bean, it is also taken from the beverages such as hot beverages or cold soft drinks. The total consumption of caffeine should be restricted since caffeine is a molecule that acts directly on human metabolism. Depending on the frequency and dose of intake, caffeine has both beneficial and adverse effects on consumer. It is known as stimulant that has an impact on central nervous system, is diuretic and affects weight loss by reducing caloric intake. However, as most active substances, higher dosages may present adverse effects as hypertension, arrhythmia, seizure or even death. In this work, a relatively simple and fast method to determine the caffeine amount in soft beverages is reported. Several soft drinks and cold teas found in Turkish market were investigated for their caffeine amount by using UV spectrometry. Sample preparation included extraction of caffeine with dichloromethane, centrifugation and analysis of caffeine in the organic layer. The extraction parameters were optimized for maximum efficiency and the method was validated. The results showed that, the declared amount of caffeine in widely known brands were significantly different form the measured quantity. Consequently, the results of this study may raise awareness among consumers about caffeine intake from commercial beverages.

Keywords: Caffeine, UV spectrophotometry, soft drinks

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Poster Presentation

In vitro genotoxic and antigenotoxic activity of *Melaleuca alternifolia* (tea tree) oil

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Abstract

Tea tree oil is derived from the paper bark *Melaleuca alternifolia*, which is part of the family Myrtaceae, has been used widely as a tropical antiseptic for a long time. Resent investigations have confirmed that tea tree oil exhibits broad-spectrum antimicrobial activity as well as anti-inflammatory and antioxidant property. Despite the progress in characterizing the pharmaceutical properties of tea tree oil, less work has been done on the safety and toxicity of the oil. The present study was designed to investigate the in vitro genotoxic and antigenotoxic activities of the tea tree oil. Tea tree oil was not genotoxic to TA98 tester strain in the *Salmonella*/microsome assay, in the same test, oil displayed antigenotoxic activity, reducing the mutation ratio induced by 4-nitro-o-phenylenediamine, a well-known mutagen. These findings indicate that tea tree oil is acceptable as a safe substance in the development of commercial pharmaceutical products.

Keywords: *M. alternifolia*, Tea tree oil, Genotoxicity, Antigenotoxicity

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Poster Presentation

Radioprotective effects of some flavonoids on the carbonic anhydrase parameter of AUERAC rats irradiated with γ-rays

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Abstract

The flavonoid term comes from the Latin word "flavus", which means yellow. Regardless of their nutritional status and their physiological functions in plants, flavonoids are essential components of human diet. Flavonoids are polyphenolic compounds commonly found as secondary metabolite in many plants and fungi. Flavonoids possesses a therapeutic potential. In our study, the in vivo effects of some flavonoids including naringenin, quercetin, and hesperidin on the activity of the carbonic anhydrase enzyme (CA) in brain and eye tissues of rats were evaluated. The animal experiments and procedures were performed in accordance with national guidelines for the use and care of laboratory animals and approved by Ataturk University's local animal care committee (22.02.2018, 75296309-050.01.04). For this purpose, one healthy group and seven experimental groups (n: 6) were formed (control group, irradiated group, naringenin group, quercetin group, hesperidin group, naringenin + irradiated group, quercetin + irradiated group, hesperidin + irradiated group). The CA activities were measured for each tissue using esterase activity methods. The activity values for each tissue obtained were calculated. All the experimental results were provided in mean EU/mL ± standard deviation (±Stp). There was significant difference between control group and seven experimental groups with regard to the CA enzyme levels of brain and eye tissues. Actually, it was observed that there were significant decreases of enzyme activities in seven experimental groups in brain and eye tissues according to CA level. The present study was provided with the seven experimental groups exposure effects on enzyme inhibitions, and we believe that further research is necessary to conduct in this subject.

Keywords: Carbonic anhydrase, enzyme inhibitions, flavonoids, radioprotective effects

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Poster Presentation

Adipogenic differentiation potential of mesenchymal stem cells under honey bee venom treatment

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Abstract

In this study, we hypothesized that the complex compound,honey bee (*Apis mellifera*) venom can differentiate adipose tissue-derived mesenchymal stem cells (AdMSCs) into adipogenic lineage. To test this hypothesis, firstly, the biological activity of the venom was tested on a rat by subdermal injection. Secondly, AdMSCs were cultured in standard medium conditions and dose-dependent cytotoxicity of the venom was measured with MTT analysis. According to these results, 50 mg/ml venom concentration was determined to be applied on cells in the upcoming experimental stage. Lastly, positive and negative control groups and venom-applied group (experimental groups) were created and the last one was treated with 50 mg/ml venom during 21 days to induce adipogenic differentiation. Then, Oil Red O staining was performed to determine the red-colored neutral lipid vacuoles inside the cells. As expected, the negative control group showed no differentiation and the positive control group formed lipid vacuoles by induction with adipogenic media. Also the venom applied AdMSCs formed lipid vacuoles observed from day four to twenty one, in a more granular form when compared with positive control group. These results support our alternative hypothesis and we suggest that AdMSCs have an adipogenic differentiation potential when treated with bee venom without an adipogenic media.

Keywords: bee venom, AdMSCs, cytotoxicity, adipogenic differentiation

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Poster Presentation

In vitro germination efficiency of gamma irradiated seeds of cotton (*Gossypium hirsutum* L.) cultivars Carmen and NP-Özbek-100

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Abstract

Cotton (*Gossypium hirsutum* L.) is one of the most important natural textile fibre and valuable seed oil crops in the world and therefore it plays an important role in the global economy. Both in our country and in the world, cotton frequently encounter Verticillium wilt symptoms caused by *Verticillium dahliae* Kleb. that limit plant production and the rate of yield. In this regard, major strategies like development of new crop varieties, creating genetic variability through mutation induction etc. are of great importance for sustaining crop production and yield. The use of in vitro culture techniques and radiation-induced mutation can provide a good alternative method to create genetic variability and rapidly multiply the selected mutants. In the present study, the effect of gamma irradiation on germination efficiency and growth parameters was studied to determine convenient radiation dose and to evaluate in vitro selection studies in cotton. For this purpose, the seeds of Carmen and NP-Özbek-100 cultivars were exposed to different doses of 60Co gamma irradiations (0, 100, 200, 300 and 400 Gy). Gamma irradiated and control seeds of two cultivars were cultured on ½ Murashige and Skoog medium. The results indicated that germination rate and seedling growth were significantly affected by radiation dose. As compared to controls, both two cultivars, dose dependent reduction in germination rate was observed in treatments. The critical dose was determined as 300 Gy according to the lowest germination rate in both two cultivars.

Keywords: *Gossypium hirsutum* L., In vitro selection, Gamma irradiation, *Verticillium dahliae* Kleb

Acknowledgment: This work was supported by the Ege University Scientific Research Projects Coordination Unit through project no 16FBE004.

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Poster Presentation

Potential novel protease discovery from lake acıgöl by functional screening approach

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Abstract

Extreme environments have a big potential for discovery of new species, new metabolites, novel enzymes and metabolic pathways of organisms'. In this study, functional based screening approach is used to isolate potential biotechnological novel protease enzymes from Lake Acıgöl where is good location for extreme environments with its high salinity (about 200g/L NaCl). It Sediment samples were used for protease activity screening. For this purpose, 1 g of Lake Sediments were transferred into 9 ml %10 NaCl containing Nutrient Broth. 100 µl diluted of sediment samples were spreaded on the %10 NaCl and %1 Skimmilk containing Nutrient Agar Plates. After the incubation period (at 30 °C for 7 days). Protease activity of the isolates was detected by screening for zones of hydrolysis around colonies. These protease positive isolates were identified by 16s rDNA cloning methodology. The results indicate that AG5-B isolate shows 92% similarity with *Virgibacillus marismortui* strain 123 and AG5-T isolate shows %95 similarity with *Planococcus rifietoensis* strain M8. Also, Both isolates have a big potential to be new species and their proteases are would be novel enzyme.

Keywords: Lake Acıgöl, Functional screening, Protease

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Poster Presentation

The effectiveness of exenatide, sitagliptin and insulin in treatment of diabetic neuropathy: A comparative experimental study in rats

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Abstract

Diabetic peripheral neuropathy affect snearly two-thirds of patients with diabetes and is a major cause of poor quality of life. Exenatide (synthetic exendin-4) is a glucagon-like peptide-1 receptor agonist developed as a first-in-class diabetes therapy. Sitagliptin is an oral anti hyperglycemic drug which is a dipeptidylpeptidase 4 class. In this study, we aimed to compare the effectiveness of exenatide, sitagliptin and insulin in treatment of diabetic neuropathy.Thirty five rats were divided into five groups (n=7 rats) as group I (control), group II (diabetes; singledose 43 mg/kg streptozotocin), group III (sitagliptin; singledose 43 mg/kg streptozotocin and 10 mg/kg sitagliptinper day for 15 days), group IV (exenatide;single dose 43 mg/kg streptozotocin and 0.1 µg/kg exenatide per day for 15 days) and group V (insulin;single dose 43 mg/kg streptozotocin and 3 IU insuline per day for 15 days). Compound motor nevre actionpotential (CMAP) was recorded to monitor the nevre function.Latency and amplitude were measured from CMAP recordings. In the diabetes, sitagliptin and exenatide groups, mean amplitu designificantly reduced with compared to control group. Administration of sitagliptin and exenatide did not improve CMAP amplitude. In the diabetes group mean latency prolonged when compared control group. There was no significant difference between control and other treated groups for latency value. Our findings have shown that streptozotocin-induced diabetes develops axonalanddemyelinating neuropathy. Sitagliptin and exenatide administration did not affect axonal neuropathy while improving demyelinating neuropathy. Insulin administration reduced both axonalanddemyelinating neuropathy.

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Poster Presentation

Utilization of processed yellow pea powder on Turkish noodle

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Abstract

Cooking and fermentation processes improve the nutritional properties of legumes with decreasing antinutritional factors like tripsin inhibitor and phytic acid. In this study cooked and fermented yellow pea powder (FPP) were used in Turkish noodle formulation at 5, 10, 15 and 20% ratio. Some physical (cooking properties and color), chemical (ash, protein, phytic acid, mineral matter, antioxidant activity and phenolic content) and sensory properties of noodles were determined. As the FPP ratio increased in noodle formulation yellowness and cooking loss values of the noodle increased significantly ($p<0.05$). Ash and protein content of the noodle changed between 1.25% and 1.97%, 13.78% and 17.25%, respectively. Phytic acid content of the FPP decreased about 67% ratio compared to raw yellow pea. Ca, Fe, K, Mg, P and Zn values of noodles changed between 45.33-57.97 mg/100g, 2.1-3.13 mg/100g, 236.35-490.89 mg/100g, 36.50-64.43 mg/100g, 277.28-305.89 mg/100g and 1.38-1.90 mg/100g, respectively. Increasing amount of FPP also increased the all mineral content of noodles. FPP usage in noodle formulation did not cause an adverse effect on sensory properties except a slight decline on odor score.

Keywords: Yellow pea, cooking, fermentation, noodle, phytic acid

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Poster Presentation

Microbial production of biopolymers

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Abstract

The use of fossil resources increases carbon dioxide emissions. The use of renewable resources instead of petroleum-derived polymers is necessary to protect the environment and reduces carbon dioxide emissions. Biotechnological methods have been used to polymers production. Lactic acid is produced by fermentation using microorganisms in industrial biotechnology. These polymers are poly(lactic acid) (PLA), polyhydroxyalkanoates (PHAs), fungal chitosan and etc. PLA is synthesised chemically from lactic acid monomer. PHAs and PLA have ester linkages in their backbone. Chitosan is comprise of N-glucosamine monomers. It is a cationic polysaccharides. In this review, production of microbial polymers will be explained. Large amount of producer and commercial name of the microbial polymers will be expressed in this study.

Keywords: Poly(lactic acid), polyhydroxyalkanoates, fungal chitosan, industrial biotechnology

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Poster Presentation

Zoogeographical evaluation of meloidae (coleoptera) biodiversity of Turkey

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Abstract

The focus of this study is to understand zoogeographical composition of Meloidae (Coleoptera) of Turkey. This family is very interested in the World. In particular, Cantharidin, which is secreted by members of this family, is used in many cancer treatments. Species of Meloidae can be recognized by the following morphological characters: narrow and elongate body; soft and flexible elytra; narrower pronotum than head and elytra. According to the literature, Meloidae family is represented by 177 species in Turkey, 3.000 species in the World. As a result of zoogeographical evaluations of Meloidae species by dividing Palaearctic region to subregions (Southern Europe, Western Europe, Northern Europe, Eastern Europe, Siberia, Middle East, Middle Asia, Far Eastern Asia and North Africa) and comparing Turkish Meloidae fauna with these subregions, it is evident that 30 species and 1 subspecies are endemic to Turkey. Turkish fauna shares most of species with Asia region (Siberia, Middle East, Middle Asia, Far Eastern Asian) (119 species). As a result, *Meloe violaceus, M. brevicollis* and *Apalus bimaculatus* species are distributed all over the Palaearctic region. These assessments could make contribution to this family's conservation and trigger more detailed zoogeographical and phylogeographical studies on this family.

Keywords: Coleoptera, Meloidae, Zoogeography, Biodiversity, Turkey

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Poster Presentation

In vitro regeneration techniques in the grass pea (*Lathyrus sativus* L.) plant

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Abstract

The Lathyrus genus is in the legumes family with annual or perennial species number of 160. There are 58 species naturally grown in our country, 18 of them are endemic. In our region, 8 species were identified, 2 of them were endemic. In the world, Lathyrus species are evaluated in the animal feed as green grass, hay and grain feed, fertilization of soil as a green manure plant and human nutrition as food grain legume plant. The cultivation of Lathyrus species are very rare in our country and are generally used in animal feeding and in small quantities in human nutrition. Grass pea (*Lathyrus sativus* L.) plant is the most used species in the world and in our country because it is resistant to adverse soil conditions, drought and flooding. Various tissue culture methods are used to develop and reproduce this species. Plant tissue culture is being applied both in the development of new varieties and genetic changes in existing varieties, and in the production of species which are difficult to reproduce and protect of the disappearing species. The basic system used in plant tissue culture processes and genetic improvements is plant regeneration. In this review, some studies related to the in vitro regeneration techniques of the grass pea plants have been put together and the techniques used in regeneration have been evaluated.

Keywords: Grass pea, *Lathyrus sativus*, in vitro, regeneration techniques

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Poster Presentation

Green synthesis of the Carob modified silver nanoparticles and investigation of its catalytic activity

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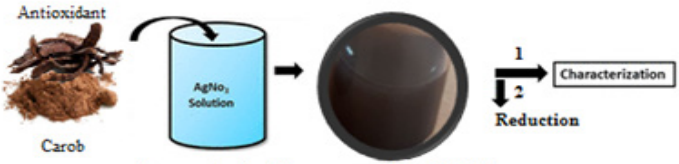
Abstract

Carob modified silver nanoparticles (Crb-AgNPs) are synthesized by chemical reduction from silver nitrate and plant extracts of Carob plant. Silver ions have been normally used in catalytic applications for years and silver particles altered with nano technological methods offers new possibilities. Dyes are the major effluents from various industries such as paper, plastic, leather, food, and textiles that cause significant pollution. There are several methods in the literature such as chemical reduction, catalytic degradation, adsorption and coagulation for the safe disposal of these compound. Among them, the chemical reduction of organic molecules using a strong reducing agent in the presence of noble metals such as Pt, Au, Ag and Cu is one of the famous removal methods in this field. AgNPs are synthetized successfully by using plant extract of carob (Crb-AgNPs). The extract from the carob acts as a reducing and stabilizing agent for the AgNP's and UV analysis shows strong plasmon resonance between 420 and 480 nm. The Crb-AgNPs obtained are characterized by ultraviolet-visible (UV–visible) spectrometer, transmission electron microscopy (TEM), X-ray diffraction (XRD) and Fourier transform infrared spectroscopy (FTIR). The catalytic performance of the Crb-AgNPs was examined for the degradation of Rhodamine B (RhB) in aqueous medium at room temperature using sodium borohydride (NaBH4) as the source of hydrogen, which indicated that the composite had an excellent catalytic activity.



Green synthesis of silver nanoparticles (AgNPs)

Keywords: Rhodamine B, catalytic degradation, cinnamon, silver nanoparticle

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Poster Presentation

Preparation and characterization of antioxidant nanoparticles for rhodamine B degradation

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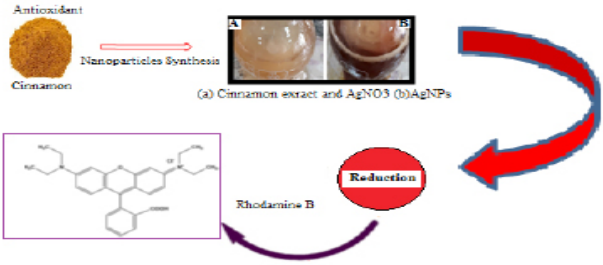
Abstract

In this study, we developed cinnamon/silver nanoparticles (Cnm-AgNPs) and evaluated their potential to be degradation of Rhodamine B (RhB) dye. Toxic chemicals are used in several of the processes for production of nanoparticles, either in the form of reducing agents to reduce various metal salts to their corresponding nanoparticles, or as stabilizing agents to prevent agglomeration of nanoparticles. These compounds are highly dangerous to organisms and to the environment, and due care must be exercised in their proper handling and disposal of toxic chemicals. Various herbs and plant sources occlude powerful antioxidants that are present as phytochemical constituents in seeds, stems, fruits and leaves. These naturally occurring antioxidants have existed in the human food chain for thousands of years and are known to be non-toxic to living organisms and to the environment. The synthesis of metallic nanoparticle using plant extracts as the reducing agents is one of the most widely used green methods. For example, cinnamon was used to produce silver nanoparticles and the synthesized nanoparticles were found to have superior catalytic property to organic molecules degradation. In this study, using cinnamon extract at room temperature (25oC) characterized using spectroscopic techniques and the potential of Cnm-AgNPs with regard to the catalytic degradation of a organic dye (e.g., RhB) was evaluated in the presence of NaBH4. The prepared Cnm-AgNPs was characterized using Fourier transfer infrared spectroscopy (FT-IR), transmission electron microscopy (TEM), and Scanning electron microscopy (SEM-EDX). The synthesized nanoparticles have been successfully applied as a catalyst in the degradation of RhB by NaBH4.



Keywords: Rhodamine B, catalytic degradation, cinnamon, silver nanoparticle

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Poster Presentation

Development of transcriptome based SSR marker in hazelnut

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Abstract

Our country, which is the biggest hazelnut producer in the world, needs to increase both the breeding and molecular studies on hazelnut plants. DNA markers provide the most important contribution to the development of abiotic and biotic stress resistant genotypes. Additionally, they are valuable tool for protection of the genetic resources. SSR markers can be developed by sequencing of both genomic DNA and mRNA. However, the development of genomic DNA based SSR marker by construction of library is time consuming, costly and labor-intensive. One of the most important advantages of SSR markers generated from transcripts obtained from RNA-Seq data is that they are successfully applied to various genotype in a very short time. There are a few genomic studies on hazelnut in our country. In present study, SSR primer pairs have been developed from hazelnut transcriptome data by using MISA software (http://pgrc.ipk-gatersleben.de/misa/). During the development of SSR markers, SSRs of 1-6 nucleotide length were considered for analysis. After analysis of available SSRs, their distribution and frequency were determined. The two nucleotides repeat motifs were the most common (12.932; 50.9%) SSR patterns followed by single repeats (6.027; 20.7%). Three, four, five, and six nucleotides repeat motifs were fewer than previous ones. The developed SSR markers were analyzed by the Genome-wide Microsatellite Analyzing Tool Package (GMATA) program.

Keywords: Hazelnut, Transcriptome, SSR marker, Sequencing

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Poster Presentation

Use of lavender (*Lavendula officinalis*) flowers for protection of honeycombs from greater wax moth (*Galleria mellonella*) damage

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Abstract

One of the most important pests in honey bee breeding is the greater wax moth. The greater wax moth larvae cause great damage to stocked, pollen and embossed honeycomb and give economic damages to the beekeepers. The majority of these chemicals used to protect against this pest interact with honeycomb structure. In order to avoid the effects of chemicals, stock honeycombs must be stored and stored at +4 ^{0}C. However, other methods are needed since each beekeepers has no chance of storing honeycomb in cold temperature. One of these methods is the use of lavender (*Lavendula officinalis*) flower during the storage of stock honeycombs. Lavender is a fragrant plant with a length of about 1 meter that opens in summer. Lavender flower contains tannins, alkaloids, glycosides and significant amounts of volatile fatty acids The aim of the study was to protect honeycombs from greater wax moth by use of dried lavender flowers. Thus, 300 stock honey combs inhabited by honey bees (*Apis mellifera* L.) which not exposed to any chemicals were stored with dried lavender flowers in the spring of 2016. The result of the study showed that stock honeycombs stored in the spring of 2017 were only affected by 10% from greater wAX moth and 90% of the stock honeycombs were usable.

Keywords: Honey bee, greater wax moth, Lavender, Stock, Honeycomb

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Poster Presentation

Potential use of different mushroom species to ıncrease nutritional value of wheat straw

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Abstrac

In the feeding of ruminant animals, roughage is important both in rumen functions and the performance of ruminant animals. In our country, wheat straws are widely used as rough feed. According to the National Research Council (NRC), wheat straws contain 3% crude protein, 1.5 mcal/kg metabolizable energy, 43% crude fiber, 58% acid detergent fibre (ADF) and 81% neutral detergent fibre (NDF). However, the nutritional value of he wheat straw is very low and it is only possible to get rumen conditions in ruminant animals. For this reason, studies based on increasing the nutritional value of wheat straw are of great importance. It was indicated that oyster mushroom (*Pleurotus ostreatus*) inoculated to wheat, rice and corn straw at different levels, decreased the cellulose, ADF, NDF and lignin contents of the straw, but increased the crude protein level and digestibility of straw at the end of the incubation (21, 28 and 35 days). In the other study conducted on wheat straw, in vitro digestibility of straw was observed to increase with the use of *Phlebia brevispora* type of mushroom. Pleuretus florida (oyster mushroom) inoculation also reduced cellulose content of straw by 20%, and increased crude protein content and digestibility of straw by 20%. Therefore, in this review, we will investigate the potential use of different types of mushroom in order to increase the nutritional value of wheat straw, which is widely used to meet the ruminant feed requirements of ruminant animals in our country.

Keywords: Wheat straw, Animal nutrition, Mushroom use

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Poster Presentation

Comparison of wheat germ stabilized by termal and non-termal processes

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Abstract

Wheat germ is the component of wheat kernel with the highest nutritional value. In spite of this, wheat germ is one of the main by-products of milling industries. Wheat germ is rich in polyunsaturated fatty acids and decreases storage quality of whole flour due to oxidation/rancidity reactions coming from its high enzyme activity. For this reason, the human consumption of wheat germ is very limited, since the major part of it is used for other purposes and especially animal feeding. The aim of this study was to investigate the stabilization of wheat germ and improve storage stability. In the experiments related with wheat germ storage stability, wheat germs was treated with five different stabilization applications (dry heating, autoclaving, microwave, infrared and Ultraviolet-C), stored in three different conditions (refrigerator (4-6 ºC), room temperature (24±1 ºC) and vacuum packaging). Stabilization tests were conducted at 0th, 90th, and 180th days of storage. As parameters, mold-yeast growth, peroxide value, para-anisidine value, tocopherol (α, β and γ) contents of the stabilizated wheat germ were measured. As a result of this study, all stabilization processes had an improving effect on storage stability of wheat germ. Especially, vacuum-packed treatment had positive effecton storage stability. According to the results obtained, autoclave as a thermal treatment and ultraviolet-C process as a non-thermal treatment were the stabilization methods that were determined to produce effective results.

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Keywords: Wheat germ, stabilization, autoclave, microwave, infrared, ultraviolet-C

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Poster Presentation

Use of whole wheat flour in traditional tarhana production

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Abstract

Tarhana is our a fermented product that is more consumed than other cereal products and, even so in different formulations, is generally produced using wheat flour, yoghurt, yeast, various vegetables and spices. The products that are used to enrich as are required to be appropriate for natural structure of tarhana as well as to play a role on development of nutritional and functional properties of final product. In this project, it is aimed to produce a cereal based traditional food having better nutritional properties. The main outlines of the project are composed of investigation on facilities to use whole wheat flour in place of rafined wheat flour that is readily used in traditional tarhana production the project. For this purpose, the usage of whole wheat flour (WWF) to improve tarhana samples chemical, nutritional and sensorial properties was studied. For this purpose, Bezostaja-1 wheat samples were milled on a laboratory type hammer mill and WWF was obtained. The WWF samples were used as replacement of wheat flour in five different rations (0, 25, 50, 75 ve and 100 %) for the production of tarhana samples. Some physical, chemical and sensory properties of tarhana samples were investigated. L* and b* values of the tarhana samples decreased while a* values increased when rafined wheat flour was repleaced by WWF. In terms of chemical properties, ash, crude protein, crude fat, phytic acid and total phenolic contents increased with increasing amount of WWF. In conclusion, it was determined that (a) can be used a raw material in tarhana production due to its functional, nutritional and chemical properties, (b) WWF may be an alternative in tarhana production except antinutritional properties, (c) in order to sensorial properties in flour blends 50% rafined wheat flour: 50% WWF ratio is convenient.

Keywords: Whole wheat flour, tarhana, health, nutrition

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Poster Presentation

Molecular characterization of *Listeria monocytogenes* isolated from chicken samples

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Abstract

Nowadays, there would be considerable consumption area of meat and meat products since they contain essential amino acids, oils, carbohydrates, vitamins and minerals, rich nutrient, high water activity, as well as pH value allowing many microorganisms to grow including pathogenic microorganisms. Especially in recent times, the rapid development observed in the chicken industry is conspicuous. This situation is related to less fat content, higher protein ratio and easier digestion when it is compared to other meats. Pathogenic bacteria are also present in chicken meat which is very rich as microflora. The most common species is *L. monocytogenes*. It is possible to observe *L. monocytogenes* in uncooked animal-based nutrients, seafood, meat and meat products, cooked chicken and uncooked vegetables and fruits. In this study, *Listeria monocytogenes* species were isolated from the chicken samples that would be ready-to-eat and these isolates were phenotypically and genotypically characterised. This species was identified as a result of conventional tests in 5 out of 150 chickens studied. Afterwards, the results were verified by 16S rRNA PCR analysis and other genotypic methods. GTG5, ERIC and BOX- PCR methods were then used to profile isolates at the genotypic level. It was determined that ERIC PCR was very successful method for genotypic profiling of this species.

Keywords: *Listeria monocytogenes*, Chicken, 16S rRNA- PCR, ERIC PCR

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Poster Presentation

A thermostable α-amylase for raw starch degradation and apple juice clarification by using thermophilic *Anoxybacillus* sp. SO-6

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Abstract

A thermophilic *Anoxybacillus* sp. SO-6 was isolated from a thermal spring water from Afyonkarahisar, Turkey. The isolate was identified after morphologic, biochemical, physiological and 16S rRNA analyzes. Its Accesion number was KJ434783. *Anoxybacillus* sp. SO-6 was produced thermostable α-amylase. Some factors such as temperature, pH, temperature and pH stability, detergents, surfactants, various starches and metal ions on influence of partially purified enzyme characterization were studied for its characterization. The optimum temperature and pH were 85 °C and 6.0, respectively. TLC analysis was also tested. The raw starch of wheat and corn were invastigated as substrates to determine the raw-starch-degrading efficiencies of partially purified α-amylase of *Bacillus* sp. SO-B6 for 3 h. It exhibited good degradation range towards to raw starch of corn and wheat. The hydrolysing yield of 1% corn and wheat starch grains were found as 34.3% and 40.8% at 4 h, respectively. Thermostable α-amylase hydrolyzed the 79% and 91% of soluble starch content in red and green apple juice at 85 °C in 3 h.

Keywords: Thermophilic bacteria, α-amylase, raw starch, apple juice clarification

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Poster Presentation

Synthesis and investigation of anticarcinogenic effects of fluorene based asymmetrical Schiff base

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Abstract

Recently, due to the increasing use of the coordination compound in analytical, bioinorganic, pigment and medicinal chemistry, many researchers have studied these topics, especially, the important role of the complexes of Schiff bases in coordination chemistry. Schiff bases usually synthesized by the condensation of primary amines and active carbonyl groups. Asymmetrical ligands are Schiff bases obtained by stepwise condensation of the appropriate diamine with two different carbonyl compounds. Asymmetrical Schiff base ligands have many advantages over their symmetrical counterparts in the composition, geometry, and properties of transition metal complexes. Asymmetrical Schiff bases may also serve as models of relevance for biologically important species and catalysts for various organic transformations and their magnetic and optical properties are promising for optoelectronic applications and the design of biosensors. Schiff base complexes have suitable biomimetic properties that can mimic the structural features of active sites. Among different types of pharmacologically active Schiff bases, the anticancer agents are one of the hottest topics of research worldwide. Schiff bases have capability of binding DNA and proteins, which resulted with cytotoxicity on tumor cells. In this study, the fluorescent unsymmetrical Schiff base was obtained by the condensation of 1,2-phenylenediamine, 2-hydroxy-1-napthaldehyde and fluorene-2-carboxaldehyde. Synthesized this compound was identified by using spectroscopic methods (FTIR, ^{1}H NMR). Fluorescence properties of this compound was examined towards different metal cations. The anticarcinogenic effect of this compound was also investigated.

Keywords: Condensation, Schiff Base, Fluorescent, Anticarcinogenic

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Poster Presentation

Influence of refinery steps on the content of sterols in pomegranate seed oil

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Abstract

Sterols, which are steroidal alcohols, are found in animal and vegetable oils and, are sterile cyclic compounds containing a group of alcohols with a side chain of 8-10 carbons. The pomegranate seed oil contained a large amount of plant sterols (phytosterols). The sterols, which form an important part of the non-saponified parts of the oils, have as inhibiting the development of colon cancer, lowering the level of lipid in the side, being used as anti-polymerizing agents for frying oils, emulsifying agents for cosmetic producers and mostly use as prodrugs and intermediates for the production of steroid hormone drugs. Refining is the removal of impurities in crude oil without altering the natural properties of the oil and without altering its structure. The refining process is the most important factor in determining the quality and economic performance of oils. Additional refinements are applied and costs are increased to improve the qualities of oils obtained by poor refining processes. Because the parameters in the refining process are not correctly determined, there is observed a continuous decrease in the content of bioactive components in the oil during refining. The aim of this study was to investigate the influence of refinery steps on the content of sterols in pomegranate seed oil by GC-MS. Obtained results showed that sterol content discreased depending on refining conditions such as temperature, adsorbent, vacuum and time in pomegranate seed oil refining process. The refining step was found to be the bleaching step with the greatest loss of sterol.

Keywords: Pomegranate seed oil, refining, sterol

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Poster Presentation

Green synthesis of luminescent nitrogen doped graphene quantum dots and their application as an anti-microbial, DNA binding, DNA cleavage and cation sensor agent

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Abstract

Graphene quantum dots (GQDs), possess smaller lateral size and high biocompatibility, thus having potential in biomedical applications. In in this study, graphene quantum dots (GQDs) containing N atoms were synthesized using hydrothermal reaction of citric acid and polyethylenediamine (PEI). Compound was characterized by UV-Vis, FT-IR spectroscopy, transmission electronmicroscopy (TEM) and thermogravimetric analysis. The antimicrobial activity of the compound was investigated for its minimum inhibitory concentration (MIC) to bacteria and yeast cultures. UV-Vis spectroscopy studies of the interactions between the GQDs and calf thymus DNA (CT-DNA) showed that the compound interacts with CT-DNA via electrostatic binding. DNA cleavage study showed that the GQDs cleaved DNA without any external agents. Moreover, the compound was investigated for its ability selectively sense biologically active metal ions. Support from Canakkale Onsekiz Mart University, The Scientific Research Commission (ÇOMÜ-FBA: 2018-1291) is greatly acknowledged.

Keywords: Graphene quantum dots (GQDs), DNA binding, DNA cleavage, Citric acid, Hydrothermal reaction

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Poster Presentation

Zoogeographical evaluation on coccinellidae (coleoptera) biodiversity of Turkey

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Abstract

The family Coccinellidae is called as Lady beetles or Ladybugs. This family is one of the biggest family of order Coleoptera and has 1208 species in Palaearctic and 6.000 species in the World. Coccinellidae fauna of Turkey includes 110 species. Coccinellidae family is an important insect group because of its economic point of view as a biological control agent and because of its diversity and adaptability in different habitats. Most of the species can be identified by the compact, rounded, body form with convex dorsum and flattened venter. The main of this study is understanding zoogeographical composition of Coccinellidae (Coleoptera) biodiversity of Turkey due to present literature. We divided Palaearctic region to subregions (Southern Europe, Western Europe, Northern Europe, Eastern Europe, Siberia, the Middle East, Middle Asia, the Far Eastern Asian and North Africa) and compared Turkish Coccinellidae fauna with these subregions and other zoogeographical regions of the World. Evaluation of data showed that, 13 species are endemic for Turkey. Turkish fauna shares most of species with the European part (Southern, Western, Northern and Eastern Europe) (87 species) of Palaearctic region. In addition to that, Afrotropical (15 species), Australian (3 species), Nearctic (15 species), Neotropical (3 species), Oriental (7 species) Regions also shares some species with Turkey. *Coccinella septempuncta, Adalia bipunctata* and *Hippodamia variegata* species have been identified as the most widespread species in the world. Zoogeographical evaluations may have contributions on species conservation and set off more detailed zoogeographical and phylogeographical studies on this family by understanding their distributional patterns.

Keywords: Coleoptera, Coccinellidae, Zoogeography, Biodiversity, Turkey

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Poster Presentation

Development of high performance liquid chromatography method for determination of malondialdehyde in human plasma samples

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Abstract

MDA is indicated as a biochemical marker of oxidative stress. The nonspecific reactivity of TBA clearly renders colorimetric TBARS method unsuitable for determination of MDA in body fluids. Recent years, development of HPLC method was continued by human plasma MDA analysis. Therefore, in this study aimed to modify a new high performance lipid chromatography (HPLC) method for human plasma MDA determination. In present study, plasma MDA assays were performed by Shimadzu Shim-Pack SBC-ODS; 2.5 mm X 15 cm column (Japan) in the Agilent HPLC 1200 Series (Germany) by modifying the methods of Hong et al. and of Seljeskog et al. for the measurement of total plasma TBA-MDA levels. Plasma MDA levels were analyzed by HPLC using fluoresans dedectors. Floresan detector wavelengths were set at 530 nm (excitation) and 560 nm (emission). Statistical analysis was performed with SPSS v16. P values of <0.05 were considered to indicate statistical significance. The MDA linear range was 0.032–20.0 μM (R2 = 0.9955 Intra-day Variation Coefficient (CV) values of MDA for 20 μM was 4,41%. Recovery values for 20 μM, 10 μM and 5 μM were 101,5 %; 94,56%; 99,84% respectively. Sample property factors such as lipemic, hemolysis, icteric samples, of freeze-thraw effects were examined. The interference of the hemolysis on MDA level was higher. Therefore, we concluded not to analyze MDA levels in hemolysis samples. However, the HPLC method is easy in applying procedure and has linearity in high concentrations, acceptable recovery levels. These findings show that HPLC method has an advantageous over the colorimetric method. This study was supported by the Selcuk University Research Foundation under the project number of 15202021a as a thesis of master degree.

Keywords: Malondialdeyde, HPLC, lipid peroxidation

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Poster Presentation

The molecular mechanism of a new phytotherapeutic agent ın cancer biology: *Inula viscosa*

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Abstract

Cancer treatment has attracted the interest of researchers because of their significant impact on health. For the discovery of new therapeutic agents, plants are regarded as one of the main sources of biologically active substances. Today, about 60% of the drugs used for cancer treatment are isolated from natural products. *Inula viscosa* is a perennial aromatic plant that grows in the natural habitat in the Mediterranean Sea and gives a strong smell. In addition to the treatment of gastroduodenal disorders, it is used in the treatment of lung diseases and diabetes in traditional medicine. It is also widely used due to its anti-inflammatory, anthelmintic, antipeptic, antiseptic and antiphlogistic activities. *I. viscosa* contains more than fourteen natural compounds and in many studies strong antiproliferative and antimicrobial activities of these compounds have been reported. Recent studies have highlighted the anti-carcinogenic and antitumoral effects of I. viscosa. *I. viscosa* has shown significant cytotoxic effects in cancer cell lines through inhibition of proliferation and induction of caspase-dependent apoptosis and is involved in a mitochondrial mediated signal pathway. In addition, Inula extract has been shown to induce telomerase shortening which can inhibit telomerase activity, as well as induce apoptosis by inducing an increase in annexin-V labeling and caspase-3 activity. In a conclusion, the Inula extract has an anti-carcinogenic effect and this effect is associated with the induction of apoptosis. However, more research is needed on plant extracts and in vivo cytotoxic effects and mechanisms.

Keywords: *Inula viscosa,* phytotherapeutic agent, antitumoral, anticarcinogenic

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Poster Presentation

Molecular ecology studies on freshwater turtle; *Trionyx triunguis*

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Abstract

Nile Softshell Turtle, *Trionyx triunguis* is distributed throughout Nambiya from Mauritania and Somalia and the Mediterranean coast in Egypt and Turkey. According to IUCN (International World Conservation Union) criteria, species are in the "Critically Endangered" till 2006. However, the 2006 IUCN Red List was included in the category "Low Risk". The Mediterranean subpopulation has been listed as ''Critically Endangered'' since 1996. It is suggested that the Mediterranean subpopulation should be included within the "Vulnerable" status of the last population size study. Molecular ecological studies have become one of the most important tools for conservation. Genome-specific analyzes of ecological aspects for conservation biology can help to understand why some populations develop at the most basic level while others are less. Until now, studies on *Trionyx triunguis* genetics have been limited to basic levels of cytochrome b, ND4 and microsatellites. With the Next Generation Sequencing methods that we can reach high and comprehensive data, more individuals and locus data can be accessed with the same cost and effort as previous ones. The methods used in Next Generation Sequencing are designed to take advantage of the large amount of data generated by genomic studies to understand more deeply the important questions in molecular ecology.

Keywords: Molecular Ecology, *Trionyx triunguis*, Next Generation Sequencing

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Poster Presentation

Determination of fatty acid profile of some salvia species in konya region by gc-fid

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Abstract

Since ancient times the crude herbal extracts of aromatic plants have been in use for different purposes, such as food, drugs and perfumery (Heath, 1981). The essential oils are considered among the most important antimicrobial substances present in these plants. Volatile oils are a complex mixture of compounds, mainly monoterpenes, sesquiterpenes, and their oxygenated derivatives (alcohols, aldehydes, esters, ethers, ketones, phenols and oxides) (Delamare, 2007). Other volatile compounds include phenylpropenes and specific sulphur- or nitrogen-containing substances. Generally, the oil composition is a balance of various compounds, although in many species one constituent may prevail over all others (Cowan, 1999). Salvia, the largest genus of the Lamiaceae family, includes about 900 species, spread throughout the world, some of which are economically important since they have use as spices and flavouring agents in perfumery and cosmetics (Delamare, 2007). The analysis of the fatty acid composition of several Salvia species indicates that linolenic acid is its main constituents. However, several authors have documented significant species-specific variations in the concentration of these compounds and/or presence of others in high concentrations (Delamare, 2007). In this study, an automated GC-FID system for determination of fatty acid profile of some salvia species in Konya was used. It was seen that salvia species analysed have high amounts of linolenic acid mostly. The biggest linolenic acid ratio was %48,2547 and the lowest linolenic acid ratio was %6,4275. One of Salvia has undecanoic acid ratio in the level of %50,2368, surprisingly.

Keywords: Fatty acid profile, Gas chromatography, Medicine plants, Salvia

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Poster Presentation

The effect of melatonin on HIF pathway in breast cancer stem cells

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Abstract

Cancer stem cells are known to be effective in cancer initiation, progression, metastasis, recurrence, and treatment response. Cancer stem cells exhibit resistance to the conventional chemotherapy and radiotherapy, so blocking of cancer stem cells is important in the treatment of cancer. Most cancer cells proliferate faster than normal cells, and traditional chemo and radiotherapies in cancer treatment target particularly rapidly dividing cells. It is important to design the treatment regimens that do not harm to normal stem cells and other cells in our bodies. In this study, we aimed to reveal the effect of melatonin, which is known to have apoptotic activity on cancer stem cells, in the hypoxic conditions of the tumor mass. We determined the expression of Bax, Bcl-2, HIF1A, TGFA, VEGF, MYC and GAPDH genes by real-time PCR in cancer stem cells that sorted from MCF-7 and HEK293 cells. According to the results, melatonin has been shown to reduce the amount of CD44 + / CD24- stem cells in MCF-7 while increasing the amount of CD44+/ CD24- stem cells in HEK293. It is known that cancer cells develop resistance to radiotherapy and chemotherapy in the hypoxic environment. In the literature, it is thought that melatonin may have an effect on self-renewal factors (such as Oct4, Sox2, Nanog, Klf4). Melatonin may suppress the self-renewal factors and promote differentiation, and lead to a decrease in the amount of stem cells. According to our results, it seems possible that melatonin is able to do this through the HIF pathway.

Keywords: Melatonin, MCF-7, HEK293, HIF

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Poster Presentation

A facile preparation of copper nanoparticles using nitrogen-doped graphene quantum dots as biomaterials with DNA interactions, antioxidant, and biological properties

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Abstract

Some studies have shown that the synthesized nitrogen-doped graphene quantum dots (GQDs) consist of hydroxyl, carbonyl, and carboxylic acid groups on their surface, and thus have the ability to reduce metal cations under heat. The resulting metal nano particles (M-NPs) are formed close to the surface of the GQDs, so it is easy to assembly of these Ag-GQDs compounds in solution because of the so-close distance and electrostatic interactions between them. In this study, the synthesized nanocomposites consisting of copper nanoparticles(GQDs-CuNPs) and graphene quantum dots has been characterized by UV-Vis, FT-IR spectroscopy, transmission electronmicroscopy (TEM), EDS and thermogravimetric analysis. The antimicrobial activity of the compound was investigated for its minimum inhibitory concentration (MIC) to bacteria and yeast cultures. The interactions of the GQDs-CuNPs with DNA were studied by the UV-Vis spectra and gel electrophoresis method. UV-Vis spectroscopy studies of the interactions between the GQDs and calf thymus DNA (CT-DNA) showed that the compound interacts with CT-DNA. DNA cleavage study showed that the GQDs cleaved DNA without any external agents.

Keywords: Nanoparticles, DNA interactions, Minimum inhibitory concentration (MIC), Spectroscopy

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Poster Presentation

Biosynthesis of ZnO nanoparticles by using aqueous extract of *Robinia pseudoacacia* L. seeds and their characterization

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Abstract

ZnO nanoparticles have been one the most preferred nanomaterials for synthesis due to their unique properties. In this regard, *Robinia pseudoacacia* aqueous extract mediated biosynthesis of ZnO nanoparticles and their characterization studies were done in the present study. The seeds were collected from *R. pseudoacacia* trees in the Atatürk University campus area in October 2017. The aqueous extract was prepared on a magnetic stirrer with constant stirring for 2h. Then, it was filtered by Whatman® No:1 Filtration-Paper and kept at +4 °C in the dark until use. In the biosynthesis reaction, the aqueous extract was added into the zinc acetate•2H2O precursor solution (final concent. 200 mM), and then incubated with stirring for 6 h. In the end of this period, NaOH solution (2 M) was added and kept on the stirrer at 60 °C for overnight. The precipitate was collected by centrifugation and washed. Finally, the product was characterized by using SEM and EDS. The results of the present study showed that ZnO nanoparticles were successfully biosynthesized from the precursor by using the seed aqueous extract of *R. pseudoacacia*. The average size of produced nanoparticles was 30 nm. Besides, they had plate-shaped with rounded corners. Consequently, the results of the present study indicated that the aqueous extract of *R. pseudoacacia* seeds may be used for biosynthesis of ZnO nanoparticles from the zinc acetate•2H2O precursor. Besides, with the optimization of this production process, new ZnO nanoparticles with various beneficial features can be synthesized in the further studies.

Keywords: Biosynthesis, Energy dispersive spectroscopy, *R. pseudoacacia*, Scanning electron microscopy, ZnO nanoparticles.

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Poster Presentation

Effects of chromatin remodeling complexes on trehalose accumulation in yeast *Saccharomyces cerevisiae*

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Abstract

Trehalose has many important physiological roles in *Saccharomyces cerevisiae*, such as energy and carbon source, reserve carbonhydrate and metabolic regulator in yeast. Furthermore many studies have shown that trehalose is accumulated under stress conditions like heat stress, ethanol stress, nutrientional starvation, desiccation and osmotic stress. In other words, trehalose contentof cell is an indicator of stress tolerance. The genes involved in trehalose synthesis and breakdown is thightly regulated in both transcriptional and protein level. Chromatin remodelers have a role in transcriptional regulation. SWI/SNF chromatin remodeling complex mobilizes nucleosomes, and SAGA complex acts as a coactivator to recruit the TATA-binding protein to the TATA. SWR1 complex replaces the canonical histone H2A with the variant H2A.Z. In this study we investigated the effects of SWR1, SAGA and SWI/SNF chromatin remodelers on the trehalose accumulation by means of enzymatic assay. In our researh, the exponentional growing cells of Δswr1, Δspt7, Δsnf2 mutant yeast strains, the essential subunits of these complexes, respectively, and their wilde type strain were used. Trehalose contents of Δswr1 and Δspt7 yeast cells were similar to wild type. But trehalose accumulation of Δsnf2 mutant yeast cells was 20-25 fold higher than wild type yeast cells. These results showed that SWI/SNF chromatin remodeling complex is essential for regulation of trehalose metabolism.

This work was supported by Çanakkale Onsekiz Mart University The Scientific Research Coordination Unit, Project number: FDK-2018-1331.

Keywords: SWR1, SAGA, SWI/SNF, Trehalose, *Saccharomyces cerevisiae*

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Poster Presentation

Detecting of SMN1 and SMN2 genes by MLPA technique

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Abstract

Spinal muscular atrophy (SMA) is an autosomal recessive genetic disorder affecting the nervous system. SMA is characterized by degeneration nerve cells of the spinal cord, resulting progressive weekness of the motor neurons and muscle atrophy. SMA prevalence is estimated approximately 1 per 10,000 live births. It is caused by mutations in the survival motor neuron 1(SMN1) gene, known as functional form on chromosome 5q13.2 also pseudogene is SMN2 in rare cases of SMA. Mutations in the SMN1 cause SMA, while the copy numbers of SMN2 affects the prognosis of the disease differs from that of SMN1 by a single nucleotide in exon 7 (840C-T), that leads to decreasing transcription and deficiency of the normal SMN protein. In the case, we reported a SMA newborn was detected in our molecular genetic laborotory and the clinic. We analyzed SMN1 and SMN2 gene by Multiplex Ligation-dependent Probe Amplification (MLPA) technique is a multiplex PCR method detecting large deletions and duplications also abnormal copy numbers in the genes. Neonatal patient had homozygous deletions in exon 7 and 8 in SMN1 gene and two copies of SMN2. Paternal and maternal MLPA results showed that the parents were carrier for SMA because of the heterozygous deletions in exon 7 and 8 both of them also father had one copy of SMN2. The result were not a surprise for us because of the parents were consanguineous. As a result, consanguineous marriage is one of the most important health problems in our country, especially for genetic diseases recessively.

Keywords: SMA, SMN genes, MLPA

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Poster Presentation

Possible alternative uses of some yellow pea products in cake productions

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Abstract

Utilization possibilities of yellow pea products such as yellow pea milk (YPM) containing high protein, and fermented yellow pea flour (FYPF) in cake production were investigated. YPM was replaced with whole egg at 0, 20, 40 and 60% ratio in cake formulation. FYPF was replaced with wheat flour at 0, 10, 20 and 30% ratio to improve the nutritional status of cake samples. Physical, chemical and sensory properties of cake samples were determined. FYPF increased ash, protein, mineral and antioxidant activity of the cake samples. FYPF at the highest ratio (60%) resulted in maximum enrichment in the nutritional quality of cake samples. Volume index values of the cake samples decreased over 40% of YPM and 20% of FYPF levels compared to control samples. Firmness values of the cake samples were adversely affected at high utilization ratios of the YPM and FYPF. The use of FYPF in cake formulation significantly ($p<0.05$) affected the crumb L* and b* values. When physical, chemical and sensory properties were evaluated together, it was determined that YPM (up to 40%) and FYPF (up to 20%) can be used successfully in cake formulation.

Keywords: Cake, egg, yellow pea, milk, fermantation

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Poster Presentation

Morphological, hematological and histopathological effects of propyl paraben on endocrine glands of male rats at prepubertal period

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Abstract

Propyl paraben is widely used as antimicrobial excipients in pharmaceuticals, personal care products and foods preventing microbial and fungal contamination. In this study we studied the effects of propyl paraben on endocrine gland of rats. For this purpose propyl paraben were given by oral gavage at 10, 250 and 750 mg/kg/day doses to castrated immature male Wistar Albino rats. According to Hershberger Bioassay, at their 6 weeks of age, rats were castrated and given 8 days for recovery. After that, rats were divided into six groups including the vehicle control, negative control (0.4 mg/kg/day TP), positive control (3 mg/kg/day FLU + TP) and propyl paraben treatment groups (10, 250, 750 mg/kg/day PP + TP). During the experiment, body weights and food and water consumption were noted. After 10 days of treatment period, rats were killed and dissected, the stated tissue weights of endocrine organs were measured and histopathological examination was done. According to the result of the comparative analytic studies, the critical decrease in the tissue weight of the spleen, thymus, pancreas and thyroid, which 250 mg/kg/day and 750 mg/kg/day dose paraben was being applied to them, has been observed and the histopathological disruption in these tissues have been observed. These findings show that the propyl paraben that has been using as an antimicrobial preservative has a critical side effect on endocrine tissues.

Keywords: Endocrine system, Hershberger Bioassay, Propyl Paraben, Histopathology

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Poster Presentation

Magnetic nanoparticles loaded electrospun pcl nanofibers for drug delivery applications

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Abstract

In this study, Fe3O4 magnetic nanoparticles (MNPs) were loaded into poly (e-caprolactone) (PCL) nanofiber mats via electrospinning method and the composite materials were characterized. MNPs were synthesized by a conventional co-precipitation method and treated by oleic acid in order to obtain hydrophobic nanoparticles. The MNPs were added to PCL solution before electrospinning at varying concentrations (4, 8, 16, 32, 64 and 128%, w/v). The chemical structure of the nanofibrous membranes was investigated by Fourier transform infrared spectroscopy (FTIR). Scanning electron microscopy (SEM), and analyses by optical and confocal microscopes demonstrated that MNPs loaded PCL nanofibers (MNP@PCL NFs) were homogeneously distributed in the membranes. Fiber diameter changed and bead formation occurred as the concentration of MNPs increased from 4 to 128%. The effect of MNPs concentration on drug loading, the encapsulation efficiency and the release properties of the composite nanofibers were investigated by using hydrophilic (Rhodamine B) and hydrophobic (Nile red) dyes, compared with plain PCL nanofibers. The dyes were used as model drug compounds in order to simulate drug release from MNP@PCL NFs. The release rate of Rhodamine B from the plain PCL nanofiber mats was faster compared to the composite materials. The results showed that the release of the model molecule was affected by the hydrophilic/hydrophobic character of the drug. MNP@PCL NFs may have the potential for using as targeted drug delivery vehicles for tissue engineering applications.

This work was supported by the Scientific Research Projects Unit of Mersin University, Project No: 2015-TP2-1345

Keywords: magnetic nanoparticles, poly (Ɛ-caprolactone), electrospinning, drug delivery

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Poster Presentation

Morphometric ınvestigation of eyeball and harderian gland in ostrich (*Struthio Camelus*)

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Abstract

The ostrich's eye differs in size, shape and localization in the skull according to the mammals. Its lens has pulvinus anularis lentis. This structure is important for accomodation in poultry. Harderian gland is one of the accesory organ of the eye, is present in all poultry. This gland may have numerous functions such as lubrication of eye, pheromone production, osmoregulation, thermoregulation, and photoprotection. The aim of this research is to reveal some morphometric values of eyeball and harderian gland in ostrich. Morphometric information about these anatomical structures in ostriches was limited in the literature study. Both sides of the eyeballs and harderian gland of 3 adult male ostrich were used. Eyeball and harderian gland were removed from orbita. In the eyeball; the diameters (dorso-ventral/temporo-nasal) of the eyeball, iris, pupil, cornea and lens were measured by digital caliper. SPSS 20 statistical package program (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.) was used for analysis of data. The intraclass correlation coefficient is calculated. The homogeneity of the variances from the preconditions of the parametric tests was checked by the "Levene" test. The normality assumption "the Shapiro-Wilk" were examined by the test. Differences between the two dependent groups were assessed by the "Wilcoxon test". There was no statistically significant difference between right and left in eyeball and harderian gland. In terms of intraclass correlation coefficient, a compliance was observed at diameter (dorso-ventral) of the lens (p=0,0002).

Keywords: Eyeball, Harderian gland, Ostrich, Morphometry

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Poster Presentation

Evaluation of preferential anticancer activity of p-tert-butylcalix[4]arene against human prostate carcinoma cell line, pc3

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Abstract

The search for new potent anticancer drugs that can only target cancer cells, rather than affecting normal tissues is very much commendable. Supramolecular calixarene is a highly promising candidate in this regard and could be modified to enhance preferential cytotoxicity for targeted therapy. Calixarenes are a family of bowl or cone shaped synthetic supramolecular macrocycles, composed of phenol units linked by methylene bridges through and an aldehyde. Metylpyridinium functionalized p-tert-butylcalix[4]arene were synthesized (AMP on 3 and 4 position) by appropriate procedures. The structure of the synthesized compounds was characterized by 1H-NMR and FT-IR. In-vitro as cancer and healthy models, PC3, Human Prostate Adenocarcinoma and L929, Healthy Mouse Fibroblast cell line (1x10-5) were cultured with 50-500 µM of 3/4-AMPs. After 24 h incubation, cell growth/proliferation analysis were done by XTT assay. The results showed that p-tert-butylcalixarene compounds affect PC3, in the pridinium group 4 position was found to be more cytotoxic than at the positions 3 after incubation time without effecting on L929. Our research directs that calix[4]arene shows effective preferential cytotoxicity at a concentration range of 25 to 500 µM with enhanced preferential cytotoxicity shown by the modification of pyridinium group at the position 4 against PC3. The effect of surface altered calixarene by pyridinium groups on preferential cytotoxicity in cancer cell in-vitro by comparing with innate preferential toxicity shown by unaltered. The results reported in this study demonstrated that tumor-preferential in-vitro cytotoxicity of p-tert-butylcalix[4]arene against PC3 over L-929 cells present a promising approach for efficient and safe cancer therapy.

Keywords: Calixarene, PC3, Prostate Cancer, Anticancer

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Poster Presentation

Highly sensitive, low-cost and disposable ITO-PET based immunosensor for detection SOX2 antigen

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Abstract

SOX2 helps the regulation of cell pluripotency and is closely related to early embryonic development, neural and sexual differentiation. SOX2 is amplified and overexpressed in some malignant tumors such as squamous cell, lung, prostate, breast, esophageal cell, colon, ovaria, glioblastoma, pancreatic cancer, gastric cancer, head and neck squamous cell carcinoma. In this study, an ITO (indium tin oxide) based biosensor was constructed to detect SOX2. To generate a hydroxylated electrode surface, ITO electrodes were modified with NH4OH/ H2O2/H2O. Later, ITO-PET electrode surfaces were modified with 3-glycidoxypropyltrimethoxysilane (3-GOPS). Then, anti-SOX2 was covalently immobilized onto the electrode surfaces. 3-GOPS concentration, anti-SOX2 concentration and incubation time, SOX2 incubation time were optimized. Electrochemical impedance spectroscopy (EIS) and cyclic voltammetry (CV) were utilized for immobilization and optimization steps of the biosensor. For analytical characterization of constructed immunosensor; linear range, repeatability, reproducibility, regeneration studies were investigated. The linear range of the immunosensor was detected as 0,625 pg/mL – 62,5 pg/mL. Square wave voltammetry technique was applied to the biosensor. Storage life of the biosensor was determined. Finally, the designed biosensor was applied to real human serum and compared with ELISA results.

Keywords: Biosensor, SOX2, Electrochemical impedance spectroscopy

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Poster Presentation

Diagnosis of BCR-ABL gene sequence with RT-PCR technique in chronic myeloid leukemia patients

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Abstract

The aim of this study is to demonstrate the presence of BCR-ABL hybrid gene with RT-PCR (Reverse Transcriptase-Polymerase Chain Reaction) method in 25 patients CML cases and identifying the chromosome in cytogenetic way to determine the correlation between them.Lymphocyte cultures were made from bone marrow material and cytogenetic analysis was performed with light microscope after GTG banding.Total RNAs were isolated from blood, bone marrow and cell line. cDNAs were synthesized from mRNAs. Thus, the target DNAs were amplified by PCR. K562 cell line was used as positive control, pure water was used as negative control. In our cases it was established to be found the ratio of BCR-ABL gene positive was 80% , the ratio of Ph chromosome positive was %80. As our RT-PCR results, which are coherent with cytogenetic analysis, has been showed that RT-PCR method, which was more quick and more sensitive, could be used for diagnosing the malign illness and watching the response for the treatment.

Keywords: BCR-ABL gene, RT-PCR, Chronic Myeloid Leukemia

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Poster Presentation

Screening Y microdeletion of the SY254 gene region in infertile men

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Abstract

In our study we aimed to demonstrate Y microdeletion on the sY254 gene region in 25 primary infertile male patients by using PCR method. Lymphocyte cultures were made from blood material and cytogenetic analysis was performed with light microscope after GTG banding. Total DNA was isolated from peripheral blood. DNA purity was checked and target gene regions were amplified with PCR method by using oligonucleotid primers. sY14 gene region which is on the Y chromosome used as internel control and pure water used as negative control. In total 25 infertile patients;13 individuals had azospermia, 12 individuals had oligospermia. As the results of our study, in sY254 gene region no microdeletion was determined.

Keywords: Y microdeletion, sY254, Azospermia, Oligospermia

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Poster Presentation

Effects of long term ıron toxicity on antioxidant related enzyme in rat spleen at gene and protein level

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Abstract

Iron plays an important role in biological processes such as oxygen transport, energy production, and synthesis of DNA, RNA and protein. Although it is essential for all living organisms, excess iron intake induces reactive oxygen species (ROS) the through Fenton reaction. Elevated ROS leads to damage of biomolecules and organ function. Therefore, antioxidant system act to protect the cell against oxidative damage. The aim of this study was to provide a better understanding of how the long-term iron overload affects the gene expression and activity of some antioxidant enzymes including glucose 6-phosphate dehydrogenase (G6PD), 6-phosphogluconate dehydrogenase (6PGD), and glutathione reductase (GR) as in vivo. For this reason, 15 male rats were classified into five groups. First group, considered as control, was given only deionized water. Other groups were exposed daily to the different concentrations of nontoxic (0.87, 3 ppm) and toxic (30 and 300 pmm) iron with drinking water for 100 days. Then, the expression of G6pd, 6pgd, and Gr were examined by real time PCR in rat spleen. Enzymatic activities of those genes were spectroscopically examined. According to our results, iron overload reduced the gene expression of G6pd, 6pgd, and Gr. The G6PD enzyme activity was significantly decreased in the presence of non-toxic and toxic iron concentrations. However, the 6PGD enzyme activity was increased in the presence of 3, 30, and 300 ppm iron. While the enzymatic activity of GR in the presence of nontoxic iron was activated, no changes were seen in the presence of toxic iron concentrations.

Keywords: Iron overload, Oxidative stress, Gene expression, Enzyme activity, Spleen

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Poster Presentation

Chromosomal aberrations

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Abstract

Chromosome aberrations (CA) are one of the important biological consequences of exposure to physical factors and genotoxic chemicals. Studies have shown a linkage between the frequency of chromosomal abnormalities and cancer formation. The majority of chromosomal abnormalities are caused by the inability to repair damaged chromosomes, improper repair, or abnormalities that occur in the migration of chromosomes to the poles during cell division. Chromosomal aberrations are divided into two main types as numerical and structural aberrations. Numerical abnormalities are usually occur from a failure of chromosome division, which results in cells with an extra chromosome or a deficiency in chromosomes or euploidy. Structural CAs occur due to a loss of genetic material, or a rearrangement in the location of the genetic material. According to organizational unit of the metaphase chromosome involved in the aberration, there are two types of structural chromosomal aberrations as chromatid type (breaks and changes) and chromosome type (breaks, fragments, sister union, dicentric chromosomes, ring chromosomes, isochromosomes and translocations). While chromatid type aberrations induced by ionizing radiation form in the G2 and mainly in the S phase of the cell cycle, chromosome type aberrations occur in the G1 phase. True radiomimetic chemicals induce similar pattern of aberrations as ionising radiation. Chemical mutagens that do not directly induce DNA chain breaks but cause other lesions have been shown to induce only chromatid type aberrations in processed DNA, independently of the S phase. There are several types of chemicals which can effectively induce chromosomal aberrations with diverse modes of action. In this rewiev molecular mechanisms of formation of CA will be presented.

Keywords: Genotoxicity, chromosomal aberrations, DNA damage

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Poster Presentation

Genetic transformation in plants: Current problems and strategies

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Abstrac

Researches of plant genetic transformation is important tool in plant biotechnology and a useful tool for cultivar improvement. There are many methods for insertion of novel genes into the nuclear, mitochondrial or chromosomal genomes of different plant species. This work aimed to investigate the criteria to verify plant transformation; the practical necessities for transformation systems; the integration of tissue culture, gene transfer, selection, and transgene expression strategies to achieve transformation in plant species; and other constraints to plant transformation including regulatory environment, public perceptions, intellectual property, and economics. The major technical challenge facing plant transformation strategy is the development of techniques and constructs to produce a high proportion of plants showing predictable transgene expression without collateral genetic damage. This will require answers to a series of biological and technical questions, some of which are defined. Recent improvements in genetic transformation have made it possible to transfer genes into the various crop species. A successful transformation system requires an efficient tissue culture-based regeneration protocol. Plant regeneration relies on the totipotent cells and it can be stimulated to regenerate into whole plants. However, because of only a limited regeneration rate of plant species, this insight is limited. Therefore, much effort has been aimed at establishing and improving plant regeneration systems. Still, efficient regeneration alone does not necessarily lead to efficient transformation.

Keywords: *Agrobacterium* spp., Microparticle bombardment, Polyethylene glycol (PEG), gene transformation

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Poster Presentation

Theoretical calculations on electron paramagnetic resonance parameters of liquid phase formamide by density functional method

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Abstract

DNA is a highly polar molecule, evolved to be stable in high-dielectric environments considered in most experimental and theoretical studies. Accordingly, the large impact of solvent modification on the properties of DNA is not surprising. Some organic solvents like formamide and methanol maintain the duplex structure. DNA duplex does not lose its structure completely, and the two strands remain bound when DNA is transferred from aqueous solution to the gas phase. For that reason in our study, we determined formamide molecule and its model radicals structure in water and acetone. Formamide is a reagent that is an ionizing solvent in aqueous buffers. It is widely utilized in biochemistry and molecular biology, particularly in nucleic acids research. To obtain molecular structure in water and acetone, conformational analysis of formamide was performed and only one conformer was determined. Including recommended radical in experimental study, total eight radicals were modeled. And their a ve g values were calculated and then they were compared with the experimental ones.

Keywords: DFT; EPR; Molecular modelling, Radical models, Formamide

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Poster Presentation

Anti-proliferative effects of *Lavandula stoechas* ssp. *stoechas* essential oil on colon cancer

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Abstract

Lavandula genus is an important member of *Lamiaceae* family. People use commonly *Lavandula stoechas* ssp. *stoechas*, known as "karabaşotu", as a medicinal plant for various diseases around the world and also in Turkey. The aim of this study was to investigate anti-proliferative effects of essential oil extracted from *L. stoechas* ssp. *stoechas*. Essential oil was extracted by hydrodistillation using Clevenger-type apparatus from the leaves and flowers of *L. stoechas* ssp. *stoechas* grown wild in Aydin. The human colon cancer cell line HT-29 was maintained in RPMI 1460 supplemented with 10% fetal bovine serum (FBS), and incubated under 5% CO2 at 37°C. The esential oil was diluted in dimethyl sulfoxide (DMSO) and then in RPMI as needed. Cells were treated with up to 250 µl/L of essential oil with 0.1% DMSO as control for up to 72 h in 96-well plate. The viability levels of the cells after the treatment were measured with MTT (3-{4,5-dimethylthiazol-2yl}-2,5-diphenyl tetrazolium bromide) assay and detected spectrophotometrically at 570 nm. Experiments were performed three times in triplicates. The results were analyzed via analysis of variance (ANOVA) test. Differences with a P value of less than 0.05 were considered as significant. *L. stoechas* ssp. *stoechas* essential oil showed significant anti-proliferative effect on HT-29 cells in a dose- and time-dependent manner ($P<0.05$). Approximately 50% of the cells were killed by 250, 200, and 150 µl/L essential oil treatment for 24, 48, 72 h, respectively.

Keywords: *Lavandula stoechas* ssp. *stoechas*, essential oil, colon cancer, MTT, cytotoxicity

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Poster Presentation

A new stem cell technology: Cultured meat

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Abstract

Lab-based, in vitro or cultured meat production, is performed by growing stem cells in an environment outside the animal. Culturing stem cells is performed in an environment where the nutrients necessary for the division and differentiation of cells into muscle cells exist. Cultured meat is considered as an alternative to traditional meat and have both advantages and disadvantages. Meat produced in a sterile laboratory environment reduces the risk of human exposure to diseases such as *Salmonella* infection, pesticides, arsenic, dioxins and hormones. Since 50,000 metric tons of meat can be produced from just10 stem cells with this method, it is argued that less time, energy, land, water, gas emissions and carbon footprint will be spent compared to traditional methods. The vegetarian approaches that limit meat consumption can be minimized by using this method. It is believed that the amount of meat that is already inadequate due to the rapid increase of the world population will not be distributed equally to the population. However, cultured meat is believed to prevent this inequality. In addition to these advantages, it is argued that thanks to stem cell studies, the meat production will be unlimited and that the production of pork or cow-based meat, which are against the religious perceptions "Halal" or "Jhatka", may cause religious and social concerns. The fact that meat have a potential market for now and that the consumers do not need a new taste can be regarded as disadvantages. Thus, cultured meat is a new biotechnology subject that needs to be elaborated on.

Keywords: Cultured meat, Stem cell technology

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Poster Presentation

The effect of ellagitannins and ellagic acid on human gut microbiota

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Abstract

Ellagitannins, having an unstable state in nature and under physiological conditions, are generally converted by hydrolysis and polymerization reactions to structures that are not easily hydrolyzable by water, such as the ellagic acid. Ellagic acids are the polyphenols found in fruits and nuts, such as pomegranates, raspberries, walnuts, and almonds. Examining the ellagic acid content of 100 grams of various foods, it was determined that the pomegranate contained 200 mg of ellagic acid; whereas raspberries contained 150 mg, and strawberries 63 mg. During recent years, ellagitannins and ellagic acid were found to have antimicrobial, anticarcinogenic, antioxidant and anti-inflammatory effects. Ellagitannins, affected by pH levels in small intestine and caecum might convert to ellagic acid. It is hence stated that the ellagic acid had notable effects on the human gut microbiota. A significant increase in the count of beneficial bacteria, also known as probiotics, was observed as a result of consuming foods rich in ellagitannins. A research conducted by the utilization of pure bacteria isolates revealed that the ellagitannin derivative pomegranate juice inhibited the growth of pathogenic *Clostridia* and *Staphylococcus aureus*; whereas it had no effect on probiotic *Lactobacilli* and *Bifidobacteria* count. Another research conducted in a medium inoculated with human fecal microbiota, demonstrated that consumption of pomegranate products not only increased bifidobacteria and lactobacilli, but also increased production of short chain fatty acids. Human research regarding the effect of ellagitannins and ellagic acid containing foods on human gut microbiota would be more valuable.

Keywords: Ellagitannins, ellagic acid, human gut; microbiota

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Poster Presentation

Investigation of roles of yfha-yfhk and cuss-cusr two component systems on survival of *E.coli* w3110 under different stress conditions

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Abstract

Bacteria have a signal transduction called a two-component system in order to adapt to external environmental stimuli. From these systems, some functions of CusS-CusR and YfhK-YfhA two-component phosphorylation systems have been identified. However, it has been thought that these systems have different roles under different stress conditions other than designated ones. Therefore as a first step, mutants of these systems were obtained and their roles were investigated against various metals (Cu, Co, Zn) and antibiotics (Kanamycin, Tetracycline, Streptomycin) effect. In the study, the mutant genes of Escherichia coli BW25113 strain were transferred to the bacteria *Escherichia coli* W3110 through P1 transduction method. In addition, by means of the plasmid obtained the roles of the genes in the studied stress conditions were controlled through performing by complementation tests. At the end of the study, obtained data were analyzed statistically through student t test. As a result of these analyzes, it was determined that yfhA, yfhK, cusS and cusR for zinc, yfhK and cusS genes for cobalt metal have a role, while yfhA, yfhK and cusR genes are important for copper stress ($p<0.05$). While yfhA, yfhK and cusR genes have a role against tetracycline in working antibiotics, it has been determined that yfhA, cusS and cusR genes play an important role against streptomycin.

Keywords: *Escherichi coli*, pH stress, two-component systems

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Poster Presentation

The effects of iron (Fe^{+3}) on the expressıon levels of heat stress proteın genes in Mcf7 cell line

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Abstract

One of the most abundant metals in the world, is iron, which is essential for the organism. The incidence of injury to internal organs such as heart is kept by tissues in high concentrations in the liver and the pancreas. In our study, we investigated how iron ions given at different doses affect the 70 kDa HSP gene expression, which is a stress protein in the MC7 cell line. In this study, iron ion Fe3 + (0,87ppm, 3ppm, 30ppm, 300ppm) was given to 5 different application groups at different concentrations. At the end of this application process, a cDNA library was constructed from the RNA samples obtained from the cells. The use of this Hsp70 (Hspa1a, Hspa4, Hspa5), Hsp90 (Hsp90aa1) that occurring in the expression levels of genes have been identified by changes in the Real-Time PCR method. It was determined that the iron ion given at a concentration of 30ppm significantly increased the Hspa1a gene expression.

Keywords: Gene expression, HSP, Iron ion, MCF7 cell line, Real-Time PCR

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Poster Presentation

Alterations ın sodıum butyrate induced cytotoxıcıty of Mcf7 breast cancer cells treated with rosmarinic acid

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Abstract

In recent years, the exploration of new anti cancer agents have been focused on the plant-based natural products and natural derivatives of substances produced in human body due to their cytotoxic effects. Among these natural products, Rosmarinic acid (RA) and sodium butyrate (NaBu) have been commonly studied. RA is a phenolic derivative of caffeic acid found in rosemary and NaBu is also a derivative of naturally occurring butyric acid in colon. Although their anti-cancer activies have been demonstrated, the synergistc/antognistic effects of their combination in cancer cells have not been elucidated yet. Therefore, the current study was conducted to clarify the cytotoxic effects in MCF7 breast cancer cell line model. RA at the doses of 37.5 µM,75 µM and 150 µM was applied while NaBu was used at the doses of 1.25 mM,2.5 mM ve 5 mM . In the combination treatment, only the highest dose of NaBu was used with other studied doses of RA. To determine the cytotoxic effects of all treatments, 3-(4, 5-Dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) and Sulforhodamine B (SRB) assays were used. The results of the both assays indicated that RA alters the antiproliferative effects of NaBU in MCF7 cells in the combination treatment.

Keywords: Rosmarinic acid, Sodium butyrate, Combination therapy, Cytotoxic effects, Breast cancer

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Poster Presentation

Investigation of cytotoxic activity of metylpyridinium functionalized *p-tert*-butylcalix[4]arene diamide on metastatic breast cancer cells

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Abstract

The search for new potent anticancer drugs that can only target cancer cells, rather than affecting normal tissues is very much commendable. Supramolecular p-tert-butylcalix[4]arene is a highly promising candidate in this regard and could be modified to enhance preferential cytotoxicity for targeted therapy. The important requirement for effective anticancer therapy is a tumor-selective vehicle. p-tert-butylcalix[4] arene functionalized with a pyridinium group on different positions were synthesized by appropriate procedures. The structure of the synthesized compounds was characterized by 1H-NMR and FT-IR. As cancer and healthy in-vitro models, MDA-MB-231, Human breast adenocarcinoma and L929, Healthy Mouse Fibroblast cell line cells (2x105) were cultured with 100, 250 and 500 µM of 2/3/4-AMPs. After 24 h incubation, cell growth/proliferation analysis were done by XTT assay and xCELLigence RTCA System. Our research directs that calix[4]arene shows effective preferential cytotoxicity at a concentration range of 25 to 100 µM with enhanced preferential cytotoxicity shown by the modification of pyridinium group at the position 3 against MDA-MB-231 breast cancer cells. We examined the dose- and time-dependent inhibition of the growth of the human breast adenocarcinoma MDA-MB-231 and healthy mouse fibroblast L-929 cell lines after p-tert-butylcalix[4]arene treatment with IC50 45.35 µM value of The effect of metylpyridinium functionalized calixarene on preferential cytotoxicity in cancer cell in-vitro by comparing with innate preferential toxicity shown by unaltered. The results reported in this study demonstrated that tumor-preferential in-vitro cytotoxicity of *p-tert*-butylcalix[4]arene against MDA-MB-231over L-929 cells present a promising approach for efficient and safe cancer therapy.

Keywords: *p-tert*-butylcalix[4]arene, MDA-MB-231, L-929, Cytotoxicity

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Poster Presentation

Has juglone an antioxidant effect on pancreatic cancer cell line?

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Abstract

Natural products are beneficial for the protection against certain human malignancies including pancreatic cancer. In this study, it is aimed to determine the cytotoxic effect of juglone and also to investigate its effect on ROS production in pancreatic cancer cell lines. Changes in enzymatic (SOD, CAT, APX and GSH) antioxidant systems, as well as oxidative parameters (H2O2 and MDA) have a critical role in ROS production. We evaluated the anticancer and antioxidant activity of the juglone The effect of juglone on cell viability was evaluated by MTT assay and antioxidant enzyme activities were measured by kinetic reading. We compared with Juglone treatment and control groups at different hours.Juglone reduced the cell viability of human pancreatic cancer cells in a concentration-dependent manner. The IC50 of juglone on the pancreatic cell line was 21,05 μM. It had a significantly higher degree of enzymatic activity to cope with the oxidative stress.In conclusion our results indicate that juglone is a potent anticancer molecule and may prove essential in pancreatic cancer therapy. Juglone can be played a central role for antioxidant system defense in pancreatic cells. beyond a shadow of a doubt, genetic analysis for this species is recommended.

Keywords: Ascorbate peroxidase, catalase, juglone, MTT

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Poster Presentation

Investigation of *Citrus exocortis viroid* and *Hop stunt viroid* infecting fig trees

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Abstract

Fig (*Ficus carica* L.) is one of the most important crops in Turkey. Viroids have been identified as the causative agents of severe diseases in many economically important crops. Fig trees are mostly susceptible to many viroid species belongs to family Pospiviroidae such as *Citrus exocortis viroid* (CEVd), *Hop stunt viroid* (HSVd). To investigate the incidence of those viroids, we collected 60 suspicious symptomatic leaf samples from different locations. Total nucleic acids were extracted from leaves using ZR Plant RNA MiniPrep™ Kit- Zymo Research and used as a template for cDNA synthesis. cDNA was synthesized by abm's EasyScript™ cDNA Synthesis Kit. Viroid specific primers CEVd_F: 5′-GATGGAAGGAAGGAGACGAGCTCC-3′ - R: 5′-GCTGGCTCCACATCCGATCGTCGCT-3′ for CEVd and HSVd-F: 5′-AACCCGGGGCAACTCTTCTC-3′ - R: 5′-AACCCGGGGCTCCTTTCTCA-3′ for HpSVd detection were used for PCR analysis. PCR analysis was performed under the following conditions: denaturation 94°C 5 min, 40 cycles of 94°C for 30 s, 60°C for 45 s, and 72°C for 1 min; and a final extension for 10 min at 72°C. The PCR products visualized under UV light after electrophoresis on 1.5% agarose gels. None of the viroids were detected on screened fig samples by RT-PCR analysis. The results demonstrated by this study will be helpful in any further study on fig viroids.

Keywords: *Ficus carica* L., HSVd, CEVd, RNA, cDNA, PCR

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Poster Presentation

Immunological activity of *Lobothallia radiosa* (Hoffm.) hafellner in RAW 264.7 macrophage cells

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Abstract

This study was conducted to demonstrate the effects of Lobothallia radiosa (LOB) on immunological activity of RAW 264.7 macrophage cells for the first time in literature. L. radiosa is a crustose placodiomorph lichen which prefers rocks as a subtrates. It synthesizes norstictic acid, atranorin, and stictic acid. Dried lichen samples were extracted by ethanol at a ratio of 1:20 (w/v) with the help of soxhlet extractor (26°C, 2 hr). Then, solvent was removed from samples by rotary extractor (250 rpm, 50°C, 1 hr.) and lyophilization for 12 hours. RAW 264.7 cells were cultured in the presence of various concentrations of extracts up to 72 hr. The percentage of cell viability was determined by metabolism of the tetrazolium salt XTT and real-time and label-free monitoring of cell viability of macrophages by xCELLigence system in addition to microscopic analysis. The dose-dependent effects of LOB on nitric oxide (NO) production was investigated by Griess method to determine its inflammatory profile in macrophages (i.e. innate immune cells). Evaluation of the effect of this lichen species on immune system is very vital since it has been using for anti-cancer studies recently.

Keywords: Cytotoxic activity, RAW 264.7 macrophages, *Lobothallia radiosa*, xCELLigence, inflammation

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Poster Presentation

The effects of bisphenol a on the proportions of alpha naphthyl acetate esterase positive peripheral blood lymphocytes

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Abstract

Bisphenol A (BPA) is an endocrine disrupting chemical widely used in the production of polycarbonate plastics and epoxy resins. Enzyme histochemical studies can be used to evaluate the functional development and maturation of the immune system. Alpha naphthyl acetate esterase (ANAE), a lysosomal enzyme, has been demonstrated in mature, immunocompetent circulating T-lymphocytes of many animal species. The aim of this study was to determine the effects of BPA on the proportions of ANAE positive peripheral blood lymphocytes (PBL) in rats. For this purpose a total of 40 rats were used. The animals were divided into five groups of as following: control, vehicle, BPA-5, BPA-50 and BPA-500. Each group was consisted of eight animals. BPA was dissolved in ethanol, then mixed with corn oil. The control group was untreated. The vehicle group was given the ethanol-corn oil mixture. The BPA-5, BPA-50 and BPA-500 groups were given 5, 50, and 500 µg/kg body weights/day, respectively. After 8 weeks, peripheral blood samples were obtained from the animals and blood smears were prepared. After ANAE demonstration, the cells having lymphocyte morphology and 1 to 3 large, reddish-brown granules were classified as ANAE-positive lymphocytes. The percentages were determined by counting 200 lymphocytes on each smears. The proportions of ANAE positivity were 43,37%, 36,50%, 32,62%, 31,37% and 30,75% respectively. The differences of ANAE positive PBL between the groups were statistically important ($p<0.01$). It was concluded that BPA has immunotoxic effect of PBL, and it might caused functional changes of lymphocytes decrasing enzymatic activity.

Keywords: BPA, ANAE lymphocytes, rat

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Poster Presentation

Detection of methicillin resistance and presence of panton valentine toxin by multiplex PCR in *Staphylococcus aureus* strains ısolated from raw milk and ıce cream

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Abstract

Methicillin resistant *Staphylococcus aureus* (MRSA) is considered to be one of the most common pathogens causing nosocomial infections and food poisoning events all over the world. İn the case of defective pasteurization, raw milk and dairy products are potential sources of S. aureus. The aim of this study is to investigate the MRSA ratio and PVL (Panton-Valentine Leukocidin) carriage of *Staphylococcus aureus* strains isolated and identified from raw milk and ice cream in Konya. A total of 55 S. aureus strains were isolated from raw milk (49) collected from various farms and ice cream samples (6) sold in the open in Konya. The obtained isolates were identified as *S. aureus* with conventional methods (Colonial morphology, Gram staining, catalase test, coagulase test, hemolysis test, lecithinase test and mannitol salt agar fermentation) and genotypic methods. Multiplex polymerase chain reaction was applied to detect the genes 16S rRNA, *mecA, femA* and PVL. Only one of the 55 *S. aureus* strains (1.8%) was detected as MRSA and this strain is ice cream isolate. And also all isolates were PVL negative. Although this study can certainly not implicate food as a source of human MRSA infection, the finding of MRSA in milk and dairy product, including strains implicated in human infections, does raise concern and the possibility that food plays a role in the community spread of MRSA. In order to prevent *S. aureus* contamination in raw milk and ice cream samples, it is appropriate to meet the hygiene requirements and further increase the measures.

Keywords: Methicillin resistance, Multiplex PCR, PVL, *Staphylococcus aureus*

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Poster Presentation

Mitochondrial DNA analysis and mitochondrial diseases

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Abstract

Mitochondria are the organelle in which cellular respiration is carried out in eukaryotic organisms. Cellular respiration is the process of forming ATP energy by breaking down the nutrients with oxygen. Free oxygen radicals coming out in the result of the electrons escaping from the electron transport chain creates damage firstly in the mitochondria and then in the cell. Mutations occur in mitochondrial DNA (Mt-DNA) which are exposed to free oxygen radicals and are specific for mitochondria. In the result of the mutations, single and double branching, abasic areas, base modifications and sugar damage may occur in Mt-DNA, or there may be cross-linking between DNA and protein (Cooke at al. 2003, Evans and Cooke 2004). These mutations cause mainly Alzheimer and Parkinson, many diseases originated from endocrine glands, brain, heart and liver diseases. In this review, the structure and genetics of Mt-DNA and diseases related to Mt-DNA and mechanisms of formation were discussed.

Keywords: Mitochondrial DNA, free oxygen radicals, mutation, insertion, deletion.

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Poster Presentation

Biosynthesis of iron nanoparticles using black tea extract and their application for degradation of methylene blue

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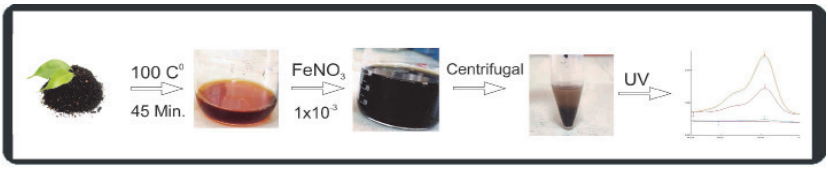
Abstract

Much attention has been paid to iron nanoparticles (FeNPs) due to their fine control of their physical, chemical, and structural properties, such as good electrical conductivity, chemical activity, sub colloidal size and strong reduction power . The large surface area of nanoparticles can lead to surprising surface and quantum size effects. Because of the particle size decreases a number of surface atoms increases, surface atoms tend to have more unsatisfied bonds with attendant higher surface energy. Plants are used widely and efficiently for large scale synthesis of nanoparticles because integration of green chemistry principles to nanotechnology is one of the key issues of nanoscience research . FeNPs has a great deal to propose at the nanoscale magnetic and catalytic properties in addition iron is the least-expensive metal catalyst that could be used for catalytic degradation reaction. The aim of the present study was to the green synthesis of FeNPs using black tea extract and their use for the catalytic degradation of a methylene blue (MB). The stable FeNPs were further characterized by Fourier transform infrared (FTIR) spectroscopy, X-ray diffraction (XRD) and scanning electron microscopy (SEM-EDX). To decrease the water pollution of industries with a large amount of toxic and non-biodegradable colored dye effluents, an efficient technique is required to safely remove harmful pollutants . In this study, the reaction between methylene blue (MB) and NaBH4 catalyzed by nanoparticles (NPs) thin films has been studied.



Keywords: Methylene blue, catalytic degradation, black tea, iron nanoparticle

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Poster Presentation

Evaluation of the relationship between *Demodex* (Acari: Demodicidae) density and the skin biophysical parameters in patients with acne vulgaris

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Abstract

The stratum corneum (SC), the outermost layer of the epidermis, is a natural barrier which prevent the entrance of microorganisms. The SC normally has lower acidic pH (ranging 4 to 6). If skin pH is increase the SC's barrier function may decrease. In addition, when transepidermal water loss increases, skin moisture decreases, and the skin becomes dry, consequently may decrease of the SC's barrier function. Decreased SC barrier function may allow easier penetration of Demodex mites on the skin. The aim of study was to evaluate relationship between Demodex density and the skin biophysical parameters such as moisture, pH, and temperature in AV patients. A total of 210 patients with AV were included in the study. Measurements for skin biophysical parameters were conducted on the cheek, nasolabial area, and chin. Samples were taken from the same facial regions using the ''standard superficial skin biopsy'' technique and examined under light microscopy. The mean density of Demodex in patients with lower skin moisture, higher skin pH and temperature were determined as 22.3/cm2, 20.4/cm2 and 22.5/cm2respectively. Whereas, in those patients which having higher skin moisture, lower skin pH and temperature, were 5.3/cm2, 5.9/ cm2and 6.7/cm2 respectively. There was a significant correlation between the mean mite density and skin moisture ($P<0.05$), while skin pH and temperature were not statistically significantly correlated to mite density ($P>0.05$). Our findings indicate that density of Demodex may be affected by skin biophysical parameters. Hence, raising moisture and acidity of the skin can reduce Demodex infestation in patients with AV.

Keywords: *Demodex*, skin moisture, skin pH, skin temperature, skin barrier

Acknowledgement: We would like to thank the Erzincan University, Coordinator of Scientific Research Projects, which suported this study (Project No: TSA-2017-441), Erzincan University Clinical Research Ethics Committee (Decision No: 2016-08/07) and the all volunteers who participated to this study.

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Poster Presentation

Demodex (Acari: Demodicidae) infestation in patients with acne vulgaris

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Abstract

Acne vulgaris (AV) is a chronic inflammatory disease of the pilosebaceous unit. Although AV is not life-threatening, it can lead to social phobia and depression due to facial scars. *Demodex* mites are arthropod microorganisms belonging to the family Demodicidae (Acari). Two species are human-specific parasites: *Demodex folliculorum* and *D. brevis*. The present study was conducted to evaluate *Demodex* infestation in AV patients. A total of 360 participants were enrolled in the study, including 210 patients with AV and 150 healthy controls. Samples were obtained from the right cheek, left cheek, nasolabial area, and chin using the ''standard superficial skin biopsy'' method, and examined under light microscopy. *Demodex* mite positivity (≥5) was detected in 62.4% of patients with AV and in 16.7% of the controls. *Demodex* density was higher in the AV patients (mean 25.7 mite/cm2) than in the controls (mean 6.72 mites/cm2). Overall, 3,367 Demodex mites were isolated from 131 (62.4%) of the patients. Of these infestations, 2,074 were only *D. folliculorum*, 52 were only *D. brevis,* and 1,241 were both *D. folliculorum* and *D. brevis.* One hundred sixty-eight mites were isolated from 25 (16.7%) of the controls; 153 samples contained only *D. folliculorum* and 15 contained both species. Differences the between the AV patients and the controls were significant ($P < 0.001$). In conclusion, the present study determined that the majority of AV patients in Erzincan, Turkey, are infested with *Demodex* mites. It may be helpful to consider these findings in clinical assessments of AV patients.

Keywords: Acari, acne vulgaris, *Demodex*, infestation, Erzincan

Acknowledgement: We would like to thank the Erzincan University, Coordinator of Scientific Research Projects, which suported this study (Project No: TSA-2017-441), Erzincan University Clinical Research Ethics Committee (Decision No: 2016-08/07) and the all volunteers who participated to this study.

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Poster Presentation

Investigation of PDGF-α expression in eyelid, conjunctival and orbital tumors

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Abstract

Eyelid, conjunctival and orbital tumors are an extremely rare malignant neoplasm all over the Word However, these tumors are the most commonly observed cancer types in ophthalmology patients. The most common diagnosis is basal cell carcinoma (BCC) among these patients (~90%). Cancer cells activate several adaptation and survival mechanisms and promote angiogenesis by releasing a lot of growth factors. Several growth factors with angiogenic activity have been described. These include platelet derived growth factors (PDGFs). PDGF-α is a member of the platelet-derived growth factor (PDGF) family and plays important roles in in the embryonal development and in wound healing as well as in the development of several pathological conditions such as atherosclerosis and tumorigenesis. The present study aims to investigate the expression of PDGF-α in conjunctival and orbital tumor patients from rare tumor types. In this study, we determined the expression levels of PDGF-α expression in 20 patients with eyelid, conjunctival and orbital tumors by RT-PCR. The data were analyzed with ΔΔCt method. PDGF-α mRNA expression level in the tumor tissue were 2.93-fold higher than in the control tissue. A significant difference in PDGF-α expression was detected between groups ($p= 0.01$). The result of this study demonstrated that increased PDGF-α expressions might be associated with eyelid, conjunctival and orbital tumor metastasis and tumor-related angiogenesis. We think that further understanding of the PDGF-α mechanism might be a promising strategy to prevent metastasis formation and tumor growth

Keywords: Eye, Tumor, PDGF-α, Expression, RT-PCR

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Poster Presentation

Age-Related Apoptotic Evaluation of the Effect of *Ginkgo biloba* Extract on Bone Tissue

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Abstract

Ginkgo biloba extract is used to treat Alzheimer, vascular dementia and age-related mental memory impairment. It specifically affects the formation of osteoprogenitor cells in bone marrow, increases osteoblast function and inhibits osteoclasts by triggering osteoblast differentiation and mineralization. Our aim is to compare effect of GbE on bone texture and epiphyseal cartilage between young/old groups in terms of apoptosis and osteoclast levels. In the study, 40 male Wistar albino rats were divided into 4 groups. Group1:30 days young control (saline,2months,-2doses), Group2:30 days young GbE (100mg/kg/day,2months,2doses), Group3:24 month old control (saline,2months 2doses), Group4:24 month old GbE (100mg/kg/day,2months,2doses). Hematoxylin-eosin and immunohistochemical staining with caspase-3, caspase-9 antibodies was performed in decalcified femoral sections. In hematoxylin-eosin staining, in old control group the number of osteoclasts was significantly higher than the young control group. The number of osteoclasts in old GbE group decreased significantly compared to old control and that in the young GbE group it was similar to the young control group. In immunohistochemistry findings, caspase-3 and caspase-9 reactions were observed in femur epiphysis and in endosteum layer of diaphysis area of old control group, while younger control group showed weak expression. In old GbE group, caspase-3 and caspase-9 involvement were observed weak to moderate, while in young GbE group were found weak in the same areas of bone tissue. It was concluded that, GbE reduced the number of osteoclasts in old bone tissue and at the same time decreased bone destruction by reducing apoptosis especially in endosteal layer of osteoblasts in diaphysis region.

Keywords: Bone, caspase-3, caspase-9, *Gingko biloba*, osteoblast, osteoclast

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Poster Presentation

Synthesis of Magnetic Alginate/Rice Husk Composite Beads and Removal of Cationic Dye from Wastewater

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Abstract

Due to the most of dyes are toxic, biologically non-degradable and even carcinogenic, they cause various environmental and health problems. Several processes to remove dyes such as physical, chemical and biological from wastewater have been tested. The aim of this study is to prepare and characterize magnetic alginate/rice husk composite beads and use them as adsorbent for removal of cationic dye, methylene blue (MB). Characterization of beads performed by using Fourier Transform Infrared (FTIR), Scanning Electron Microscopy (SEM) and Thermogravimetric Analysis (TGA). The ability of magnetic alginate/rice husk composite beads as an adsorbent for the removal MB from an aqueous solution has been investigated. The various operating parameters such as pH, contact time, temperature and initial dye concentration optimized. It was determined while pH was no significant effect on dye removal efficiency of beads, Temperature and ionic strength caused a decrease on removal efficiency.

Keywords: Alginate, rice husk, methylene blue, dye removal

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Poster Presentation

Investigation of determined water sources in Zonguldak province for *Cryptosporidium* spp.

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Abstract

Cryptosporidiosis is a very important zoonotic disease which caused by Cryptosporidium spp. Cryptosporidium species is known as a major cause of diarrhoea and gastroenteritis in humans and animals. Cryptosporidium oocysts spread to animals through contaminated feed and water with the faeces. Infective Cryptosporidium oocysts are thick-walled so highly resistant to chlorine and UV disinfection. In this study, water samples were taken from 15 different wells in Zonguldak province of Turkey. These samples were investigated for Cryptosporidium spp. Water samples were analyzed for Cryptosporidium oocysts and their antigens respectively, by using the modified Ziehl-Neelsen method and the CryptoQuick kit. According to the results, no antigens were detected in studies performed with the CryptoQuick kit. However, Cryptosporidium oocysts were detected by modified Ziehl-Neelsen method in water samples taken from Gülüç, Aktaş-3 and Kozlu regions of Zonguldak. Ziehl-Neelsen method is preferred for more accurate results in routine-scanning. Gülüç is an open well which its water used by the inhabitants of the region. In this case, it can be dangerous in terms of human health and also cause water-borne outbreaks. Therefore, the screening of water resources in rural areas is very important for the detection of zoonotic diseases such as cryptosporidiosis.

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Poster Presentation

Tumor preferential activity of *p-tert*-butylcalix[4]arene on human osteosarcoma saos-2 cells

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Abstract

The search for new potent anticancer drugs that can only target cancer cells, rather than affecting normal tissues is very much commendable. Supramolecular Calixarene (p-tert-butylcalix[4]arene) is a highly promising candidate in this regard and could be modified to enhance preferential cytotoxicity for targeted therapy. Calixarenes 5,11,17,23-Tetra-tert-butyl-25,27-bis (2 or 3 or 4-aminomethyl-pyridineamido)-26,28-dihydroxycalix[4]arene functionalized with a pyridinium group on different positions were synthesized (AMP on 2, 3 and 4 position) by appropriate procedures. The structure of the synthesized compounds was characterized by 1H-NMR and FT-IR. As cancer and healthy in-vitro models, Saos-2 is a human osteosarcoma cell line and L929 healthy mouse fibroblast cells (1x105) were cultured with 25-250 µM of 2/3/4-AMPs. The control group was treated with DMSO at the concentration of 0.1% in every assay After 24 h incubation, cell growth/proliferation analysis were done by XTT assay. The results of XTT assay were used to determine percentage cell death with respect to control (untreated cells) as a function of absorbance of dissolved formazan produced from conversion of XTT dye by the action of mitochondrial dehydrogenase enzyme. Our research directs that calixarene shows effective preferential cytotoxicity at a concentration range of 25 to 250 µM with enhanced preferential cytotoxicity shown by the modification of pyridinium group at the position 3 against Saos-2 human osteosarcoma cancer cells. The results reported in this study demonstrated that tumor-preferential in-vitro cytotoxicity of p-tert-butylcalix[4]arene against Saos-2 over L-929 cells present a promising approach for efficient and safe cancer therapy

Keywords: Calixarene, Anticancer, Saos-2, Tumor Preferential

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Poster Presentation

Investigation of the effect of *Thymbra spicata* extracts on L929 fibroblast cells

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Abstract

Wound, physical or chemical damage caused by the skin surface can be described as tearing or disintegration of the skin surface. Since ancient times, extracts of various plant species have been used for wound burn treatment. When looking at the content of these plants, it appears that the compounds they contain used for scientific purposes. Wound healing is a biological process involving many cell types, various cytokines, growth factors, and interactions between them. Wound healing process consists of hemostasis, inflammation, proliferation, and reorganization of the tissues. Each phase of the wound healing process occurs when specific cell types are displaced to affect other cells. In this study, Thymbra spicata, a species belonging to Lamiaceae family, was used. The pure water extract of Thymbra spicata was applied onto L929 fibroblast cells. Hematoxylin eosin staining was done for examination of cell morphology. The WST-1 test was used to determine the cytotoxicity of the extracts. Double staining method was used to show apoptosis - necrosis and the cell proliferation was determined using xCELLIGENCE - Real Time Cell Analysis System depending on the concentration of apoptosis and necrosis determined by WST-1. Finally, the genotoxic effect of the plant extract was investigated using the micronucleus test. As a result, the extract obtained from Thymbra spicata caused neither cell toxicity (85±3.5% cell viability) nor genotoxicity ($p>0.05$) on L929 fibroblast cells with a negligible very low apoptotic-necrotic effect.

Keywords: *Thymbra spicata,* cytotoxicity, genotoxicity, apoptosis, necrosis, in vitro

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Poster Presentation

Chromosomes of hybrid (O. × *haradjanii*) and its parents (O. *laevigatum* and *O. syriacum* subsp. *bevanii)* of the genus *Origanum* L. (Lamiaceae)

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Abstrct

Origanum L. comprises 22 species (25 taxa) and eleven hybrids in Turkey and 22 of which are endemic. The species are mainly concentrated in the Mediterranean area of Turkey. Root-tip meristems were provided from seed by germinating them on wet filter paper in Petri dishes at room temperature. Firstly root tips pretreated for 16 h in α-monobromonaphthalene at 4°C, fixed in 3:1 absolute alcohol/glacial acetic acid, then the root tips were hydrolyzed with 1 N HCl for 12 min at room temperature and stained with 2% aceto-orcein for 3 h at room temperature. Stained root tips were squashed in a drop of 45% acetic acid and permanent slides were made by mounting in Depex. The chromosomes were counted by Software Image Analyses (Bs200ProP) loaded on a personal computer. According to the karyological results, *Origanum* × *haradjanii* (*Origanum laevigatum* × *Origanum syriacum* subsp. *bevanii)* have a similar somatic chromosome number, which is n=15 for the haplotype. Chromosome analyses support that O. × *haradjanii* is a natural hybrid that is generated from crossed homoploidy of *O. laevigatum* and *O. syriacum*, which means that the hybrid taxon is generated by homoploid hybridization (all taxa have 2n = 30 chromosomes).

Keywords: Chromosome, *Origanum* × *haradjanii,* Turkey

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Poster Presentation

Immobilization of globulin on calixarene based Cu-affinity nanofiber

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Abstract

A new calixarene nanofiber was synthesized for the improving of a new immobilized metal affinity material. Firstly, the calixarene was synthesized then, chelated with Cu on nanofiber surfaces to produce an immobilized metal affinity nanofiber (IMAN) adsorbent for Globulin immobilization. The amount of Cu (II) ions were loaded to surfaces of the calixarene based nanofiber. The binding amount of the copper was determined as approximately 1.5 ppm by using ICP. Immobilization of globulin on nanofiber at 7,6 of pH was analyzed by using fluorescence spectroscopy. The binding amount of globulin was found to be 0,068 µg to 2.25 cm-2 of the Nanofiber/Cu at pH 7.4. The characterization of the prepared surfaces was performed by FT-IR, TEM and SEM.

Keywords: Nanofiber, immobilization, IMAC, globulin

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Poster Presentation

Green synthesis of silver nanoparticles (AgNPs) by using leaf extract of *Origanum bilgeri* and effect of pH changes on the synthesis

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Abstract

Origanum bilgeri P.H. Davis is one of the endemic plants originated from Turkey. In this study, silver nanoparticles were green synthesized by using aqueus extract of endemic *O. bilgeri* leafs beside studying the pH effect on the synthesis for the first time. Effect of different pH values on the synthesis was observed with number of distribution measurements by Dynamic Light Scattering (DLS) method. Nanoparticle synthesis was achieved by using aqueus leaf extract of *O. bilgeri* (T.D. 4343) at room temperature. 5 ml extract was mixtured with 95 ml $AgNO_3$ (1 mM) for nanoparticle synthesis at three different pH values (5.37, 6.77, 8.65) adjusting with HCI (1 M) and NaOH (0.1 M). It was followed by centrifugation at 4°C (9000 rpm/20 min) after washing two times to remove any unbound residues by distilled water and storing at 4°C. The obtained AgNPs were taken into a 96 well uv microplate and absorbances of reaction mixtures were measured in the 200–800 nm wavelength range by using a spectrophotometer. Also, polydispersity and size distribution measurements of AgNPs were carried out through sonication of diluted reaction mixtures. Three replicates were done for this measurement. According to obtained data from spectrophotometric measurement at the end of 2 hours of the synthesis, maximum absorbances were found at 400 nm, at 430 nm, at 410 nm for pH 5.37, pH 6.77, pH 8.65 values, respectively. As a result of DLS analysis, the number of distrubition was found as almost at the same level for the reaction mixtures of pH 6.77 and pH 8.65, while the number of distrubition is the highest one in the reaction mixture at pH 5.37.

Keywords: *Origanum bilgeri*, Green synthesis, Silver nanoparticle

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Poster Presentation

Fingerprint analysis and simultaneous determination of phenolic compounds in extracts of *Salvia rosifolia* by LC-MS/MS

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Abstract

The genus *Salvia* L. (sage) consists of about 900 plant species and represents one of the most important and the largest genera of the Lamiaceae family. The name of *Salvia* comes from the Latin words salvare, salveo, salvus or salvere meaning healing, non-harmful and safe and refers to the numerous medicinal applications of *Salvia* plants. Salvia species are known for their several therapeutic properties in folk medicine to treat tuberculosis, bronchitis, pyretic, rheumatoid arthritis, colds, wounds and skin infections, headache, cerebral ischemia and memory disorders, as well as hepatitis. Terpenoids (di- and triterpenoids), phenolic acid derivatives and flavonoids are the predominant secondary metabolite constituents of *Salvia* species. *Salvia* species mainly contain two major types of biologically active compounds: lipid-soluble abietane-type diterpenoid tanshinones and carnosic acid and water-soluble phenolic acids and flavonoids. Phenolic acids which are widely distributed in plant species are responsible for their various therapeutic effects. Petroleum ether, chloroform and ethanol extracts of *S. rosifolia* collected in 2015 were prepared. In addition, ethanol extracts of various parts of *S. rosifolia* collected in 2015, 2016 and 2017 were prepared. Content analyzes of 19 phenolics of these prepared extracts were determined by LC-MS / MS. Ethanol extracts were found to be richer than petroleum ether and chloroform extracts in terms of phenolic content. Ethanol extracts have been found to be richer in terms of apigenin, kosmosiin, rosmarinic acid, and 6,7-dehydrorhenone.

Keywords: *Salvia rosifolia,* LC-MS/MS, Phenolic Compounds

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Poster Presentation

Histological evaluation of osteogenesis in mesenchymal stem cells on fibrin glue and fibronectin coated Ceraform

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Abstract

Fibrin sealants have been used for cell delivery for growth factors in order to increase bone growth and vascularization. A growing number of studies have been performed about osteogenic potential of adipose tissue derived mesenchymal stem cells (ADSC) in combination with several growth factors which are increasing the bone formation. Ceraform®, is a synthetic calcium phosphate ceramic, used as a bone substitute. In this study the behaviour of ADSC osteogenically induced on Ceraform with different tissue adhesives namely fibrin glue (FG) and fibronectin (FN) were investigated. The cells were cultivated for 28-day period by osteogenic induction medium. Days 1, 7, 14, 21 and 28 were selected as specific intervals for incubations. Samples were stained with Hematoxylin & Eosin and Alizarin red to observe osteogenesis (calcification of matrix) and examined under the light microscope. According to the results, on day 7, there were undifferentiated cells but on day 14, osteoblasts were differentiated and morphologically changed on especially FG coated Ceraform group. At the same time, inorganic matrix was increased and this was supported by the increased alizarin red stainings. On FN coated groups, the osteogenic differentiation of cells was not apparent as FG coated groups. Consequently, FG coating of Ceraform combined with adipose-tissue derived mesencyhmal stem cells would be an alternative approach on bone regeneration applications in bone injury.

Keywords: Mesenchymal stem cell, ceraform, fibrin glue, fibronectin, osteoinduction, histology

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Poster Presentation

Improvement of catalytic activity of lipase in the presence of lower rim substituted calix[4]arene

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Abstract

In biotechnology, lipases are the class of enzymes most widely used in the kinetic resolution of racemic compounds and organic synthesis. In particular, lipase from Candida rugosa has important industrial uses. It is well known that Candida rugosa is used in a wide variety of esterification reactions and hydrolysis. The activity of Candida rugosa lipase (CRL) is high and it also has broad specificity in reaction medium, as compared to free lipase, which has low activity, and is usually unstable in organic medium or in harsh conditions such as high temperature or excessive pH. The stability, catalytic activity, and reusability of immobilized lipase are improved in continuous operations by the immobilization of CRL on various supports, providing the separation of products. Investigations of the immobilization of CRL on different carriers have been reported by a series of recent studies, and carriers have included chitosan, amberlite, cyclodextrin, and calixarene. The calix[4]arene platform in supramolecular chemistry shows interesting organizational properties for the construction of ligating sites to recognize different species. The increasing interest in these compounds is due to the simple large-scale synthesis of calixarenes, and the various methods by which they can be selectively functionalized either at the upper rim or the lower rim. In this study, we synthesized lower rim substituted calix[4]arene amide derivative and their use as additives in the sol–gel encapsulation process. The influence of these materials on the enantioselective hydrolysis of racemic Naproxen methyl ester has also been evaluated.

Keywords: Calix[4]arene , Candida rugosa lipase, Sol–gel encapsulation, Naproxen methyl ester

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Poster Presentation

Investigation of biofilm formation in Escherichia coli porin proteins

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Abstract

In this study, it was researched whether OmpA, OmpC, OmpF, OmpG, OmpT, LamB and PhoE porin proteins of Escherichia coli W3110 has a role in the formation of biofilm in the presence of different metals. In the study, ompA, ompC, ompF, ompG, ompT, lamB and phoE mutant strains of E. coli W3110 were used. Minimal inhibition concentration (MIC) values of these strains were determined by serial microdilution method in the presence of CuSO4, NiSO4 and ZnSO4 metals in Luria-Bertani (LB) Brot media. Biofilm formation in LB broth at half the concentration included metal was investigated. Confirmation of genes which plays a role in biofilm formation was determined by completion tests.No biofilm formation was observed in E. coli W3110 strain in the presence or absence of metal. However, ompA, ompC and lamB mutant strains were found to produce biofilm in both metal-free media and in media containing Cu + 2 and Ni + 2, but not biofilm in the presence of Zn + 2 metal. ompA, ompC and lamB genes, which plays a role in biofilm formation has been confirmed by complementation tests.

Keywords: *Escherichia coli,* biofilm, porin protein, metals

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Poster Presentation

Evaluation of juglone effects on metastasis by cell migration assay

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Abstract

Pancreatic cancer (PC), a highly aggressive and malignant cancer characterized by high metastasis and angiogenesis, is one of the deadliest cancers worldwide. Incidence and mortality of PC is increasing every year and estimated death is third leading in the cancer-related disease in US for 2018. The lack of early specific clinical signs and symptoms of PC cause late diagnosis at stages in which metastase have already occurred. Late diagnosis, high metastatic potential and the chemoresistance to drugs which are used to treatment have led to searching for different treatment strategies in PC. Combinations of natural components with low toxicity with standard chemotherapeutic agents can provide additional or synergistic effects, alleviate side effects, increase uptake of conventional drugs, and support the immune system to fight cancer. Juglone is a secondary metabolite that can be isolated from the leaves, roots, shells and fruit of Juglandaceae walnut trees. On the otherhand, knowledge about juglone's cytotoxicity, and effects on angiogenesisand metastasis. is insufficient. In our early study, effect of juglone on metastasis and angiogenesis in BxPC-3 and PANC-1 human pancreatic cancer cell lines was determined changing of target genes expressions which are related about angiogenesis, metastasis. Cell migration (wound healing) assay is a technique which is used to analyze metastatic behavior. The aim of this study is to analyze the migration of normal cells and cell proliferation-suppressed cells in juglone treated BxPC-3 and PANC-1 cell lines with low serum concentration in cell medium (serum starvation) and normal serum concentration in cell medium (nonstarvation).

Keywords: Pancreatic Cancer, Juglone, Cell Migration Assay

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Poster Presentation

Effects of acrylamide on oxidative stress modulators in HEK293 cell line

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Abstract

Acrylamide is a cytotoxic, genotoxic and neurotoxic chemical for the human.During the cooking process at high temperatures, the lower amount of acrylamide is formed and taken into the human body. High level of acrylamide uptake causes genotoxic and neurotoxic effects, however the cellular damage mechanisms of long-term low-dose acrylamide uptake are not fully known yet.The present study was carried out to investigate the effects of different doses of acrylamide on oxidative stress modulators such as glutathione (GSH), superoxide dismutase (SOD) and catalase (CAT) in HEK293 cell line. Effects of acrylamide on the viability of HEK293 cells were evaluated using MTT method. To measure GSH, SOD and CAT, we used an EnzyChrom GSH, SOD and CAT Assay Kit. As a result, radical oxygen species formed by the metabolism of acrylamide have increased oxidative stress in cells and the amount of SOD significantly decreased. The amount of GSH decreased in proportion to the increase in the amount of hydrogen peroxide and the level of oxidized GSH (GSSG) has declined. Moreover, CAT which has the same function as GSH is also increased up to IC50 dose level then the amount decreased. It was determined that the hydrogen peroxide formed is first neutralized by glutathione however if the capacity of glutathione is insufficient catalase inactivated the hydrogen peroxide. Increased oxidative stress in cells leads to oxidation of DNA, proteins and lipids. This causes the decrease in cell viability, increase in cell death and tumorigenesis. Our work has supported that the induction of oxidative stress causes carcinogenesis.

Keywords: Acrylamide, Oxidative stress, HEK293

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Poster Presentation

Quantitative evalutaion of biocompatibility ın the terms of cytotoxicity of four different adesive bonding agents before polymerization

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Abstract

G-Premio BOND (GPB), 3M espe single bond universal (ESBU) and dentsply sirona-prime bond universal (DSBU) are universal, single component, light-cured dental bonding agents. They are compatible with total-etch, self-etch and selective-etch techniques and indicated for use in all classes of direct restorations. Tokuyama Universal Bond (TUB) is a two component self-cured dental adhesive system. The aim of this study was to make a quantitative comparison of the cytotoxic potentials of these adhesive bonding agent. To evaluated cytotoxic potentials of the test materials on L929 rat fibroblast cells were used SRB (Sulforhodamine B) test. Four different dilutions (0.1%, 0.01%, 0.001%, 0.0001%) of the unpolymerized form of materials was quantitatively incubated in three different time periods (24h, 48h, 72h). In the statistical analysis of the data obtained as a result of the SRB test; TUB was determined as the most cytotoxic after the 24-hour period, DSBU after the 48-hour period and the 72-hour period. GPB was showed at least cytotoxic potential all of the incubation time (20-60% cell viability at 0.1% dilutions), while other tested adhesive have similar effect (10-20% cell viability at 0.1% dilutions). This effect was observed to significantly increase related to dose and changes were seen related to time. Although most of the dental adhesive systems are used after their polymerization, also are treated unpolymerized components during application, or after application. So, the toxic effect of monomeric forms of them must be assessed. According to our results GPB was found more safety dental adhesive. However, they could be tested also after polymerization.

Keywords: Biocompatibility, Cytotoxicity, bonding agent, polimerization, quantitative comparison

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Poster Presentation

Development of biodiesel production methods from cotton oil

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Abstract

Biodiesel; chemical methods from vegetable or animal oils are an environmentally friendly fuel that is the final methyl ester form. Chemically, long chain fatty acids can be defined as mono alkyl esters. Biodiesel is produced by reacting vegetable or animal oils with an alcohol and a catalyst. Biomass fuel is renewable, while diesel fuel can be used as diesel fuel. In recent years, renewable energy plants in the world have concentrated on agriculture (biodiesel, bioethanol, biogas and biomass), and many countries are on the fast track. A.B: Approved by the European Parliament (EP) and the Council of Europe (EC) with "Directive 2003 / Support for biofuels 30 / CE". With this directive, for the first time, all Member States are obliged to use renewable fuels. The cotton oil methyl ester used in this study was obtained; transesterification method was used. During this process, changing temperature, time and catalyst ratio were determined and optimum values of cotton oil in biodiesel production were determined and usage properties for biodiesel improved.

Keywords: Biodiesel, cotton oil, extraction, energy

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Poster Presentation

Antioxidant properties of *Onobrychis argyrea* subsp. *isaurica*

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Abstract

The aim of this study was to determine the antioxidant activity of *Onobrychis argyrea* subsp. *isaurica*. Antioxidant activity were investigated by different assays, including total antioxidant capacity (phosphomolybdenum and metal chelating assays), free radical Scavenging assays (DPPH, ABTS), iron and copper reduction potency (FRAP and CUPRAC). In addition to these methods, the total phenolic and flavonoid contents of the extracts were also studied. Methanol, ethyl acetate and water extracts of Onobrychis argyrea subsp. isaurica were used in all of the methods applied. Total phenolic and flavonoid content and total antioxidant capacity of *Onobrychis argyrea* subsp. *isaurica* were generally higher in methanol extract than in ethyl acetate and water extracts. In DPPH, FRAP and CUPRAC methods, the highest results were obtained in methanol extracts. The highest activities of ABTS radical scavenging and metal chelating capacities were also detected in water extracts. According to the study results, Onobrychis argyrea subsp. isaurica may be used as a source of natural antioxidants.

Keywords: Antioxidant, *Onobrychis argyrea*, total phenolic, total flavonoid

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Poster Presentation

Determination of ozone gas effect on zeta potential and ph values of fresh pomegranate water

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Abstract

Pomegranate (*Punica granatum*), which is highly rich in bioactive compounds, has increased its use as a medical food because of its positive effects on health, and pomegranate juice has become popular due to these important biological effects. Ozone is used as a disinfectant in the food industry because it does not harm the environment and does not leave toxic residues. Ozone is a powerful oxidant that can lead to physiological, chemical and microbial changes in fresh products. In this study, ozone gas (3.5 g / h) were treated to freshly squeezed pomegranate juices in 25 ml volumes for 5, 15, and 30 minutes and left at +4oC for 24 hours. The zeta-potential and pH values of the pomegranate juices were measured immediately and 24 hours later. pH values of pomegranate juice samples decreased from 3.26 to 3.01 with the increase of ozone application period. It has been observed that cold standing does not change pH values. The pomegranate juices treated with ozone for up to 15 minutes have statistically ($p < 0.05$) reduced zeta-potential values after the application but the reduction is not significant after 24 hours. The ozone treatment of 30 minute increased the zeta potential.

Keywords: Pomegranate juice, *Punica granatum*, ozone gas, zeta-potential

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Poster Presentation

An investigation the effect of $NiFe_2O_4$/CNT catalyst toward photocatalytic hydrogen evolution

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Abstract

Photocatalytic hydrogen production, which is known artificial photosynthesis, from water have great attention due to providing high energy yield without pollutants by products. The purpose of this work is to supply alternative hydrogen evolution reaction (HER) catalysts materials to platinum. In dye-sensitized system, NiFe2O4 and NiFe2O4/CNT structures have systematically investigated the enhancement of HER activity. NiFe2O4 and NiFe2O4/CNT structures have been prepared by hot injection method and characterized by X-ray powder diffraction (XRD) and scanning electron microscopy (SEM) and energy-dispersive X-ray spectroscopy. These structures have been reported to be active catalysts for the photocatalytic hydrogen evolution from water under the visible light irradiation by using Eosin-y dye as a photosensitizer and triethanolamine as the sacrificial electron donor. A comparative study demonstrated that NiFe2O4/CNT catalysts have been improved HER performance than NiFe2O4. This is thought to be due to the inhibition of recombination of electron−hole pairs and electron transport efficiency of CNT.

This study has been supported by UNESCO-Loreal for Woman in Science programme, TUBITAK (The Scientific and Technological Research Council of Turkey) (215M309), Selcuk University Scientific Research Projects (17201067) and Turkish Academy of Sciences via a TUBA-GEBIP fellowship. This paper is the part of PhD thesis prepared by Assoc. Prof. Dr. Faruk Ozel.

Keywords: Carbon nanotubes, hydrogen evolution, metal oxides

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Poster Presentation

Comparative study of nanofiber structures for hydrogen production at liquid-liquid interfaces

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Abstract

Natural photosynthesis occurs in biological membranes that can be viewed at thin organic liquid membranes separating two Aqueous solutions. Inspired by biological photosynthesis, hydrogen production from water may be an approach to solve the global energy crisis. Liquid/liquid (L/L) interfaces has been proposed as a model system to explore the activity of hydrogen evolution reaction (HER). In this work, transition-metal oxides nanofibers have been investigated for the HER. Transition metal oxides are promising due to their low cost and earth-abundant to replace by using the platinum-group metals. Nanofiber structures have been synthesized by electrospinning technique. Our approach herein is the use of metal oxide nanofiber structures in HER at polarized liquid/liquid interfaces between an acidic solution and an organic solution which contain decamethylferrocene (DMFc) acting as an electron donor. These catalytic activities have been investigated by two-phase reactions and cyclic voltammetry methods at water/1,2 dichloroethane interface.

This study has been supported by UNESCO-Loreal for Woman in Science programme, TUBITAK (The Scientific and Technological Research Council of Turkey) (215M309), Selcuk University Scientific Research Projects (17201067) and Turkish Academy of Sciences via a TUBA-GEBIP fellowship. This paper is the part of MSc thesis prepared by Gizem Yanalak

Keywords: Metal oxide, hydrogen evolution, liquid-liquid interfaces, co-catalyst free

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Poster Presentation

Polyphenol oxidase enzyme activity in Gemlik olives during the different developmental periods

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Abstract

The olive is a popular fruit in the Mediterranean countries, and commonly used as table olives and olive oil. Polyphenol oxidase (PPO) is responsible for the progressive browning of the fruit during the maturation process on the tree, or during the postharvest technological treatments. PPOs are a group of Cu-containing enzymes that catalyze the oxidation of colorless phenols to colored quinones. In this study, the PPO activity in the fruits of *Olea europaea* L. cultivar Gemlik was studied during four developmental stages. Utilizing the equations of the Linewear-Burk graphs, the K_M and V_{max} values of cultivar Gemlik PPO enzyme at different maturity periods (August, September, October, November) were determined. The K_M and V_{max} values of olive PPO enzyme were determined using catechol as substrate. It has been observed that the V_{max} values gradually increased depending on the maturity periods.

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Poster Presentation

Bacterial and parasitic zoonoses in fish and fish products

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Abstrac

Food-borne infections such as zoonotic disease are gaining importance due to increasing in the number of outbreaks in the recent years throughout the world. There has been increasing outbreak based on zoonotic diseases by the increase in consumption regional fish dishes such as sushi, sashimi, ceviche, carpaccio based on raw or minimally processed fish, by the growth in the international market in fish and fish products, and by the spectacular development of aquaculture. Zoonotic diseases are infections that can be naturally transmitted from animals to humans. Consumption of raw or under-cooked infected fish tissue and, ingestion of fish tissue contaminated with feces from infected fish result in food borne zoonotic disease. Overall 46.15 % of fishborne zoonoses are transmitted orally which are mostly helminthic diseases are caused by trematodes, cestodes and nematodes. These parasites have been known to cause some diseases like gastritis, ulcer, cancer or appendictis in human. As bacterial fish-borne zoonoses, only *Mycobacterium* spp., *Streptococcus iniae, Clostridium botulinum,* and *Vibrio vulnificus* have been reported. In this rewiew, we will focus on the most important and prevalent emerging and re-emerging fish-borne zoonoses in the world including the current situation, sources of human infection and control regimes.

Keywords: Bacteria, Parasite, Zoonoses, fish-borne, foodborne

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Poster Presentation

Vaccine therapy for cancer

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Abstract

Despite various strategies to treat cancer, it is still one of the most deadly diseases worldwide. Although there is a critical need to develop cancer vaccines, vaccines are not available for many cancer. There are 2 types of cancer vaccines: Prophylactic and Therapeutic. Subunit vaccines Gardasil and Cervarix against Human Papillomavirus 16 and 18 approved by FDA are used to prevent cancer causing infections, while an FDA approved dendridic cell (DC) based vaccine Spileucel-T is used for treatment of metastatic prostate cancer. The down side of DC based vaccines is they are expensive, need to be patient specific, and their production is challenging. On the other hand, subunit vaccines consisting tumor associated antigens and adjuvants are more economically feasible with their ease of production and marketing. The problem of subunit vaccines is that the immunogenicity of most antigens is low and most of them being self antigens. Prophylactic vaccines are given to healthy individuals to prevent virally induced tumors and generation of long term humoral immune response is the main goal. Otherwise, induction of an acute effector response may induce undesired side effects, such as inflammation. On the other hand, therapeutic vaccines are given to people with established tumors and compromised immune system and primarily rely on CD8+ T cell responses for the elimination of cancer. Furthermore, generation of a long term memory is also critical for therapeutic tumor vaccines to control recurrences. Therefore, vaccine formulations should be chosen based on type of treatment.

Keywords: Vaccine, Cancer, Tumor, Prophylactic, Therapeutic

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Poster Presentation

Highly enantioselective direct aldol reaction catalyzed by tetraoxocalix[2]arene[2]triazine (R)-phenylethylamine derivative

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Abstract

The aldol reaction is recognized as one of the most powerful carbon–carbon bond-forming reactions in modern organic synthesis. It provides an atom-economic approach to β-hydroxyl carbonyls, which make up a large family of chiral intermediates for the synthesis of biologically active substances and natural products. Since the early reports in the 1970s that the L-proline catalysed intramolecular aldol reactions that L-proline can mimic type I aldolase to enantioselectively catalyse intermolecular aldol reactions, interest in organocatalysis has increased spectacularly in the past few years as a result of both the novelty of the concept and unique activation modes, because of the fact that the operational simplicity, ready availability of catalysts, less toxicity, efficiency, and selectivity make many organocatalytic reactions attractive method to synthesize complex structures superior to those carried out using more conventional methods. Novel bifunctional chiral R-Phenylethylamine bearing a Tetraoxocalix[2]arene[2]triazine scaffold was synthesized and applied in catalytic asymmetric Aldol reaction of acetone with benzaldehyde derivatives in different solvents. The corresponding adducts were obtained in excellent yields (up to 92%) and with high enantioselectivities (up to 99% ee).

Keywords: *Asymmetric aldol reactions, Enantiomeric excess, NMR, Tetraoxocalix[2]arene[2]triazine*

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Poster Presentation

Anti-inflammatory effects of resveratrol in diabetic kidney tissues

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Abstract

Diabetes is a common disease among the people and negatively affects the quality of life. It causes special complications with hyperglycaemia due to the absence, inadequacy or ineffectiveness of insulin hormones, and affects many organs in the body if not treated. In this study, we aimed to elucidate the oxidative stress and inflammation status of kidney tissues in diabetes and investigated the effects of resveratrol, which is a strong antioxidant and anti-inflammatory agent, on these parameters. Equal age male Wistar rats were divided into four groups two of which diabetes was induced with streptozotocin (55 mg / kg). To the one control and one diabetic group, resveratrol (20 mg / kg) was injected to the animals intraperitoneally for 3 weeks as a single daily dose. The oxidative stress and inflammation states in kidney tissues were evaluated. Accordingly, lipid peroxidation (MDA) has been shown to increase significantly ($p < 0.05$) in diabetic groups together with proinflammatory cytokines such as IL-6, IL-8, TNF-α. Anti-inflamatory effects of resveratrol administration on inflammatory markers in kidney tissues have been demonstrated. The results of this study include explanatory data in diabetic kidney tissues regarding the diabetes research, such as new drug production.

Keywords: Resveratrol, Diabetes, Kidney, Anti-inflammatory effect

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Poster Presentation

The effects of monoethyl hexyl phthalate (MEHP) and monobutyl phthalate (MBP) at INS-1 pancreatic beta cells

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Abstract

Phthalate plasticizers used in a wide range of common plastic products are released into the environment and may pose a risk of increased incidence of diabetes mellitus. In this work, we studied the effects of monoethyl hexyl phthalate (MEHP), the metabolite of diethylhexyl phthalate and monobutyl phthalate (MBP), the metabolite of dibutyl phthalate exposure on INS-1 rat pancreatic beta cells. 5 different doses (1ng/mL, 10-1 ng/mL., 10-2 ng/mL., 10-3 ng/mL. and 10-4 ng/mL) were used for both of phthalates and MTT analysis for cytotoxicity screening of INS-1 cells exposed to MBP and MEHP during 24, 48 and 72 h. Also, Total Oxidant Status (TOS) and Total Antioxidant Status (TAS) were analyzed. The mRNA expression levels of FOXO-1, PDX-1, SIRT-1, INS-1, INS-2, p53, BCL-2, BCL-XL were measured with real-time PCR. For MEHP, the cell viability was decreased with 1ng/mL, 10-1 ng/mL and 10-2 ng/mL dose groups compared to control group. For MBP, the highest decrease was observed at the end of 72 h treatment. TOS levels were increased and TAS levels were decreased for MEHP and MBP dose levels. PDX-1 is a transcription factor necessary for pancreatic development, including β-cell maturation and the expression levels of this were decreased at 1ng/ml of MEHP and MBP. Statistical analyses were performed by using a SPSS 20.0 program for Windows. All values were examined by two sample t test to detect differences among groups. P values less than 0.05 were considered statistically significant.

Keywords: Phthalate, Diabetes, plasticizer, MEHP, MBP.

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Poster Presentation

Chitosan: A promising antiviral against Betanodavirus

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Abstract

Viral encephalopathy and retinopathy (VER) also known as viral nervous necrosis (VNN), caused by betanodavirus, is one of the major devastating threats in sea bass Mediterranean aquaculture. To date, therapeutic procedures are not fully effective in the case of VNN. Therefore, to determine a sustainable strategy to protect sea bass species, a new approach to inhibit betanodavirus infection is recommended. Chitosan, a polymer extracted by alkali deacetylation of chitin from crustacean shell, has a broad spectrum of unique biological activities, including its ability to inhibit viral infections. However, the antiviral activity of chitosan against betanodavirus has never been studied. In this frame, we used chitosan extracted from *Parapenaeus longirostris* shrimp shell *waste to evaluate the antiviral potential on betanodavirus (RGNNV*). *SSN-1 cell infected by RGNNV was exposed to* different concentration of chitosan (0.1%, 0.5% and 2%) for seven days. Following inoculation period, cell culture suspensions were collected to assess viral gene expression. Results showed a good antiviral activity against betanodavirus where *cytopathic effect* was drastically reduced at 0.5% concentration of chitosan. Moreover, viral gene (RNA2) expression was down expressed during the seven days post inoculation. The chitosan showed high antiviral activity against betanodavirus which seemed to be dependent on its concentration.

Keywords: Antiviral activity, Betanodavirus, Chitosan, Gene expression

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Poster Presentation

Extracellular matrix and vascular anomalies in obesity and insulin resistance

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Abstract

The purpose of current study was to examine the relation of extracellular matrix (ECM) with vasculature in insulin resistant adipose tissue. RT-PCR was used for gene expression analyses of collagen, elastin and angiogenic factors, and immunohistochemistry (IHC) for additional abdominal sc adipose tissue analyses. Adipocyte-macrophage coculture experiments were measured in an angiogenesis assay. CD31 mRNA which is an endothelial marker showed no significant correlation with body mass index or insulin sensitivity. In a subgroup of 17 subjects consisting of nine obese and eight lean, CD31-positive capillary number in obese was decreased by 58%, While larger vessels were increased by 70%. When IHC is used, elastin had decreased and collagen V expression increased in obese subjects (compared with lean). Adipocytes cultured with M2 macrophages had reduced of elastin and increased collagen V expression.

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Poster Presentation

Fabrication of curcumin loaded chitosan and silver based spheres for biomedical applications

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Abstract

Curcumin as a yellow natural compound extracted from turmeric roots is an important candidate in the treatment of various diseases. However, the clinical applications of curcumin is greatly limited due to its poor solubility and low bioavailability. In order to overcome these limitations, curcumin was loaded into a particle-based delivery system using chitosan (CH). CH is a natural, low toxic, biodegradable and biocompatible polymer which is abundantly available in nature. CH interacts very easily with bacteriums and most of the proteins thereby enhancing the antimicrobial effect of silver particles. The present study involves the fabrication of curcumin loaded CH and CH-Ag particles by a simple one-step production. Curcumin loaded CH and CH-Ag composite materials were synthesized in concentrated NaOH solution at room temperature. Particles were successfully synthesized and characterized with the use of UV-Visible and Fourier Transform Infrared Spectroscopy. The surface morphology and diameter of the synthesized particles were determined by Optical Microscopy. Our study demonstrated that curcumin loaded CH and CH/Ag particles can be utilized as a potential material for use in biomedical approaches including delivery systems and tissue engineering applications to prevent microbial contamination and to inhibit the growth of microorganisms.

Keywords: Fabrication, Chitosan, Silver, Curcumin, Tissue engineering

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Poster Presentation

Preventive effects of Oleuropein on SiO2 nanoparticles induced oxidative stress on *D. melanogaster*

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Abstract

Nowadays, nanotechnology is one of the most active research areas with both steady-state chemical material and biological systems. In the past decades, especially nanomaterials have been widely used in the fields of biomedicine, pharmaceutical, and other industry. Among the produced nanomaterials, silicon dioxide (SiO_2) have the potential for widespread applications. SiO_2 nanoparticles are used in many areas such as chemical mechanical polishing and as additives to drugs, cosmetics, printer toners, varnishes, and food. Considering their wide range of applications, the potential adverse effect of SiO_2 nanoparticles is of great interest on human health and the environment. Oleuropein is a natural phenolic antioxidant, which is present in an elevated concentration in olives, olive oil, and olive tree leaves. It scavenges reactive oxygen and nitrogen species and recent studies have shown that oleuropein is an anti-tumor agent, which is completely non-toxic in several animal species. The aim of this study was to investigate the effects of SiO_2NP (20-55nm) application on oxidant-antioxidant systems on *Drosophila melanogaster,* and the protective role of Oleuropein (OLE) on these effects. For this purpose, the same old third instar larvae (72±4 h) of D. melanogaster were divided as follows: untreated control groups including distilled water, treated groups including SiO2 (0,1, 1 and 10mg/mL) and OLE (100µM), and another treated groups including SiO2+OLE. Later, the oxidant (for SiO2 application group) and antioxidant systems (for SiO2+OLE application groups) of the biochemical tests and measurements were made. Total antioxidant status (TAS) and total oxidant status (TOS) of adult individuals were measured using commercially available kits. Using tissue homogenates of *D. melanogaster*, oxidative stress index (OSI) was calculated with TAS and TOS measurements. It was determined that the TAS value was found higher, and TOS value was found lower in SiO2 application group than SiO_2+OLE application groups ($p<0.05$). In addition, it has been put forth that OLE preventive formation of free radicals and inhibit lipid peroxidation caused by SiO_2 and stimulate the detoxification enzymes

Keywords: *Drosophila melanogaster,* Nanoparticles, SiO_2, Oleuropein, Oxidative **stress**

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Poster Presentation

Evaluation of awareness on radiation sources and radiation protection among Turkish community

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Abstract

Radiation has negative biological effects on living organisms, which may vary depending on the dose and the duration of exposure. Humans use the ionising radiation properties of radionuclides for many different processes, including energy production, industry, diagnosis and treatment of medical problems. Among the artificial radiation, the largest pie slice is ionising radiation from medical applications and it represents the majority of radiation doses to which the general population is exposed. It is also exposed to radiation in daily life like natural background radiation including cosmic, terrestrial, internal and many consumer products that contain non-ionising radiation sources including mobile phone, microwave oven. In this study, it was aimed to assess the awareness on radiation and radiation protection among Turkish community. A cross sectional questionnaire applied 300 people between 5 and 15 November 2017. Statistical analysis was done by SPSS using the Chi-square and Kruskal Wallis test.

Keywords: Radiation, Radiation protection, questionnaire

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Poster Presentation

Selective recovery of levulinic acid and formic acid from mixed acid solutions by reactive extraction method

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Abstract

Nowadays, chemical industry is under an increased pressure to develop green and sustainable materials and methods. The endeavour is to develop more eco-friendly and cost-efficient production processes, technologies and chemical transformations of biorenewables. Levulinic acid (LA) is shown as one of the most important platform chemicals in this century since it can be used in the production of green fuels. It can be produced from lignocellulosic materials via chemical and biological means. There is a growing need for its selective recovery from multiple acid solutions containing by-products and unreacted substrates. Reactive extraction is one of the most appropriate methods for the purpose. The present study is on the selective extraction of levulinic acid (LA-0.25 M) and formic acid (FA-0.25 M) from their binary solutions. Trioctylamine (TOA) was used as the extractant and dissolved in organic solvents. Effects of several reactive extraction parameters were studied. Formic acid (pKa=3.75) was preferentially extracted from the binary solution, as expected due to its higher acidity. The highest separation factor was obtained at pH 1.92 which is the natural pH of the solution, as about 9.5 and 9.3 with the use of 0.3 M TOA in heptanol and octanol, respectively. The increase in TOA amount to 0.5 M decreased the separation factor to 7.4 and 8.9 for the two alcohols, respectively. The extraction efficiency of FA was more than 95% and purity was less than 60% in these conditions. The increase in pH increased the purity, however decreased the extraction efficiency of the acids.

Keywords: Levulinic acid, Formic acid, Selective extraction, Trioctylamine, Recovery

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Poster Presentation

Sequencing of the Amylopullulanase (apu) gene of *Thermoanaerobacter brockii brockii* and identification of conserved regions

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Abstract

Starch is mostly used raw material in industry and it has to be hydrolyzed before using. Starch hydrolysis is carried out by three main steps named as gelatinization, liquefaction and saccharification. Firstly, raw starch is exposed to high temperature to obtain it like gel form material. Then some endo-amylase enzymes such as α-amylase is required for enzymatic degradation in liquefaction step. In the saccharification step, exo-amylases such as glycol-amylase enzyme and de-branching enzymes are used to hydrolyze the starch. Since the starch molecule has also some branch points one in every 20-25 D-glucose units, de-branching enzymes are also required together with α-amylase enzyme to reduce starch molecule to oligomers. Amyllopululanase enzyme (EC 3.2.1.41) is one of the de-branching enzymes with an extra α-amylase activity. So it would be possible to decrease of by product formation and process time and also with increase of yield in starch hydrolysis process. Amylopullulanase enzyme from thermophilic *Thermoanaerobacter brockii brockii* has a high potential in starch industry. Sequencing of amylopullulanase enzyme from *Thermoanaerobacter brockii brockii* is unknown yet. Here we aimed to define the DNA sequence of the amylopullulanase from *Thermoanaerobacter brockii brockii* by using primer-walking method.

Keywords: *T. brockii brockii ,* de-branching, Amylopullulanase, Primer-walking

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Poster Presentation

Use of anion exchange resins for the recovery of succinic acid from aqueous solutions

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Abstract

Succinic acid (SA) is a dicarboxylic acid that has a wide use in various industries. It is known as one of the most important platform chemicals in industry. Besides its chemical synthesis, it can be produced by fermentation technique and today a significant portion of the industrial SA is provided by this method. Following to that, its selective and efficienct recovery is required. Several techniques have been evaluated for the process. Ion exchange and adsorption are shown to be appropriate ones for the aim. In this work, SA was separated from aqueous solutions using several types of anion exchange resins. Aqueous solutions of SA with pre-determined initial concentrations (0.1-0.5 M) were used and different initial resin doses (0.5-1.5 g) were chosen in the experiments. Effects of several process parameters, e.g., initial acid concentration, resin amount, temperature and contact time were investigated. The data presented that contact time had a positive effect till reaching the equilibrium. Among kinetic models studied, the pseudo-second order was the most appropriate one. Equilibrium data showed that the recovery efficiency decreased with the increase in initial SA concentration and the decrease in resin dosage. Highest efficiency was obtained as 97.5% at 298 K with 0.1 M SA and 1.5 g resin using Lewatit MP-62. Several adsorption isotherms (Langmuir, Freundlich etc.) were applied to equilibrium data to understand the recovery mechanism. The data was observed to follow the former one. Temperature had a negative effect on the process and it was exothermic according to thermodynamic data.

Keywords: Ion exchange, Adsorption, Succinic acid, Recovery, Anion exchanger

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Poster Presentation

Morphological alterations in the brain of rats exposed to sinusoidal low frequency electromagnetic field from neonatal to adult: an ultrastructurally examination

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Abstract

Magnetic fields of devices that used for everyday, which is more than magnetic field of human body and natural environment, can impair the harmony. Our aim in this study was investigated that if exposure to magnetic fields in everyday life level was affected brain in rats or not ultrastructurally. Fourteen Wistar albino male weaned rat pups were divided as magnetic field (MF) and control group. The rats in the MF group were exposed to magnetic field with 50 Hz frequency and 1.5 mT intensity 5 days in each week during the 7 months. Rats in the control group that also underwent the same period and conditions but no received magnetic field in Helmholtz coils. At the end of 7 months, brains were removed and examined ultrastructurally. In the frontal and temporal cortex sections of the control group neurons, glial cells and nerve fibers were observed to have normal structure. In the sections of MF group, many neurons had nuclear vacuoles in the temporal cortex but in the frontal cortex, this number was lesser. Glial cells were observed as normally in the frontal cortex. On the other hand glial cells of the temporal cortex had intracytoplasmic vacuoles and granular endoplasmic reticulum cisterns were swelled. Perivascular edema was remarkable. Increased axonal densities, axonal withdrawal and separation into myelin sheaths were observed in the cortexes. Plus, mitochondrial destruction was rarely observed in the frontal cortex. The findings of this study show that sinusoidal low frequency magnetic field causes structural changes in brain.

Keywords: Magnetic field, electron microscopy, brain, rat, neuron

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Poster Presentation

The characterization and evaluation of mineral release performance of '*Bolus*' in artificial fluid of rumen

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Abstract

A nutritional supplement for ruminants called "bolus" contains trace elements and vitamins. Boluses in a range of form of recipe prepared in terms of mineral and vitamin contents are administrated to the rumen of animals and are released in a controlled manner in order to keep the levels of minerals and vitamins in the targeted therapeutic window. In this study, the synthesis, the characterization and in vitro degradation profiles of boluses were investigated. The Boluses were characterized by a helium pycnometer, surface area and pore size analyzer using the Brunauer–Emmett–Teller (BET) method, the contact angle measurements and scanning electron microscopy (SEM). In vitro degradation studies were performed in an artificial rumen fluid at a pH of 5.5 and a temperature of 37 °C in order to determine the stability and the degradation kinetic of the boluses. The bolus samples were washed with deionized water, freeze-dried and weighed in every three days. The artificial rumen fluid was refreshed in every three days to prevent mass transfer limitation due to a concentration and pH change of the fluid. The densities of the boluses were found to be between 2,30-2,40 g/cm^3. The surface areas and porosities of the boluses were determined in the range of 0,990-1,400 m^2/g and 0,002-0,004 cc/g, respectively.

Keywords: Artifical rumen fluid, Bolus, bioproduct development, degradation

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Poster Presentation

The modelling the growth kinetic of *Pseudomonas pseudoalcaligenes* in M9 medium under the different environmental factors

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Abstract

Microorganisms play an important role in the development of energy efficient and cleaner production and waste treatment processes. The modelling of growth kinetic may help process optimization especially while reaction pathways and kinetic constants cannot be fully obtained for a single organism yet. *Pseudomonas pseudoalcaligenes* with its ability to grow under pHs of up to 10 makes it an alternative tool for the treatment of cynanide-containing wastes in industry. In this work, M9 minimal medium with mineral salts was used to study the effect of C/N ratio (5, 10, 20 and 50) and Fe^{+2} (5, 10, 20 and 50 ppm) concentrations in range of temperature from 32 ^{o}C to 36 ^{o}C and pH from 7,50 to 8,50. The calibration based on optical densities versus the number of microorganism in the culture was carried out. Baranyi function using the DMFit curve fitting program developed by Baranyi (1998) was used to estimate the growth rate at the given environmental factors. The comparison of experimental growth rates with the estimated values from the model is in good agreement. Our study also shows that C/N ratio of 5, Fe^{+2} concentration of 50 ppm at a pH of 7.5 and a temperature of 34 oC shows the highest growth rate

Keywords: Growth kinetic, modelling growth rate, predictive microbiology, *Pseudomonas pseudoalcaligenes.*

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Poster Presentation

Changes in the expression levels of CAT, SOD1 and SOD2 in kidney tissues in response to diabetes and resveratrol

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Abstract

Diabetes is a disease that occurs when the pancreas does not produce enough insulin hormones in mammals or when the insulin hormone it produces is not used effectively. It is known as state of hyperglycaemia. Resveratrol which is a plant-derived polyphenolic compound has anti-inflammatory, antiplatelet aggregation, anti-carcinogenic, cartilage preservative and anti-aging properties. The antioxidant system is essential for cellular response to cope with oxidative stress under physiological conditions. Furthermore, antioxidant enzymes such as CAT, SOD and GSH-Px and non-enzymatic electron receptors such as GSH could be used as an index to assess the level of oxidative stress. The aim of this study is to reveal how diabetes would affect the renal antioxidant enzymes (SOD, CAT, GST, GPx) and to elucidate the regulatory effect of ersveratrol. Male Wistar rats of equal age were divided into four groups as follows; diabetic (n=12), control (n=12), diabetic group supplemented with resveratrol (n=9), control group supplemented with resveratrol (n=12). Diabetes was induced in respective groups with single intraperitoneal streptozotocin (55 mg/kg) administration. One week after the diabetes, resveratrol was given as 20 mg/kg/day throughout 3 weeks. Changes of protein expression levels were determined by using Western blot analysis. According to results, while renal CAT expressions were down-regulated in diabetic group, SOD1 protein levels were augmented just above the control levels. Besides, when applied to the control group, resveratrol increased the level of SOD-2 protein significantly ($p < 0.05$), the same effect has not been shown in other antioxidant enzymes. As given to the diabetic animals, resveratrol increased the CAT and SOD2 expression while it repressed the SOD1 expression. In conclusion, this study includes data on the use of resveratrol, which may reduce the treatment or adverse effects of diabetes and diabetic metabolic diseases.

Keywords: Diabetes, Kidney, Resveratrol, Protein expression, Western blot

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Poster Presentation

Alternative usage of taro (*Colocasia esculenta* (L.) Schott) products

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Abstract

Taro (*Colocasia esculenta* L. Schott) is a member of the Arum family (Araceae) and it is known as dasheen, eddoe, cocoyam or tannia. It is cultivated in southern provinces of Turkey, especially Mersin-Bozyazı, and consumed as root vegetables, potatoes. Taro is important carbohydrate source and also contains high amount of dietary fiber, mucilage and mineral. On the other hand taro contains antinutritional factors such as oxalate and phytic acid. The most effective methods to reduce the antinutrient factors of taro are soaking cooking and fermentation. This study was conducted to improve alternative usage area of taro products such as fresh taro (FT) and taro flour (TF) in traditional fermented food stuff, tarhana. To prepare TF, taro corm was sliced, cooked in acidic boiling water, dried and grinded. FT and TF were used in tarhana formulation as replaced with wheat flour at 5-20% ratio (dry matter basis). Some physical and chemical properties were determined. pH values of tarhana samples changed between 4.72 and 4.85 (FT); 4.73 and 4.88 (TF). Color values of tarhana samples changed significantly ($p<0.05$) with usage of FT or TF compared to control tarhana. Ash values of tarhana containing FT and TF increased from 1.55% (control) up to 2.11% and 2.30%, respectively. A significant decrement was observed in protein content of tarhana samples, especially high utilization levels of taro products. As a result of sensory analysis, a slight decrease was observed in overall acceptability score of tarhana sample with high usage levels of FT and TF.

Keywords: Taro, *Colocasia esculenta* (L.) Schott, tarhana, flour, fermentation, cooking

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Poster Presentation

The effect of monosodium glutamate used in childhood on neurofilament and dopamine receptor D2 expressions in hippocampal neurons

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Abstract

Monosodium glutamate (MSG) is a flavor enhancer added to several processed foods and with known neurotoxic effects. The purpose of this study was to investigate the probable toxic effect of MSG on neurons in the hippocampal region of rats in childhood and the protective effect of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) on Neurofilament (NF) and dopamine receptor D2 (DRD2) expression in the brain using immunohistochemical methods. Six female Wistar rats in the childhood period were used in each group. Group 1 represented the healthy control group, Group 2 received MSG (4 mg/kg on days 1, 3, 5, 7 and 9 intraperitoneally (ip)), Group 3 received MSG + EPA (MSG + 300 mg/kg for 9 days ip), Group 4 received MSG + DHA (MSG + 300 mg/kg 9 days), and Group 5 received MSG-EPA+DHA (MSG+300+300 mg/kg 9 days). Brain tissues were collected at the end of the 9th day. NF and DRD2 expression results were evaluated immunohistochemically. NFs were strongly stained in the axons of neurons in the dentate gyrus (DG) region of the hippocampus and moderately in the CA1 region. In the MSG group, weak NF expression was observed in both regions. Similar staining was observed in the MSG-EPA, MSG-DHA and MSG-EPA+DHA groups to that in the control group. DRD2 reaction was normal in neurons in the DG region in the control group, and was granular in form and powerful in neuron cytoplasm in the CA1 region. DRD2 expression in the MSG group decreased slightly compared to the control group. Similar powerful reaction to that in the control group was observed in the other three groups. In conclusion, since MSG caused a decrease in NF and DRD2 neural signal molecules in the CA1 and DG regions of the hippocampus of rats in the childhood period compared to the control group, we think that it may have an adverse effect on cognitive functions in this age group and that omega-3 fatty acids such as EPA and DHA can reduce these adverse effects of MSG.

Keywords:MSG, EPA, DHA, Brain, NF, DRD2

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Poster Presentation

Immobilization of laccase onto chitosan based metal-chelated copolymer nanoparticles and ıts application in phenol removal using ABTS as mediator

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Abstract

This study presents immobilization of laccase onto metal-chelated chitosan nanoparticles (Cu (II)-PEI-CHT-g-poly (glycidyl methacrylate)) via adsorption and its application in phenol removal from aqueous solution. Chitosan based copolymer nanoparticles were synthesized by radical copolymerization and characterized using FTIR, TGA, SEM and zeta-sizer analysis. Maximum laccase immobilization capacity of metal chelated chitosan based nanoparticles was 65.75 ± 2.51 mg/g. The immobilized laccase had a broader application pH and temperature range and better stability and reusability compared with free laccase; after eight cycles of continuous use, the activity of the immobilized enzyme remained above 50 ± 0.62%. Laccase immobilized on Cu (II)-PEI-CHT-g-poly (glycidyl methacrylate) NPs showed significantly great performance on phenol removal (>96%) in the presence of mediator, ABTS.

Keywords: Laccase, phenol removal, nanoparticles, mediator

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Poster Presentation

Retrospective study: Association between monocyte, neutrophil, eosinophil and lymphocyte volume levels and multiple myeloma

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Abstract

Multiple Myeloma is a hematologic malignity, which emerges as a result of uncontrolled growth of malign plasma cells, a kind of white blood cell, and is still incurable. Antibody-producing plasma cells (immunoglobulin) can be described as cells which eliminate effects of pressurizing cells and immune reactions. Immunoglobulin includes neutrophils, lymphocytes and monocytes. Monocytes are pioneers of dendritic cells which important role in the immune system that governs the responses of the T-cell against tumors. Lymphocytes have an important role in the destruction of the M-protein. Neutrophils are important in assessing the degree of susceptibility of the cells to infection. Therefore, the aim of the present study was to evaluate the association of monocyte, neutrophil, eosinophil and leucocyte volume values, which are widely available hematological marker, with disease in multiple myeloma patients as retrospective data. 60 patients with Multiple Myeloma aged 64.5±11.2 and 107 healthy control aged 64.9±10.3 years were admitted to the Polyclinic of Hematology in Faculty of Medicine of the Selcuk University have been included in the study. The Monocyte, lymphocytes, neutrophil volume levels were significantly higher in patients as respectively 175.62±8.06; 95.05±6.08; 152.51±8.18 compared with control group as respectively 170.41±8.15; 89.78±4.92; 148.19±8.04. The eosinophil volume levels were 157.5±22.4 in patients group and 157±17.3 in control group (p=0.953). According to this study's results, increased Monocyte, lymphocytes, neutrophil volume values except eosinophil volume may be a potentially useful prognostic biomarker in patients with Multiple myeloma.

Keywords: Multiple Myeloma, monocyte, lymphocytes, neutrophil.

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Poster Presentation

Electron paramagnetic resonance and nuclear magnetic resonance study of captopril molecule with density functional theory

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Abstract

Captopril is a group of drugs known as ACE inhibitors. ACE inhibitors are used in high blood pressure and heart failure treatments. In this study 13C and 1H chemical shifts and Electron Paramagnetic Resonance (EPR) parameters of captopril molecule were calculated with DFT method. Firstly conformation analysis of captopril were performed with PM3 method. The most stable conformer was determined using the Density Functional Theory (DFT). 13C and 1H chemical shifts of captopril molecule were calculated with DFT method. Possible radicals were modeled with DFT calculations using the most stable conformer. The EPR parameters of modeled radicals were calculated using the DFT method for each of radicals.

Keywords: Captopril, Nuclear Magnetic Resonance, Electron Paramagnetic Resonace, Density Functional Theory

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Poster Presentation

Investigation of toxic dichromate anion extraction ability and anticarcinogenic effects of N-methylpyrrol derivative of calix[4]arene

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Abstract

Toxic oxyanions like arsenite, arsenate, chromate, and dichromate contamination of water are serious hazards. The United States Environmental Protection Agency (US EPA) declared chromium as one of the greatest threat to humans. The permissible limit of hexa-valent chromium in drinking water is set as low as 0.05 mg/L. Toxicity of chromium compounds depends on its oxidation stat. According to the World Health Organization, Cr(VI) is one of the most toxic metals. The vast majority of industrial effluents and wastewaters, such as mining effluents, dilute leaching solutions generated during hydrometallurgy, electroplating rinse liquors, etc., carry Cr(VI) in low concentration. Chromium(VI) is a common pollutant introduced into natural waters from a variety of industrial waste waters including those from the textile dyeing, leather tanning, electroplating and metal finishing industries. Calixarenes are macrocyclic compounds widely used in supramolecular chemistry. Their unique three-dimensional structures with almost unlimited derivatization possibilities on the "lower" and "upper" rims, along with a tunable shape, make calixarenes ideal candidates for building blocks or scaffolds in the design of new, more sophisticated molecules. The anticancer activity of various functionalized calixarenes has been reported by several research groups. Due to their superior geometric shape, calixarenes can accommodate drug molecules by forming inclusion complexes. In this study, a new calix[4]arene derivative in the cone conformation was synthesized from 25,27-bis(3-aminopropoxy)-5,11,17,23-tetra-tert-butyl-26,28-dihydroxycalix[4]arene by treatment with 1-methylpyrrol-2-carboxaldehyde. Extraction studies of this compound with Na2Cr2O7 were evaluated at different pH values and anticarcinogenic effect of this compound was investigated.

Keywords: Toxic oxyanions, Calixarene, Extraction, Anticarcinogenic

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Poster Presentation

Determination of antimicrobial activity of essential oil of Turkish endemic, *Thymus spathulifolius* (Lamiaceae) obtained by hydro-distillation method and chemical composition by GC-MS

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Abstract

Thymus spathulifolius Hausskn. & Velen. (Lamiaceae) is an endemic to Turkey and it has very limited distribution area in inner Anatolia. The dried and powdered aerial parts of the Thymus spathulifolius were submitted for hydro-distillation method using a Clevenger-type apparatus for about 3 h to give an oil with 3.85% (v/w) yield. After drying with anhydrous sodium sulphate and filtration, the oil was stored at refrigerator until use. The analysis of the obtained essential oils was carried out using an Agilent 7809B GC system, equipped with a HP-Innowax capillary column (60m, 0.25mm i.d., 0.25 µm film thickness) and a 5977B Mass Selective Detector system. The essential oil of T. spathulifolius was tested against a panel of microorganisms including *Staphylococcus aureus* (ATCC 29213), *Enterococcus faecalis* (ATCC 29212)), *Pseudomonas aeruginosa* (ATCC 27853), *Escherichia coli* (ATCC 25922) and *Candida albicans* (ATCC 10231) for determination of minimum inhibition concentration (MIC) by micro-dilution method. The essential oil of T. spathulifolius was characterized by a majority of monoterpenes such as Thymol (45%), p-cymene (26.8 %), carvacrol (6.8%), $_{\gamma}$-Terpinene (6.1%), and Borneol (2.4%). The MIC value of the essential oil for *E. coli, S. aureus, C. albicans* was 2.5 mg/mL, for *P. aeruginosa* and *E. faecalis* were founded 5 mg/mL. In addition, the bioauthographic analysis showed an inhibition zone on TLC plate, which are also confirming antimicrobial activity of the oil. The activity may be attributed to the domain compound-thymol presents in the oil. This study scientifically supports the use of this plant or its volatile oils as a deterrent against degradation in food or pharmaceutical formulations.

Keywords: *T. spathulifolius,* Essential oil, Antimicrobial, GC-MS

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Poster Presentation

Effect of SNP rs13266634C/T in solute carrier family 30/Zinc transporter gene (SLC30A8) on type 2 diabetes in a broad Turkish population.

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Abstract

SLC30A8 (solute carrier family 30/zinc transporter) encodes the ZnT-8 protein, a zinc carrier that is overexpressed in the pancreatic islets. Insulin is stored as a hexamer linked to two zinc ions in pancreatic beta-cells. The ZnT-8 protein is localized on the membrane of the insulin secretory vesicles and transfers the zinc, necessary for insulin storage and secretion, to the secretory vesicle from the cytoplasm. Therefore, ZnT-8 appears to be a critical factor in the pathway of insulin storage and secretion, and variations in the SLC30A8 gene are thought to be a risk for type 2 diabetes (T2DM) development leading to insulin release defects. In our study, we investigated the role of SLC30A8 gene and its prominent variant rs13266634C/T (R325W) in type 2 diabetes in a broad Turkish population (460 T2DM patients and 440 healthy). We detected a significant association between type 2 diabetes and SNP rs13266634C/T of SLC30A8 gene (OR:2 [95% CI: 1,38-2,98] and OR:3,3 [95% CI: 1,30-7,69] P=0,000 and P=0,011, under dominant and additive models, respectively). Genotype distributions were in the Hardy-Weinberg equilibrium in both study groups (P>0.05). Also, SNP rs13266634C/T had a strong effect on insulin (P=0,022) and fasting glucose levels (P=0,003). This variant in SLC30A8 gene may increase blood glucose levels by reducing insulin secretion. In conclusion, in Turkish population, SNP rs13266634C/T of the SLC30A8 gene might contribute to genetic background of type 2 diabetes, a disease which emerges from the interactions among multiple genes, variants and environmental factors.

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Poster Presentation

Evaluation of the in vitro anticancer and antimicrobial activity of methanolic leaf extract of *Thuja occidentalis*

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Abstract

Recently, natural product derived substances have received considerably more attention for their potential as new anticancer and antimicrobial agents. In the present study we aimed to investigate the possible anticancer and antimicrobial effects of methanolic leaf extract of *Thuja occidentalis* (MTOL). Anticancer activity of MTOL was evaluated in human lung carcinoma (A549), human breast carcinoma (MCF7) as well as in normal (non-neoplastic) human bronchial (Beas-2B) cells using the XTT test. The cells were exposed to serial concentrations of MTOL (1–1000 µg/mL) for 24 h. The results of XTT assay revealed IC50 values of Beas-2b: 221.45 ± 21.12, 301.05 ±19.2 and 114.62 ±7.86 µg/mL for Beas-2B, A549 and MCF-7 cells, respectively. Antimicrobial activity tests were performed using the well-agar diffusion method. Escherichia coli ATCC 2922, Yersinia enterocolitica ATCC 9610 were selected as gram negative test group whereas Staphylococcus aureus ATCC 25923, Enterococcus faecalis ATCC 29212 were selected as gram positive test group. All test bacteria were exposed to serial concentrations of MTOL (0.1 - 20 mg/ml). It was observed that the lowest concentration of MTOL had no effect on gram positive bacteria. However, MTOL showed an inhibition zone of 17 mm in gram negative bacteria at the same concentrations. All results showed that MTOL is more effective in MCF7 human breast carcinoma cells and also against gram negative bacterial strains.

Keywords: Thuja occidentalis, Anticancer effect, Antimicrobial effect

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Poster Presentation

Antimicrobial effects of some herbal extracts on acne bacteria ınstead of chemical methods

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Abstract

Acne, as a family of skin disorders is one of the most prevalent dermatologic diseases in the world. It usually affects almost everybody during the life. There is a variety of medications for acne vulgaris including topical agents, oral antibiotics, oral retinoids and oral hormonal therapies. In view of increasing resistance to existing anti-microbial agents, side effects and sometimes high cost of treatment, interest in medicinal herbs has been progressively increased. In this study different plant extracts were tested for antibacterial activity against acne bacteria. In this study aimed to prevent the spread of acne by means of finding plant-based remedies rather than chemical drugs without damaging the skin. Lemon peel (*Citrus limon*) pomegranate peel (*Punica granatum*), fern (*Pteridium aquilinum*), white mulberry leaf (*Morus alba*), japanese persimmon *(Diospyrios kaki*), rhus cotinus (*Cotinus coggyria*) were used for antibacterial activity against acne bacteria. Acne bacteria was obtained from youngest man's face under sterile conditions. The plant materials were air-dried, crushed into small pieces, and 10 grams of each were extracted with soxhlet extractor using 200ml of 80% methanol solution for 24 hours. Spore and gram staining were performed. The antibacterial activities of six extract were tested against acne bacteria using the agar well diffusion method. In Gram staining, the bacteria was as Gram (+), and showed morphologically as coccobacillus, spore structure was not observed. The study showed that pomegranate peel formed the biggest inhibition zone (33 mm) against the acne bacteria.

Keywords: Acne, Antibacterial activity, Herbal extract

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Poster Presentation

A new biomarker for obesity: Can GDF-15 fight obesity?

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Abstract

Obesity is considered as one of the 10 most risky diseases by the World Health Organization, and is among the most common causes of cancer risk increase according to the AARC 2015 report. Obesity is a major cause of type 2 diabetes and this rapid increase in obesity has also caused a concomitant increase in type 2 diabetes, cardiovascular disease and some types of cancer. The most important problems that trigger obesity are imbalances in the regulation of food intake, energy storage and energy expenditure. For this reason, anti-obesity drugs aim to reduce food intake and suppress appetite. Recent studies suggest that a molecule named GDF-15 is directly related to nutrient uptake, body weight and fat accumulation by acting directly on the brainstem and hypothalamic nutrition centers, indicating that this may be an important factor for obesity. GDF15 is a cytokine originally defined 20 years ago and is a different member of the transforming growth factor-β (TGF-β) superfamily. Serum concentrations of GDF-15, also called PLAB, PDF, MIC-1 or NAG-1, increase slightly in several disease states, especially in inflammation, injury and cancer. In normal weight individuals, the level of GDF-15 in circulation is about 0.2-1.2 ng / ml. Significant increases in serum levels of GDF-15 have been reported in diseases such as cardiovascular disease, rheumatoid arthritis, insulin resistance, obesity and diabetes, in which circulating levels may increase 10-100 times in various diseases. Studies have shown that germline GDF-15 broad knock-out mice have a mildly obese phenotype, with less fat tissue transgenically overexpressing GDF-15 and decreased glucose and insulin tolerance due to anorexia, increased energy expenditure macrophage infiltration and inflammatory activation of white fat. This suggests that GDF-15 may play a role in the protection of obesity and type 2 diabetes, suggesting that recombinant GDF-15 may be effective for the treatment and complications of severe obesity.

Keywords: Obesity, GDF-15, biomarker

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Poster Presentation

Selection of reliable reference genes for qPCR analysis on MCF7 cells with melatonin treated

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Abstract

Melatonin, also known as N-acetyl 5-methoxytryptamine, is a hormone that is produced by the pineal gland in animals and regulates sleep and wakefulness. Melatonin has been shown to inhibit various carcinomas, including MCF7. A correct choice of safe reference genes as an intragroup control is ineluctable to procure accurate results. Here, we present an assessment of 5 reference genes (18SrRNA, ACTB, GAPDH, TUBA1 and SDHA) to normalize gene expression data in MCF7 cell line treated with melatonin. Treated and untreated cell samples were collected from cell culture. After isolation of total RNAs, cDNA synthesis was performed and Ct data obtained with qPCR. The BestKeeper program was used for descriptive analysis of the data. geNorm and NormFinder software packages were used for estimating the values for each gene. Results acquired by geNorm indicated that average expression stability values (M) of all nominee genes were smaller than 1.5 (accepted M value for geNorm), showing that all the evaluated genes can be employed as housekeeping genes. GAPDH (M=0,034) and ACTB (M=0,032) were reported to be the most stable. Similarly, NormFinder (respectively stability value were 0,012 and 0,014) results were in accord with geNorm's results. GAPDH and ACTB think about being most suitable reference genes to evaluate new gene expression in the MCF7 with melatonin treated.

Keywords: Melatonin, MCF7, qPCR, Housekeeping gene, BestKeeper, geNorm, NormFinder

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Poster Presentation

Molecular mechanisms of micronucleus formation

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Abstract

Humans are frequently exposed to various physical and chemical substances such as medicines, agricultural chemicals, cleaning products, food additives, environmental pollutants, radiation and rays. In the body, these chemicals either may become activated or detoxified to prevent toxic effects through various enzyme systems. When these chemical exposures are increased, carcinogenic and mutagenic events take place in the body. Severe exposure to genotoxic agents may lead to changes in mechanisms of chromosomal division and formation of DNA damage which involved in the development and progression of many diseases. Micronucleus (MN) test is one of the commonly used genotoxicity test performed with all types of cells reproducing by mitosis in the in vitro and in vivo studies to determine the genotoxic effects of chemical and physical agents on somatic cells. Micronuclei formed during mitosis do not integrate in the main nucleus and appear in the cytoplasm of the cells. MN originate from acentric chromosome or chromatid fragments created by misrepair of DNA or unrepaired DNA fragments in anaphase. Malsegregation of whole chromosomes may also lead to MN formation due to hypomethylation of repeat sequences in centromeric and pericentromeric DNA, defects in kinetochore proteins, dysfunctional spindle and defective anaphase checkpoint genes. Although MN test has been widely used for many years due to its simplicity, reliability, validity and applicability to different types of cells, there isn't sufficient information about the mechanism of MN formation. The main purpose of this mini review is to give information about the molecular mechanism of MN formation.

Keywords: Micronucleus, genotoxicity, chromosome damage

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Poster Presentation

Development of a highly simple and practical automated method for determining ıodine values of edible oils

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Abstract

The main objective of this study was to develop a new automated flow injection analysis (FIA) method -expected to be an alternative to standard methods- for iodine value (IV) used in determination of unsaturation degree of edible oils. Iodine value (IV) is determined using classical titration methods which have several limitations such as timing, protection of the reaction mixture from light and atmospheric oxygen and the use of large volumes of toxic solvent. To overcome these drawbacks an automated procedure is highly desirable. The proposed method is based on the interaction of ICl3 dissolved in n-propanol (carrier phase) with double bond in oil sample to produce I2. For this purpose, ICl3 solution dissolved in n-propanol was used as reagent and the oil sample and reagent solution were directly injected together, into the carrier phase flowing at 3 mL min-1 in the form of *"30 µL reagent/10 µL sample/30 µL reagent"*. The results showed that the proposed new FIA method is found to be a good method due to their superior properties such as reducing the use of solvents potential danger for the environment, allowing the realization of rapid analysis with low cost. Also, validation studies showed that FIA method was found to be a wide linear range and LOD and LOQ values calculated in terms of "g I2/ 100 g oil" were found to be as 12.3 ve 37.2, respectively.

Keywords: Edible oils, Flow injection analysis (FIA), Iodine value (AV), Validation

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Poster Presentation

Utilization of non-conventional edible seed oils as potential energy source

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Abstract

A large quantity of oils and fats, used for human consumption or for industrial purposes, are derived from plant sources. With the growing body of evidence that all fats and oils are not equivalent, interest in polyunsaturated fatty acid (PUFA) profiles has been emerging. Depending on this, a great interest has been begun to new sources of non-conventional edible seed oils obtained by cold pressing due to their higher nutritive value than refined oils. This study includes the investigation of physicochemical properties of some cold pressed oils (pumpkin seed, walnut seed, flaxseed, black seed, and poppy seed oil) that have not traditionally been used and the determination of superior properties of them by comparing with refined oils. FAC results showed that cold-pressed walnut seed oil had the greatest level of PUFAs (72.02 %) and a good n-6/n-3 ratio (4.9), due to a high content in linolenic acid (18:3 n3). The cold-pressed flaxseed oil with 66.89 % PUFAs content followed the cold-pressed walnut seed oil. The total tocols content ranged between 490.24-977.47 mg kg-1 oil for all tested cold pressed seed oils. Cold-pressed poppy seed oil proved to be the most stable of all the cold pressed seed oils tested, with an OSI of 4.92 h at 120°C. As a conclusion, many unconventional cold pressed oils can be thought as more beneficial for health compared to refined ones in term of having valuable components and no chemical contaminant.

Keywords: Cold Pressed Seed Oil, Fatty Acid Composition, Tocols Profile, Oxidative Stability, Rancimat

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Poster Presentation

Brain ınfarct volume measurement in non-cardiogenic ıschemic stroke patients

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Abstract

Stroke is the second most common cause of death worldwide and is the leading cause of serious disability. Estimating severity of the disease and early risk assessment is crucial. Several methods have been proposed in the literature for risk assessment and to estimate stroke prognosis and patient monitoring. From our patient population; 10 stroke patiens were selecting according to inclusion criteria. The inclusion criteria for patient group were as follows:lack of any contraindication to MR imaging, first stroke, diffusion abnormalities restricted to single anatomic location, ER referral after first 6h, lack of any forms of acute/chronic cardiopulmonary disease, coronary artery disease, diabetes, no drug or substance addiction/abuse, non-obesed body mass index (BMI)<30d, lack of malign hypertension confirmed by medical reports and initial examination. All MR examinations were performed with 1.5T MRI scanner. Axial T1-weighted, axial and coronal T2-weighted, axial fluid attenuation inversion recovery and diffusion weighted images with apparent diffusion coefficient (ADC) maps were acquired. On the MR images, acute cerebral ischemia was defined as bright area separated from normal brain parenchyma with a demarcation line on diffusion weighted images with correspondent hypointensity on ADC maps. All readings were performed by a single radiologist who was blind to the patient data. Evaluation was made by patient basis in offline workstation and the stroke volumes were calculated using DTI Studio Analyze system. According to the results of our study, the measurement of the quantitative volume of infarct areas in stroke cases is very important in terms of patient follow-up and prognosis.

Keywords: Brain, DTI studio, infarct, volume measurement

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Poster Presentation

Investigation of the distribution of two polymorphisms of *HIF1 Alpha* in children with neural tube defects and their mothers

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Abstract

The incidence of neural tube defects is still high, albeit a reduction due to folic acid like applications. In some studies, an association between oxygen pressure, apoptosis, and neural tube closure is mentioned. In these studies, it has been shown that hypoxia is required in the induction of apoptotic processes that are essential for neural tube closure. Increasing the oxygen level during the critical period of development has been shown to produce similar results as using caspases that block the neural tube closure. In studies performed on mice, genes that are thought to be involved in apoptosis and neural tube formation such as protooncogene ski, homeobox gene Cart1, and tumor suppressor gene p53 were found to be regulated by hypoxia. Hypoxia Inducible Factor (HIF-1) is taking place in the physiological response to the hypoxia by increasing angiogenesis, vasodilatation, anaerobic glycolysis, and erythropoietin levels. It has been reported that mouse embryos with homozygous HIF-1 alpha mutation cannot survive and exhibit neural tube defects and cardiovascular anomalies. In this study, we investigated the distribution of two polymorphisms (rs11549465, rs11549467) of HIF1 alpha gene, which is thought to be related to NTD, in children with NTD and their mother by PCR-RFLP method. According to our results in G1970A, there was no difference between the control group and children with NTD and their mothers. For C1772T, we observed that there was a statistical difference between allelic distributions in comparison between the mothers and the control groups.

Keywords: Neural tube defects, Hif1 alpha, rs11549465, rs11549467

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Poster Presentation

UV-visible spectroscopic studies of the metal complexes of a new indole-based schiff base

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Abstract

In the literature, much effort has been given to monitor the concentration of the cupper ion for environment protection and human health because it plays a critical role in many biological and environmental processes. Schiff-base based ligands have been studied during the past years because of their facile synthesis, structural labiality, and unusual configurations. In this study, a new Schiff base ((E)-1-(((2-(1H-indol-3-yl)ethyl)imino)methyl)naphthalen-2-ol) (L) were prepared by condensation reaction between tryptamine and 2-hydroxy-naphthaldehyde and characterized using 1H nuclear magnetic resonance. Then, complexation property of the Schiff base L toward selected metal ions (Li^+, Na^+, K^+, Mg^{2+}, Ca^{2+}, Ba^{2+}, Ag^+, Ni^{2+}, Zn^{2+}, Hg^{2+}, Co^{2+}, Cd^{2+}, Al^{2+}, Fe^{2+}, Cu^{2+} and Pb^{2+}) has been investigated by UV-visible spectroscopy. The results from the UV-vis spectroscopic studies revealed that the ligand L showed marked sensitivity and selectivity to Cu^{2+} ions.

Keywords: Schiff base, Cupper (II) ion, Complexation, UV-visible spectroscopy

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Poster Presentation

Molecular phylogeny of the genus *Trinia* (Apiaceae) based on nrDNA its sequence in Turkey

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Abstract

The flowering plant family Apiaceae comprises approximately 460 genera and 3700 species. Trinia Hoffm. belongs to Apiaceae family and is a small genus. Trinia comprises about 10 species and the genus are distributed Europe and SW Asia. Trinia was revised by Hedge and Lamond for the *Flora of Turkey* and the *East Aegean Islands* in which two species, *Trinia glauca* (L.) Dum. and T. scabra Boiss. & Noë, were accepted. *Trinia scabra* is endemic for Turkey. The aim of the present study was to determine phylogenetic relationships among Trinia and related genera that are collected from Turkey using nrDNA ITS sequence. Genomic DNA has been isolated using the DNA isolation kit and ITS region of studied taxa have amplified using universal ITS4 and ITS5a primers. PCR condition is 95 °C for 5 min initial denaturation, 35 cycles of 94 °C for 1 m denaturation, 50 °C for 1 m annealing, and 72 °C for 1 min extension, 72 °C for 10 min final extension. PCR products were visualised by agarose jel. The amplified fragments were sequenced using the same primers used for amplification. ITS1+5.8S rDNA+ITS2 sequences of the studied taxa were aligned via Bioedit and were used to construct phylogenetic trees by using PAUP. *Trinia* and *Seseli* are classified in different tribes up to recently. However, molecular analysis has shown that *Trinia* and *Seseli* are sister group.

Keywords: Trinia, ITS, Turkey, endemic, phylogeny

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Poster Presentation

Utilization of traditional tarhana powder in puffed rice cake production

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Abstract

Tarhana is often produced by lactic and yeast fermentation of wheat flour, yoghurt, tomato paste, onion and some species. Nutritional, functional and sensory properties of tarhana have been revealed in many researches. Tarhana can be consumed as soup and also chips form in Turkey. In this study, tarhana powder were used in puffed rice-corn cakes production at %0, 2.5, 5 and 10 ratios to improve nutritional, functional and sensory properties of the end product. Also puffed cakes prepared with (%30) and without corn. Diameter, thickness, spread ratio, color (L*, a* and b*) values and sensory properties were determined. Increasing amount of tarhana powder in puffed cakes resulted in a slight decrement in diameter and thickness. L*, a* and b* values ranged between 70.38 and 82.89, -1.18 and 5.67, 6.76 and 25.39, respectively. As expected, tarhana usage increased darkness, redness and yellowness of the samples. Those increments were found more remarkable in puffed cakes containing corn. Tarhana powder usage ratio over 7.5%, decreased the all sensory scores. When physical and sensory characteristics are evaluated together, a new rice based product can be improved with 2.5-5.0% tarhana powder and 30% corn utilization.

Keywords: Tarhana, corn, rice, puffed cake

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Poster Presentation

Effects of various biofertilizer applications on the P uptake and yield of central Anatolian originated wheat genotypes

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Abstract

While nutrient use efficiency in the first year of application by plants is less than 50%, however the use of biofertilizers can aid in improving this recovery. When it comes to phosphorus (P), its fundamental importance for society is unparalleled. The limited available amounts of phosphate rock reserves; its high fixation under alkaline and acidic soils; and its exceedingly vital importance to plant and human growth and development, stresses the need to both improve fertilizer use as well as, plant acquisition efficiency. In Turkey, most soils are low in organic matter content, with high levels of lime, clay, and pH. In 2016, approximately 4.6 million tons of phosphorus fertilizers (17% P2O5) were applied to plants in Turkey; 56% of the P consumed was used in cereal farming. Wheat is the most widely grown cereal crop and consumes the most P fertilizer in Turkey. Most of Turkey's wheat production occurs in the Central Anatolian region. Since P recovery by plants from chemical fertilizers ranges between 10-30%, depending on the soil characteristics, the aim of this research was to identify wheat varieties from the Central Anatolian region which under P deficiency and various biofertilizer applicationss had low and high P acquisition efficiency. Per the results, Tosunbey and Bayraktar 2000 had the highest and lowest P acquisition efficiency, respectively. A field experiment is currently being conducted to evaluate the effects of the various biofertilizers on fertilizer use efficiency under field conditions, as well as, on plant and soil biological, physiological, and chemical properties.

Keywords: Phosphorus deficiency, Wheat, Biofertilizers, Phosphorus Acquisition

Acknowledgement: This study is supported by Selcuk University and the Agrobiotechnology Laboratory

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Poster Presentation

Brain derived neurotrophic factor (BDNF) expression in the filum terminale with tethered cord syndrome (TCS)

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Abstract

The filum terminale (FT) is a thin fibrous band that connects the spinal cord to coccyx. Some events disrupt the structure of the FT and cause TCS. The aim of our study was to investigate the effect of BDNF on the development of TCS. Three groups were formed for this purpose. Group A; normal FT group obtained from cadaver, Group B; normal appearance FT group obtained from patients with TCS, Group C; anormal appearance FT group obtained from patients with TCS. BDNF expression was demonstrated using immunohistochemistry technique in the FT samples. Group A contained loose collagen fibers, nerve fibers and blood vessels. It was found that the collagenous fibers were abundant and were stained moderate intensity with BDNF. Furthermore, a strong reaction was detected in the ependymal cells surrounding the central canal. Group B consists of more intense collagenous fibers. In some places, it was observed that the expression of BDNF was changed from weak to medium. In ependymal cells, which had central channel laying, weak staining was noted. In group C, intense collagen fibers and fat cells increased. BDNF expression in both collagen fibers and ependymal cells was close to negative. BDNF expression was strongly observed in the ependymal cells of the control group, while weakening in group B and negative in group C suggested that BDNF might be effective in the structural change in FT in the development of THC. Identification of biomarkers associated with THC will provide important information for elucidating the mechanisms underlying this disease.

Keywords: Filum Terminale, Tethered Cord Syndrome, Brain derived neurotrophic factor

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Poster Presentation

A new perspective to produce biopharmaceuticals: Molecular pharming

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Abstract

Molecular pharming is defined as the production of pharmaceutically important proteins in plants. Plant tissue culture studies, rDNA studies and plant genetic transformation are the main steps of the development of biopharmaceuticals in plants. Tomato, potato, lettuce, maize, carrot and rice have been used to produce pharmaceutically useful proteins. Insulin, somatotropin, human serum albumin, interferon, lactoferrin, monoclonal antibodies (plantibodies), hemoglobin, cancer therapeutic antibodies, human growth factor and edible vaccines have been produced in plants. The production of biopharmaceuticals in plants is considered cost effective, safe, easy and high yield potential. In the near future, plants are going to have importance in pharmaceutical biotechnology.

Keywords: Edible vaccine, Biopharmaceuticals, Genetically modified organisms, rDNA

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Poster Presentation

Chemical compounds profile of pholliota aurivella extract and its potential effects on serum biochemical parameters

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Abstract

This study presents chemical composition of *Pholiota aurivella* extract and effects of the extract on serum biochemical parametres. Ethanol-based lyophilized extract obtained from fruting bodies of *Pholliota aurivella* was found as a rich source of phenolic (p-comaric and protocatechuic acids) and fatty acid (linoleic, oleic and palmitic acids) compounds. However, the extract contained high level of Arsenic according to normal level. Intraperitoneal administration of CCl4 (0.5 ml/kg, twice a week) and treated groups (CCl_4+mushroom doses) to rats for 28 days resulted in significantly elevated ($p<0.05$) serum levels of aspartate aminotransferase (AST), alanine aminotransferase (ALT), lactate dehydrogenase (LDH) compared to Control group. Consequently, it was observed that there was no protective role of *P.aurivella* extract against CCl_4-induced damage in rats. The extract contained high level of Arsenic which might be one of the main source of toxic effects of *Pholoita aurivella*.

Keywords: *Pholiota aurivella,* Biochemical parameters, Arsenic, CCl_4, Rat

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Poster Presentation

Antiproliferative activity of *Thecocarpus carvifolius* against colon cancer cell, caco-2

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Abstract

The aim of this study was to investigate different cytotoxic activities of *Thecocarpus carvifolius* on human breast adenocarcinoma cell line (MCF-7) and mouse fibroblast cell line (L929). 40 g of dried and pulverized sample were extracted in pure methanol at 300C for 24 hours with a sample to solvent ratio of 1:10 (w/v) and incubated in the oval shaker 180 rpm. The crude methanol extracts were weighed to calculate the yield. 5 g of crude extract was dissolved in a total 400 mL of methanol/water mixture (7:3 v/v) and 400 mL hexane was added in a separator funnel, and mixture was vigorously shaken and kept steady until organic and aqueous phase were separated. Fractionation steps were further continued with aqueous phase mixed with organic solvents in increasing polarity: chloroform, and ethyl acetate, respectively. MCF-7 and L929 were cultured in the presence various concentrations of extracts for 72 hr. T. carvifolius inhibited the survival of MCF-7 and L929 cells in a concentration and time dependent manner, shown by XTT. According to cytotoxic analysis, IC50 values of extracts were calculated as 59 µg/ml on MCF-7. Although, T. carvifolius effected MCF-7 in low doses, it did not show same activity on L929 cells. These finding suggest that *T. carvifolius* effects on breast cancer cells at low doses is cytotoxic but there is no activity on healthy cell lines. So, presented results support further investigations of *T. carvifolius* as a prospective therapeutic agent with potential relevance in the treatment cancer.

Keywords: Cytotoxicity, L929, MCF-7, *Thecocarpus carvifolius*, XTT

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Poster Presentation

Determination of tyrosinase inhibitory activity and volatile compounds of *Pilosella hoppeana*

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Abstract

Pilosella hoppeana belongs to the family Asteraceae exhibits antioxidant wound healing, antibacterial, antifungal, anti-inflammatory, antitumor, antiseptic effects. The plant has been known for its anti-inflammatory potential in Balıkesir for many years. The aims of the research were to analyze the volatile compounds by using GC-MS and detect tyrosinase inhibitory of the plant. The IC50 value of tyrosinase inhibitory activity was measured as 112, 202 (µg/mL). Limonene, α-terpineol, anethole, nonanal and decanal were specified by GC-MS. According to the results, the plant was contained moderately volatile compounds and observed significiant tyrosinase inhibitory activity.

Keywords: *Pilosella hoppeana*, GC-MS, tyrosinase inhibitory activity

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Poster Presentation

Determination of proteolytic CAPN1 and CAST gene expressions in different bovine muscles

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Abstract

The objective of this study was to detect the expression levels of the proteolytic CAPN1 and CAST genes between different muscle groups of the bovine skeletal muscle. In theory, genes must be expressed different levels in different muscle groups in order to be effective on the maturation of the meat. Otherwise, genes that expressed equally in all muscles should analogously contribute to the transformation of the meat on entire carcass. In this regard, we expected to observe statistically significant differences or at least a trend between high and low quality muscles, especially the genes associated with meat maturation. In the present study, 15 Angus were used in the same age and gender, and 12 different muscle groups were sampled which were offered for consumption. Gene expression values of CAPN1 and CAST analyzed by using qPCR. Our work indicated that CAPN1 and CAST genes have shown significant differences ($p < 0.001$) between muscles. However, these differences were not between high and low quality muscles for the CAST gene. Thus, in the calpain / calpastatin proteolytic system, CAPN1 gene might be more effective than CAST gene for the determination of meat quality.

Keywords: CAPN1, CAST, qPCR, Different skeletal muscles, Bovine

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Poster Presentation

Heat shock protein 90 gene in *Meloidogyne* species on molecular phylogeny

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Abstract

A protein superfamily, Heat shock proteins (HSPs) are widely used in many organisms including nematodes. HSPs are classified at numerous gene families, based on particular molecular weights that some of them most conserved and rich in cells including heat shock protein 90 (HSP 90). *Meloidogyne* genus termed also root knot nematode group is the most damaging plant parasitic nematodes in the world that estimated its damage more than 50 billion US dollars. They have around a hundred species, infect more than 2000 plant species, and live from temperate to tropic climates in the world. Genetic relations may have understood using molecular phylogeny that HSP 90 gene is one of them due to conserved features within cells. However, the evolutionary history of *Meloidogyne* species has not been fully understood. For this aim, existed data of *Meloidogyne* species were taken from The National Center for Biotechnology Information. Evolutionary analysis were carried out in MEGA7 using 13 nucleotide sequences: 12 Meloidogyne species and one outgroup. Codon positions were 1st+2nd+3rd+Noncoding. All positions containing gaps and missing data were eliminated. Results revealed that three main clades were observed that *M. artialle* is the most primitive species, in contrast, *M. graminicola, M. naasi, M arenaria* and *M. incognita* were found to be advanced species in different clades. In general, tropical climate-*Meloidogyne* species found to be more advanced in the tree of molecular phylogeny that may relate to heat response

Keywords:Heat shock protein 90 gene, *Meloidogyne*, Molecular phylogeny

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Poster Presentation

Cu(II) resistance, removal and bioacumulaton and its influences on antioxidant defense enzymes by using thermophilic Anoxybacillus flavithermus SO-17

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Abstract

The thermophilic bacterium *Anoxybacillus flavithermus* was isolated from Gecek spring mud samples, Afyonkarahisar, Turkey. Acccording to biochemical, physiological, morphological, and 16S rRNA gene sequencing analysis revealed that, the thermophilic isolate was identified as A. flavithermus. The thermophilic *A. flavithermus* exhibited significant resistance to Cu(II) in solid and liquid medium. Minimum inhibitory concentrations were 145 and 600 mg/L for Cu(II), respectively. The removal yields were determined as 90.7%, 100%, 98.4%, and 95.2% at concentration of 2.5, 5, 7.5, and 10 mg/L, respectively. *A. flavithermus* had the bioaccumulation capacity differ according to metal concentration and incubation time. The highest bioaccumulation capacity was found as 102.36 mg/g dried bacteria at 10 mg/L for and 36th h. SEM and FT-IR analysis were also investigated for surface characterization. In addtion to these, the influences of various concentrations of Cu(II) on SOD and CAT enzymes, which are significant members of antioxidant defense system, were also experimented.

Keywords: Thermophilic bacteria, Cu(II), resistance, bioaccumulation, antioxidant enzyme

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Poster Presentation

Cryogenic conservation stratagies of plant seeds: applications and limitations

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Abstract

There are much more seed banks in the world established for the ex situ conservation of plant diversity, the majority of which conserve crop diversity, storing a combined total of over four million accessions of food and forage crops covered by the multilateral system of benefit sharing of the International Treaty on Plant Genetic Resources for Food and Agriculture. These seed banks distribute seed germplasm to crop scientists and researchers around the world, and the seed is germinated as the first step in the quest for genes to improve quality, to improve yield, and/or to overcome biotic or abiotic stresses. According to desiccation responses, seeds have been divided into two main categories: desiccation-tolerant (orthodox) and desiccation-sensitive (recalcitrant). A third category has been known as suborthodox, which are relatively desiccation-tolerant seeds, but they cannot resist desiccation down to water contents as low as those tolerated by orthodox seeds and they are freezing sensitive. The storage of seeds of many plant species in liquid nitrogen at –196°C is now well developed and applied to agricultural crops and for the purpose of rescue of rare and endangered plant species. This work aimed to study seed cryopreservation applications, limitations and also consider the current knowledge that is available to guide the management and use of wild species collections in seed banks.

Keywords: Dehidration, liquid nitrogen, orthodox seed, recalcitrant seed, seed bank

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Poster Presentation

Toxicity of green synthesized silver nanoparticles to yeast *Schizosaccharomyces pombe*

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Abstract

Nanotechnology is an interdisciplinary science, which utilizes the principles of physics, chemistry, biology and materials science for synthesis and fabrication of nanoparticles/nanostructures. Nanoparticles find wide spread applications in catalysis, energy science, agriculture, environment and medicine. Despite of the wide application of these nanomaterials, there is a serious concern regarding the impacts of manufactured nanomaterials on human health and the environment. Increasing the awareness of green chemistry and other biological processes has created a desire to develop an environmentally friendly approach to the synthesis of nanoparticles with various advantages such as simplicity, cost effectiveness, and compatibility for biological studies. The fission yeast *Schizosaccharomyces pombe* is an important model organism for the study of eukaryotic molecular and cellular biology. *S. pombe* is a widely used in eukaryotic cell biology to study the oxidative stress and aging as well as regulation of cancer cells metabolism This study aims determination of toxicity of silver nanoparticles (AgNP) compared with silver ions (AgNO3) to *S. pombe.* In the study, silver nanoparticle synthesis has been achieved using biological (green) synthesis process using extracts of Thymbra spicata. Characterization of the synthesized nanoparticles was performed by Dynamic Light Scattering (DLS), Transmission Electron Microscopy (TEM) and UV/Visible spectroscopy. DLS results show that biosynthesized nanoparticles have particle diameter with an average of 70 nm. The effect of biosynthesized AgNPs and Ag-ions on cell growth was determined different concentrations of both were added and the yeast were incubated at 30 °C, and growth was monitored by observing changes in OD600 as a function of time. Results demonstrated that Ag in the form of ions was more toxic than the biosynthesized AgNPs.

Keywords: *Schizosaccharomyces pombe*, silver nanoparticles, growth

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Poster Presentation

Multifactorial modelling of microrna associated repression and ıts subsequent effects on gene expression in MicroRNA:Target network

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Abstract

MicroRNAs negatively regulate expression of many genes, efficiency of which depends on concentration of targets, content and structure of seed region. Current models consider one microRNA and its targets, or one mRNA and microRNAs targeting that mRNA. In this study, a network-based model was developed incorporating factors that are important in microRNA activity such as free energy, microRNA expression and gene expression levels, seed structure and position of target region on mRNA. The gene and microRNA expression data were downloaded from The Cancer Genome Atlas (TCGA), microRNA:target pairing data was obtained from previously performed high-throughput sequencing studies using CLASH and CLEAR-CLIP. In this regard, microRNA expression, gene expression and microRNA:target databases were combined and the initial network created from the dataset was accepted as steady-state. The model was used to calculate how the expression of other genes will change in the network upon perturbation of single gene expression. As an example, in a microRNA:target network extracted from a breast cancer patient with 61 microRNAs and 186 genes, two-fold increase in one of the genes resulted in 15% of targets being up-regulated and 81% being constant . When gene expression changes calculated for the genes two genes node away from initial perturbed gene, we observed increase in 53% and decrease in 18% of all genes in the network. Our model can help understand gene expression changes in context of complex microRNA:target network and pave the way for gene expression analysis in context of ceRNAs such as circRNAs, lncRNAs.

Keywords: MicroRNA, Network, Gene expression regulation

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Poster Presentation

Determination of proliferative and cytotoxic properties of Luteolin

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Abstract

Particularly anticarcinogenic activities of phenolic compounds are noteworthy. Studies in human cell cultures and animal models have shown biological effects such as anticancer properties of flavonoids, DNA damaging effects, free radical cleansing properties, and apoptosis and cell signaling pathways that are involved in cell cycle control. Some researchers have reported that the protective effects of often-consumed fruits and vegetables on cancer are due to their flavonoid content. Luteolin, one of the important members of flavonoids, is abundant in many plants such as carrots, black pepper, mint, thyme, olive oil, sage, rosemary and celery. In this study, the effects of Luteolin on cytotoxicity, cell viability and cell number were investigated by WST-1 and LDH tests on HUVECs. According to the obtained findings, it was determined that Luteolin had proliferative effect and increased cell number and viability in all concentrations used.

Keywords: Luteolin, HUVECs, LDH, WST - 1

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Poster Presentation

Micropropagation of olive (*Olea europae* L.): The effects of Fe-EDDHA on *in vitro* shoot formation

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Abstract

Olea europaea L. has been cultivated from ancient times using traditional propagation systems including cuttings or by grafting onto seedling rootstocks. Additionally, the development of tissue culture techniques for mass propagation of olive plants has also received considerable attention in the last two decades. In fact, micropropagation can be applied for mass scale production and may represent an effective alternative to the traditional techniques for the olive cultivars that show easy- and medium-adaptation to in vitro conditions. However, further investigations are needed to optimize the technique and adapt it according to specific requirements of different cultivars. This study aimed to investigate the effects of FeEDDHA on *in vitro* shoot formation of olive cultures by using semi-solid medium with and without FeEDDHA. Optimum decontamination that allowed subsequent plantlet establishment was 2.5% commercial bleach treatment for two times 10-min, after which 56% of the shoot tips were free of contamination and all of them were able to survive and regenerated. Both cultivars of *O. europaea* L. shoots responded well to in vitro applications when cultured on the optimized proliferation MS medium supplemented with 10 µM zeatin and and 50mgL-1 FeEDDHA.

Keywords: FeEDDHA, *in vitro* propagation, MS Medium, Olive, Zeatin.

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Poster Presentation

Identification of lactic acid bacteria isolated from Turkey dry fermented sausage

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Abstract

Product-specific flavor, consistency and the situation providing aroma-forming in fermented sausages would be bacterial, enzymatic and biochemical reactions during ripening. Lactic acid bacteria are found in some foodstuffs in plant and plant wastes, in the mouth, intestines and vagina flora of the mammals, depending on the genus and species. Various methods are used to classify lactic acid bacteria. These might be sorted as morphology, form of glucose fermentation, development at different temperatures, lactic acid production type, ability to develop in high salt concentration and acid or base tolerance. These bacherias are *Lactobacillus, Lactococcus, Weissella, Streptococcus, Leuconostoc, Aerococcus, Oenococcus* and *Pediococcus.* In this study, isolation of lactic acid bacteria from sausage samples obtained from the market was carried out. Afterwards, these bacteria were analysed by morphological, biochemical, physiological and phenotypic methods. Genotypically, the bacteria were identified by using 16S rRNA, GTG5 and BOX-PCR analyses. These methods were then corroborated with the API 50 CH system, which would be a metabolic profiling method. As a result of the analyses, the following species were observed: *Lactobacillus plantarum, Pediococcus pentosaceus Lactococcus lactis* subsp. *lactis, L. curvatus* subsp. *curvatus, L. fermentum, Weisella viridescens* and *L.delbrueckii* subsp. *delbrueckii.* According to the results, it was observed that the predominant flora in sausage belongs to *Lactobacillus* species.

Keywords: *Sausage, Lactic Acid Bacteria, API, 16S rRNA PCR, BOX-PCR, GTG5-PCR*

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Poster Presentation

Isolation, identification and molecular characterization of lactic acid bacteria collected from different regions of Turkey white cheese samples

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Abstract

Lactic acid bacteria (LAB) are a group of natural catalase negative and gram-positive bacteria that would be lactic acid-forming as a final product. The sources of milk and dairy products of LAB have been quite remarkable in terms of studies. The most widely consumed and fermented dairy product containing the richest group as microflora is cheese. In the first stage of the study, samples of cheese were collected from different regions in Turkey and bacterial isolation from these samples was performed. Many conventional tests and genotypic methods were used for this purpose. As a consequence of the 16S rRNA sequence analysis and the API 50 CH method used, 45 bacterial isolates belonging to *Lactobacillus kefiri, L. brevis, L. casei, L. paracasei, Pediococcus lolii, Staphylococcus haemolyticus, P. parvulus, L. paraplantarum, Staphylococcus hominis, L. buchneri, L. plantarum, Enterococcus faecium, Micrococcus yunnanensis, Microbacterium paraoxydans* and *Rothia dentocariosa* were obtained. Genomic fingerprint analysis was then performed. It was observed that (GTG)5-PCR was more successful than BOX-PCR in terms of discriminating strains. In addition, it was deduced that two isolates were similar to *L. buchneri* and *E. faecium* with rate of 98% and 97% respectively, and these three isolates might be the new species.

Keywords: *Cheese, Lactic acid bacteria, Isolation, Identification,16S rRNA-PCR*

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Poster Presentation

Novel thiosemicarbazone copper complexes exert anti-metastatic effect through inhibition of epithelial mesenchymal transition in cancer cells

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Abstract

Newly synthesized copper complexes of 2-hydroxy-5-methoxyacetophenone thiosemicarbazone and its N(4)-substituted phenyl and ethyl derivatives that have proved anti-microbial properties were characterized previously. Here we report first evidence on anti-metastatic activity of the complexes at the molecular level. The evaluations of potential anti-cancer activity of these complexes were carried out against highly metastatic MDA-MB-231 (ATCC HTB-26) breast adenocarcinoma cell line by MTT assay. Our results suggest that all tested copper complexes have high cytotoxic effects with the range of 1.76-3.53 μM IC50 values in vitro. The UV-Vis studies results indicated that the main copper complex have high DNA binding ability. Due to this the subjected complexes could alter transcriptional regulations of the genes. Further western blot experiments on the MDA-MB-231 cell line have shown that the complexes posses anti-metastatic property via supression of epithelial mesenchymal transition which is the initiator process of cancer metastasis. The complexes and its N(4)-substituted derivatives upregulate expression of E-Cadherine epithelial cell marker and downregulate expression of N-Cadherine and Vimentin mesenchymal cell markers in MDA-MB-231 cells, thus supressing cell metastasis. Furthermore our complexes downregulate expression of Twist1 transcription factor play key role in the regulation of epithelial mesenchymal transition. According to our results these copper complexes and its derivatives could be considered as potential anti-cancer agents to counteract metastatic abilities through inhibition of epithelial mesenchymal transition of metastatic and drug resistant cancer cells.

Keywords: Thiosemicarbazone, metastasis, epithelial mesenchymal transition.

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Poster Presentation

Understanding the relationship between single cell morphology and colony pattern of *Pseudomonas pseudoalcaligenes*

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Abstract

Understanding of colonization of surfaces by a type of bacteria is of great importance not only for human health but also for industry e.g. biofilm formation. Alkaliphilic autochthonous propersties of the strains of *Pseudomonas pseudoalcaligenes* lead this specie to be applied in the treatment of cynanide-containing wastes of industries such as gold mining, steel and petrochemical. Besides the fact that bacteria have their own unique shapes, the changes in colonial morphology in response to environmental conditions and genetic factors have also been known. In this study, we have invastigated the morphological change in colonies of *Pseudomonas pseudoalcaligenes* (CECT 318) and its relationship with the single cell structure. Single colonies obtained throughout a serial dilution were examined on nutrient media solidified with agarose ratios of 0,5%, 1,0%, 1,5% and 2% (% w/v). The colony patterns obtained through the incubation at a temperature of 32 oC were collected by a digital camera as a function of time. The single cell images of the related colonies by SEM were collected. For samples on silicon supports, the bacteria were fixed with 2% glutaraldehyde, washed and resuspended in water and then deposited onto the silicon platelets as a 1-µl droplet. It is shown that the flagella-dependent and flagella-independent motility of bacteria are affected by medium content thereby show the most suitable morphology for environmental conditions

Keywords: Colony morphology, bacteria shape, *P. pseudoalcaligenes.*

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Poster Presentation

Isolation and molecular characterization of alkaliphilic and alkali-tolerant cellulase-degrading *Bacillus* strains.

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Abstract

Cellulose is the major structural polysaccharide that are found in plant cell walls and some algae. It is consist of β(1→4) linked D-glucose units and this organic polysaccharide is the most abundant organic polymer on Earth. It is reported that the annual production of this renewable polymer is about 100 billion tons. Cellulase is one of the most important industrial enzymes that catalyse hydrolysis of cellulosic substrates into its monomeric glucose component. This commercial enzyme is widely used in many industrial areas such as textile industry, food industry and in laundry detergents. In this study, totally 94 alkaliphilic and alkalitolerant *Bacillus* strains isolated from different origins and these strains were evaluated for cellulase enzyme activities. All isolates were incubated on CMC medium at 30°C for 72 h. At the end of this incubation period, petri dishes were stained for 15 minutes with 0,1 % congo red and then the excess dye was removed with 1M NaCI. After the excess dye removal process, strains with a clear zone around them were determined to be cellulase positive. As a results of this qualitative analyses, the isolates with the highest cellulose enzyme activity has been selected for molecular characterization. According to biochemical tests results and 16S rDNA gene sequence analysis results the strain SB104 has been identified as *Bacillus pumilus*; strain SB120 has been identified as *Bacillus aerius*; strain SB138 has been identified as Bacillus safensis; strain SB147 has been identified as *Bacillus licheniformis*.

Keywords: Alkaliphilic, Alkali-tolerant, *Bacillus*, Cellulase, Molecular Characterization.

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Poster Presentation

How TrxR activity changes in an iron-overload mouse heart?

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Abstract

Iron is an essential nutrient for all living organisms. Although it is required for many vital biological processes such as energy production, oxygen transport, synthesis of DNA, RNA and protein, the accumulation of iron in the body produces reactive oxygen species which causes oxidative stress. Thus, preventing oxidative damage via antioxidant system is indispensable for cell survival. Since the misregulation of iron metabolism may cause cardiovascular diseases, cancer, neurodegenerative diseases, and thalassemia, iron homeostasis is firmly regulated to organize a complex biochemical network in the body. In the present study, effects of iron overload on thioredoxin reductase (TrxR), which is one of the enzymatic antioxidant system, was investigated in mouse heart at the gene and protein levels. For this purpose, 10 male BALB/c mice were divided into 2 groups. Control group was intraperitoneally injected with 0.5 mg of dextran 5 solution. In the treatment group, 5 mg iron dextran solution was intraperitoneally injected twice weekly for 3 weeks to form systemic iron loading. The expression of hepcidin (*Hamp*), ferroportin (*Fpn*), ferritin *(Fth*) genes was examined by qPCR in mouse heart. Quantitative iron content, GSH level, and TrxR enzyme activities were examined. According to our results, quantitative iron content was significantly increased. However, no changes were seen in GSH level. While the gene expressions of *Hamp* and *Fpn* was increased, no changes were seen in Fth expression. TrxR enzyme activity was significantly increased. It may be said that TrxR protects the cell against iron-overload induced oxidative stress in mouse heart.

Keywords: Iron, Hepcidin, Oxidative stress, Thioredoxin reductase

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Poster Presentation

The expression levels of matrix gla protein (mgp) in various cell lines

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Abstract

Matrix Gla protein (MGP) is a member of vitamin K-dependent protein. MGP enacts in cellular growth and differentiation. It was observed in many in vitro studies that MGP is expressed in some cell types including osteoblast, chondrocytes, and fibroblasts. Besides, MGP presence was detected in several tissue. However, precise physiological function of MGP is still unknown. In our study, expression levels of MGP in various cell lines were investigated. Human cell lines; Chon-001 (chondrocyte), U-2OS (osteosarcoma), HEK-293 (embryonic kidney), Beas-2b (bronchial epithelial) were propagated under optimum cell culture conditions. Total RNA was isolated from cell cultures. Then expression of GAPDH and MGP were analyzed with real time qPCR. Gene Globe Data Analysis Center (Qiagen) was used to analyze real-time PCR data. The results were expressed as "fold-change". Our results indicate that MGP gene is expressed in Chon-001, U-2OS, HEK-293, and Beas-2b cell lines. Moreover, we observed that MGP gene expression was at maximum levels in human chondrocyte cells while at minimum levels in human osteosarcoma cells. It was shown in many cell culture models that MGP expression increases after cells exceed normal confluence threshold. Moreover, it was also demonstrated that MGP expression levels were high in developing perinatal organs such as kidney and lungs in early stages of embryological development. Considering the data in our study, we suggest that MGP shows a spatio-temporal expression pattern regarding cell and tissue type. Besides, further studies are needed in order to comprehend the action mechanism and role of MGP in human biology.

Keywords: MGP, Chon-001, U-2OS, HEK-293, BEAS-2B

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Poster Presentation

COI barcode based species specific primers for identification of sunn pest species

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Abstract

Accurate taxonomic *identification* of *pest* and *natural enemy* species is *important* and is essential before initiating an IPM programme. Traditional identification techniques rely on examination of morphological characters which have some shortcomings and limitations. Screening large numbers of samples requires undamaged specimens and substantial sample preparation which is also time consuming. The most serious drawbacks of only using this approach for species identification is the fact that some traits or characters are apparent only during certain life cycle stages or in one gender. Therefore, DNA-based approaches can compensate for the deficiencies in morphological identification. The universal *Folmer* primers have been probably the most *widely used* primer pair for amplification of cytochrome c oxidase (COI) gene in many animal groups. In this study we have sequenced a 658 base pair (bp) region of the (*COI) gene* of the most economically important species of the sunn pest are *Eurygaster integriceps* Puton and *Eurygaster maura* (L.) using universal primers. Analyzed nucleotide sequences were found without pseudo genes and indels that match with high similarity to the sunn pest sequences in NCBI database. The DNA barcodes were used in order to design new species specific primers by alignment of sequences based on highly conserved regions that is present in both species. *COI* barcode based species specific primers will enable rapid and accurate identification of aforesaid sunn pest species.

Keywords: DNA barcoding, COI, sunn pest, primer design

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Poster Presentation

Investigation of protein carbonyl groups as oxidative stress indicator on biological systems

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Abstract

In biological systems, it is very important to determine the relationship between high protein carbonyl group formation, oxidative stress and cell damage. The use of protein carbonyl groups as biological markers of oxidative stress is more advantageous than the measurement of other oxidation products due to the earlier formation and relative stability of carbonylated proteins. The most commonly used marker to assess protein oxidation is to identify protein-bound carbonyls. The protonic carbonyls can all be identified by a variety of methods based on the derivatization of the carbonyl group. Some hydrazine derivatives which are formed with the most common 2,4-dinitrophenylhydrazine (DNPH) are used. Hydroxylation of aromatic groups and aliphatic amino acid side chains resulting from the oxidation of proteins leads to the nitration of aromatic amino acid radicals and sulfhydryl groups, the sulfoxylation of methionine, the chlorination of aromatic and primary amine groups, and the conversion of some amino acid radicals to carbonyl derivatives. Oxidation also results in the formation of cross-linked proteins and breakage of the polypeptide chain, which in turn results in the formation of alkoxyl radicals, the most important of which are radicals. In addition, the functional groups of proteins react with oxidation products of polyunsaturated fatty acids such as 2-alkenal, 4-hydroxy-2-alkenal and ketoaldehyde and some carbohydrate derivatives (carbohydrate addition or carbohydrate oxidation products) to form inactive derivative compounds. Protein carbonyl content is the most common and useful biomarker of protein oxidation. Oxidative modifications of enzymes and structural proteins cause numerous diseases. Rapid and novel advances in the identification of oxidative proteins provide new diagnostic biomarkers for oxidative damage, leading to the creation of effective antioxidant therapy. Determination of protein oxidation can be used in early diagnosis of many diseases, especially cancer.

Keywords: Protein carbonyl, protein oxidation, cell damage, free radicals

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Poster Presentation

Ion exchange chromatography in protein isolation and purification

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Abstract

The components that make up a substance have differences such as molecular weight and ionic charge. While these components are passed over a fixed phase with the help of a moving phase, the same type of components are gathered together depending on the pace of travel over the stationary phase. Chromatography is a separation and / or purification technique based on the principle that components of the same species together and complete their progress over the stationary phase for a specific period of time. The chromatographic method in which the stationary phase is distinguished from the ion exchange principle is called ion exchange chromatography. At each pH of the protein, there is a net charge due to the positive or negative charge of the amino acids forming it. Accordingly, the binding of the protein to the negatively charged material (if it is positively charged itself) or to the positively charged material (if it is negatively charged itself) constitutes the basis of the separation in ion exchange chromatography. In ion exchange chromatography, ion exchange materials are used as the column material. An ion exchanger consists of a matrix in a water-insoluble polymeric structure and functional groups bearing a positively or negatively charged chemical bond thereto. The matrix portion of the ion exchangers may be aluminum silicate, a synthetic resin, or a polysaccharide derivative. The ion-exchange resins are mainly used for the purification of small molecule globulin proteins and peptides. In the purification of proteins due to their advantages such as water retention and water swelling properties, as well as the non-denaturation of proteins, the resins have been replaced by polymeric cellulose and dextran derivatives over time. Ion exchange chromatography is particularly used for the isolation and purification of a wide variety of macromolecules such as enzymes, proteins, nucleic acids..

Keywords: Protein isolation, purification, ion chromatography

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Poster Presentation

Development of genome specific microsatellite marker in *Cucurbita pepo* L.

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Abstract

Cucurbita pepo L. is an economically important member of the Cucurbitaceae family and perhaps the most polymorphic species with respect to fruit characteristics. Cultivated varieties display a rich diversity of vine and flowering type. Despite the agronomic and economical importance of the plant, the first whole genome sequence assembly was published at 2017. In this study whole genome sequence (261.355 Mb) of the *Cucurbita pepo* L. was bioinformatically analyzed to determine the microsatellite motifs for developing primers to generate genomic molecular markers. Repeated motifs were searched using the Perl script program MISA within whole genome sequence, by applying the parameters; di-nucleotide ≥7, from trinucleotide to hexanucleotide ≥6, and distance between two SSRs ≤200 bp.Primers were designed by using Primer3 software by applying high stringency primer designing parameters. As a result of analyses 28.367 newly developed microsatellite markers were evenly distributed to 20 chromosomes of *C.pepo* with high density coverage. For the first time, huge amount of microsatellite markers were developed in this study and this information will provide valuable information to breeders for future molecular breeding programs.

Keywords: *Cucurbita pepo* L., Molecular marker, MISA program, Primer3 software, SSR

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Poster Presentation

Short-term genotoxicity test

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Abstract

Humans are exposed to various chemical substance and physical factors (irradiation) in their daily life. Some of these agents may have genotoxic activity by leading DNA damages such as gene mutation, structural chromosome aberration, recombination and numerical changes. These damages can lead several health problems, from cancer to a wide variety of different diseases containing tissue defects, infertility, ageing, and multifactorial disorders and also cause hereditary defects due to mutations in germ cells. Therefore, identifiying mutagenic/genotoxic substances, in order to minimize exposure to these compounds is important for preventive medicine. Several genotoxicity tests with different endpoints have been developed since 1970 and used to detect mutations in single gene, chromosome, or genome and also endpoints representing primary DNA damage. Mutagenicity tests are performed by using bacteria, invertebrates, mammals, fishes and plants. In the “in situ” and “in vivo” studies, eucaryotic organisms are exposed to the evironmental compartment for monitoring purposes. In vitro test systems are performed with bacteria, primary tissue cultures, blood cells and permanent cell lines from eucaryotic organisms such as V79, CHO, and CHL. Most frequently used genotoxicity tests are namely bacterial Ames test, E.coli WP2, umuC and SOS chromo assays, Mammalian hypoxanthineguanine phosphoribosyl transferase (HPRT) forward mutation test and Mouse lymphoma thymidine kinase (TK) gene mutation assays, Somatic mutation and recombination test (SMART), Comet assay analysing integrity of DNA, Unscheduled DNA synthesis (UDS) assay measuring repair activity after exposure to genotoxins, Chromosomal aberration (CA), Micronucleus (MN), and Sister chromatid exchange (SCE) tests detecting macro damages of chromosomes which visible in the light microscope. Positive results obtained from genotoxicity tests indicated that tested agents have the potential to be carcinogens and/or mutagens for human.

Keywords: Genotoxicity tests, Mutagenicity tests, DNA damage

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Poster Presentation

Use of next generation discovery technologies in plants

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Abstract

DNA sequencing studies emerged recently with the rapid development of Molecular Biology have enabled the possibility of sequencing whole genomes of plants using new generation technologies. New generation DNA sequencing methods are divided into three groups: sequencing through synthesis, sequencing through ligation, and sequencing one molecule. The number of studies performed synthetic sequencing methods using Roche 454 and Illumina sequencing technologies are higher in plants. The greatest goal of the studies was the discovery of many DNA markers in one go. Due to the complex nature and size of the plant genome, a new generation of sequencing is needed. Sequencing methods offer high data quality with long, accurate and fast readings and are very useful because they are economically viable. In addition, they light the selection of plant populations, genetic diversity, quantitative feature locus (QTL) mapping and marker-assisted selection. In recent research, it has been used successful in the identification of important plant varieties such as corn, barley, zucchini, rice, wheat and potatoes. This study is about the assessment of the use of next-generation sequencing technologies in the field of plant technology.

Keywords: New Generation Sequencing (NGS), DNA sequencing analysis, Plant Biotecnology

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Poster Presentation

Synthesis of some new thiadiazine derivatives and their biological activities

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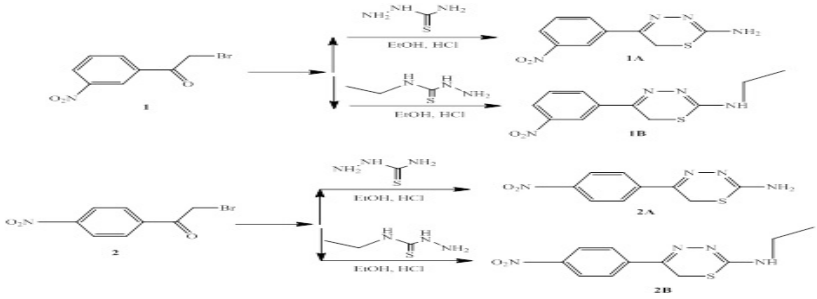
Abstract

In recent years, interest in thiadiazines has increased due to the high biological activity and broadspectrum action of their derivatives . Many thiadiazines have been discovered with possible applications in medical practice as sedatives, antianxiety agents, antiasthmatic agents, anticonvulsants, myorelaxants, coronary vasodilators, and spasmolytics. 1,3,4-thiadiazine derivatives are also being used in agriculture as herbicides, fungicides, pesticides, insecticides and plant-growth regulators. The 1,3,4-thiadiazine system was first reported by Bose employing a reaction of α-bromoacetophenone with thiosemicarbazide. In this study we describe a series of 6H-1,3,4 thiadiazines. Reaction of α-bromoacetophenone derivatives with thiosemicarbazide in ethanol at room temperature as the first step, followed by refluxing of the ethanolic solution of the obtained product in the presence of small amount of HCl. The biological activities of the synthesized products were then examined.



Scheme 1. Synthesis of Thiadiazine derivatives.

Keywords: 1,3,4-thiadiazines, Thiosemicarbazides, Antimicrobial activity, Biological activity.

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Poster Presentation

Determination of protease enzyme production potentials of thermophilic bacteria isolated from hot water springs

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Abstract

Proteases are known as enzymes in the hydrolase group, which hydrolyse proteins to peptides and free amino acids. In order to fulfil this function, all protease groups would break the amide bond in the polypeptide chains. There has been an increased interest in microbial proteases since plant and animal proteases can not meet the needs in the world. Microorganisms are excellent enzyme sources due to their wide range of biochemical diversity and susceptibility to genetic interventions. Proteases obtained from microbial sources are more advantageous than those obtained from plant or animal sources, because of high catalytic activity, no undesired byproduct formation, more stability and more quantitative yields. This makes microbial proteases unprecedented for biotechnological applications. In this study, protease enzyme production potentials of 12 thermophilic bacteria isolated and identified as molecular from hot water springs were determined spectrophotometrically and by using disc diffusion method. As a result of the analysis carried out, it was observed that isolates of O16, O12 and A10 have maximum activity and O9, O3, O5 and O11 bacteria have no protease enzyme activity.

Keywords: Amylase, Disc diffusion, Biotecnology, Enzyme

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Poster Presentation

Quantitation of β-sitosterol in crataegus orientalis (Rosaceae) by gas chromatography-mass spectrometry

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Abstract

Hawthorn belongs to *Crataegus* L. genus of the Rosaceae family and it has been reported that Crataegus contains nearly 21 species in Turkey. *Crataegus orientalis* is a species of hawthorn and fruits, flowers and leaves of its have been used for the treatment of cardiovascular diseases, hypertension and arteosclerosis diseases since ancient times. In experimental and clinical studies demonstrate that different taxa of hawthorn have antiinflammatory, antioxidant, antivascular, antiviral, antithrombotic, antifungal effects and also it is effective in the early stages of congestive heart failure. Due to its positive effects on the cardiovascular system, hawthorn has recently become a popular herbal medicine in phytotherapy. Beta-sitosterol, plant sterol ester, is a substance found in plants. β-sitosterol is used for heart disease and high cholesterol. This study aims at the simultaneous determination of β-sitosterol in *C. orientalis* by GC-MS method. The retention times of β-sitosterol were found to be 14.9 min. The validation of the proposed method was carried out for specificity, linearity, accuracy, precision, limit of detection, limit of quantitation and recovery. The linear ranges were 1-100 µg/ml for β-sitosterol. The intra- and inter-day precisions, expressed as the relative standard deviation (RSD), were less than 4.99%, determined from quality control samples for β-sitosterol, and accuracy was 1.33% in terms of relative error. The application of a simple, rapid and accurate GC-MS method was carried out the quantitation of β-sitosterol in *C. orientalis*. Therefore the proposed method can be used for the routine quality control analysis of β-sitosterol in *C. orientalis.*

Keywords: β-sitosterol, GC-MS, *Crataegus orientalis*, cholesterol-lowering effect

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Poster Presentation

Determination with qRT-PCR of expression levels of some antioxidative enzymes in safflower types (*Carthamus tinctorius* L.) applied by boric acid

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Abstract

Today fossil based primary energy resources like coal, petrol and natural gas have been depleting and these energy resources have ecological harm. For these reasons, new renewable energy sources are preferred in recent years. Animal fats and herbal products like soy beans, corn and sunflower are used to obtain renewable energy. Safflower (*Carthamus tinctorius* L.) is the leading among those herbal products. It is an enduring herbal because of its high tolerance to cold and hot; its tolerance to salinity and weeds. This fact arises the idea that its reaction to different stress factors should be analysed. Changes on three different safflower type (Balcı, Dinçer and Remzibey) brought by APX, GR, CAT and SOD enzyme activities of boric acid in different concentrations at expression level are found. Though the element boron is one of the micro elements absolutely necessary for the growing of the plants, too much boron found in the soil is a stress factor which limits the plant growth and productivity. In this study, total RNAs are isolated from the leaves of three safflower types (Balcı, Dinçer and Remzibey) grown in different boric acid concentrations (0: control, 5, 10, 15, 20 mM). These RNA samples are transformed into first strand complementary DNA (cDNA). APX, GR, CAT and SOD gene expression levels is identified with qRT-PCR as a result of normalisation with GAPDH which is determined as reference gene. Difference on gene expression levels of antioxidative enzymes based on increasing boric acid concentration in three safflower types.

Keywords: *Carthamus tinctorius*, boric acid, seedling, RealTime-PCR

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Poster Presentation

Topoisomerase mutations are associated with resistance to the second generation quinolones in *Pseudomonas aeruginosa* clinical ısolates

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Abstract

Background: *Pseudomonas aeruginosa* is a clinically significant pathogen causing opportunistic infections and nosocomial outbreaks. The emergence of multi-drug-resistant strains in P. aeruginosa isolates has increased worlwide. Fluoroquinolones and aminoglycosides are two important classes of antibiotics used in the treatment of *Pseudomonas* infections. Fluoroquinolones act as bactericidal agents by inhibiting DNA gyrase and topoisomerase IV, thus inhibiting DNA transcription and replication. The second-generation quinolones have broader clinical applications in the treatment of complicated urinary tract infections and pyelonephritis, sexually transmitted diseases, selected pneumonias and skin infections. Though topoisomerases I and III are not very susceptible to inhibition by the quinolones, topoisomerases II and IV are the lethal targets of the quinolones. In the present study, we investigated susceptibility profiles of the clinical samples to the second generation fluoroquinolones ciprofloxacin and ofloxacin and the mutations related with fluoroquinolones resistance (topoisomerase II: gyrA and topoisomerase IV: parC genes). Methods: A total of 54 *P. aeruginosa* isolates were collected from various clinical specimens from hospitalized people in Sinop and nearby cities, Turkey. The isolates were identified based on Gram staining and conventional biochemical tests. Reference strain *P. aeruginosa* ATCC 27853 was used as a positive control for all tests. Antibiotic susceptibility profiles were determined with Kirby-Bauer disc diffusion test. DNA extraction from the bacterial isolates was carried out by standard phenol chloroform method and gyrA and parC target gene sequences were amplified by PCR using specific primers. For restriction fragment length polymorphism (RFLP) analysis, PCR products were treated with SacII and HinfI enzymes for gyrA and parC respectively, and the fragments were separated on agarose gel stained with ethidium bromide and visualized on gel documentation system. Results: The results of disc diffusion test showed that 21 samples (38.9%) were sensitive and 33 samples (61.1%) were resistant to ciprofloxacin. For ofloxacin, 6 samples (11.1%) were sensitive and 48 samples (88.9%) were resistant. We found mutation in gyrA (Thr-83→Ile) in 17 (51.5%) of ciprofloxacin resistant samples. There was no mutation found in ciprofloxacin sensitive samples. We found mutation in parC (Ser-87→Leu) in 14 (42.4%) of ciprofloxacin resistant samples. Mostly, parC mutation accompanied gyrA mutation, only 4 isolates had a mutation in parC without a gyrA mutation. We found mutation in gyrA in 16 (33.3%) of ofloxacin resistant samples and the same value was also found for parC mutation. Only one sample had a mutation both in gyrA and parC genes in ofloxacin sensitive samples. Conclusion: Since gyrA mutations are the major mechanism of resistance to fluoroquinolones for clinical strains of *P. aeruginosa* and that additional mutations in parC could lead to a higher level of quinolone resistance, these mutation screening tests would be appropriate for epidemiological surveillance.

Keywords: Topoisomerase II (gyrA), Topoisomerase IV (parC), *Pseudomonas aeruginosa*, Ciprofloxacin, Ofloxacin

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Poster Presentation

Codon bias trends in three domains of life

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Abstract

Although synonymous codons encode the same amino acid, these codons are not used randomly in a genome and this phenomenon is known as 'codon usage bias'. Synonymous codon biases though often referred to as silent mutations can exert a plethora of effects on the cell that directs us to consider novel biological hypotheses. The initial hypothesis related with the biased codon usage was related with the abundance of tRNA molecules to enable the mRNA being translated faster and/or more accurately. This concept reflects the optimal codon biases in highly expressed genes taking into consideration of the fact that translation is energetically very expensive and inaccurate translation wastes limited cellular resources. It has been known that; species exposed to selection for rapid growth exhibit a stronger codon usage bias. Besides, fast-growing bacteria with relatively low generation time generally have more tRNA genes which is positively correlated with genome size and G+C content to increase translation speed. However, codon bias is less distinguished in higher eukaryotic genomes, a fact that may reflect different translation mechanisms among the three domains of life. Today, a plenty of novel biological hypotheses including amino acid starvation responses, cyclically expressed proteins, tissue-specific expression patterns, cellular differentiation, tRNA modifications, stress response genes, and carcinogenesis also have an extensive coverage in the literature. For humans, a concept known as 'isochores' corresponding to genomic regions with distinct G+C compositions is present. This contributes to variation scales among genes in terms of codon usage bias and signs a different selection mechanism compared with lower organisms. Though among bacteria generally the values of selected codon usage bias (S) are highly correlated with both the number of rRNA operons and tRNA genes, a different, not so straightforward codon-mediated translational control plays role in humans reflecting the tissue-specific pattern; genes selectively expressed in one human tissue can generally be discriminated from genes expressed in other tissues based on their synonymous codon usage. It seems that each genome has a specific codon usage signature reflecting particular evolutionary forces acting within that genome. We aim to recapitulate the codon usage trends both in prokaryotic and eukaryotic genomes in terms of a molecular evolutionary perspective.

Keywords: Codon bias, prokaryotic genomes, human genome, isochores, translation efficiency, molecular evolution

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Poster Presentation

Calixarene nanofiber design for human gingival fibroblast 3D-cell culture

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Abstract

A growing body of evidence has suggested that 3D cell culture systems, in contrast to the 2D systems, represent more accurately the actual microenvironment where cells reside in tissues. The main advantage of using 3D cell aggregates/spheroids in tissue regeneration is their ability to mimic not only the architecture of the cells in vivo, but also the cells' natural tendency to fuse and form tissue units with well-defined morphogenic and functional properties. p-tert-butylcalix[4]arene, similar to a ring basket, represent a third generation of supramolecular hosts. Due to having a cyclic structure and large surface area, calixarenes, can be functionalized easily with polar and apolar groups, be a good carrier for cations, anions and neutral molecules. Electrospinning of p-tert-butylcalix[4]arene nanofibers with different functional groups were performed and their Human Gingival Fibroblast (HGF-1) cytocompatibility behaviour on cell adhesion function were examined. The structure of the synthesized compounds was characterized by 1H-NMR and FT-IR. Then the nanofibers of these synthesized compounds were withdrawn by electrospinning. Surface characterization of the nanofibers was done by SEM, TEM and AFM analysis. As cell in-vitro models, HGF-1 cells (2x105) were cultured on nanofibers. Cell growth/proliferation analysis were done by XTT assay and fluorescent microscopy analysis with DAPI stain. Finally, SEM/EDS measurement was used to characterize the morphology of the attached cells and evaluated the cell proliferation. It has demonstrated that ECM-adhered gingival fibroblast monolayers and spheroids indeed migrate, rearrange, and create 3D cell-constructs on calixarene nanofibers.

Keywords: Calixarene, Nanofiber, 3D-Cell Culture, Human Gingival Fibroblast

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Poster Presentation

Influence of the functionale variants of NR3C1 and UCP2 genes on risk of ankylosing spondylitis in a Turkish cohort

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Abstract

Ankylosing spondylitis (AS), chronic autoimmune disease, a polygenic disease caused by the combined influence of environmental and genetic factors. The human glucocorticoid receptor gene (NR3C1) is considered to play a role in the the glucocorticoid response in individuals with autoimmune diseases. Uncoupling protein 2 (UCP2) is a member of the mitochondrial transporter superfamily. We proposed to investigate the role of NR3C1 Bcl-1 (rs41423247) and UCP2 -866G/A (rs659366) variants in Turkish patients with AS. NR3C1 Bcl-1 and UCP2 -866G/A variants in a total of 74 patients with AS and 80 healthy controls were genotyped using polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP). The NR3C1 Bcl-l allele and genotype frequencies were found similar in the two groups. There was a significantly difference genotype and allele frequencies of UCP2-866G/A variant between AS patients and controls. The AA genotype and A allele of UCP2 -866G/A variant were increased in patient group compared to control group, respectively (p=0.006, p=0.001). The subjects carrying the UCP2 -866G/A variant AA genotype showed a 4.115-fold increased AS risk than control group (OR:4.115, 95%CI:1.499-11.296). Additionally, we found that UCP2 -866G/A variant AA genotype was associated with Ankylosing spondylitis quality of life (ASQoL) (p=0.036). We demonstrated for the first time that UCP2 -866G/A variant was associated with AS. These findings indicate that the the UCP2 -866G/A variant may contribute to AS susceptibility in a Turkish cohort.

Keywords: Ankylosing spondylitis, NR3C1, UCP2, PCR-RFLP, ASQoL

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Poster Presentation

Typing of *Staphylococcus aureus* strains ısolated from raw milk and ice cream by pulsed field gel electrophoresis

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Abstract

Bacterial food-borne pathogens are a major cause of morbidity and mortality throughout the world. *Staphylococcus aureus* is one of the major pathogenic bacteria found in milk and dairy products. For this reason, typing methods are important tools for determining the primary sources of bacterial contamination. Pulsed-field gel electrophoresis (PFGE) is known as the ‘‘gold standard’’ for typing *S. aureus*. The purpose of this study was to investigate 55 *S. aureus* strains isolated from 260 raw milk and 150 ice cream samples in terms of genetic diversity. Pulsed-field gel electrophoresis was used to identify the genetic relations of S. aureus isolates. The phylogenetic dendogram of strains were established according to PFGE profiles obtained after restriction with SmaI. At a similarity level of 80%, ıt was determined that the 55 *S. aureus* strains revealed 43 different pulsotypes represented by 9 subtypes. According to the findings obtained, 55 *S. aureus* isolates isolated from raw milk and ice cream were found to have high genetic diversity and consequently clonal associations were low. However it was determined that *S. aureus* isolates isolated from the milk collected from the same area were related or possible related. No related or possible related isolate between ice cream and raw milk isolates was detected. The results showed that PFGE is a powerful method to follow the sources of food contamination.

Keywords: Genetic diversity, Pulsed-field Gel Electrophoresis, *Staphylococcus aureus*

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Poster Presentation

Adventitous shoot regeneration from cotyledonary leaves of Melissa officinalis on medium containing TDZ-IBA

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Abstract

Melisa officinalis is an important herbaceous medicinal plant of . Lamiaceae family and shoes wide distribution in Mediterranean, Europe and Central Asia regions. Cotyledonary leaves from 7-10 days old seedlings were cultured on MS medium supplemented with 0.10, 0.20, 0.40 and 0.80 mg/l Thidiazuron (TDZ) using single or in combination with 0.10 mg/l Indole-3-butyric acid. The medium was also enriched with 3.0% sucrose, gelled with 0.65% agar with 5.8 pH. Shoot regeneration started after 3 weeks of culture but explants showed signs of necrosis and subcultured to same medium with addition of 1.0 mg/l Polyvinylproline (PVP). Addition of PVP exerted positive signs on explants and multiple shoot regeneration without sign of necrosis were recorded and data were taken after 10 weeks of culture. Among mediums, 0.40 mg/l TDZ with 0.10 mg/l IBA induced more callogenesis, regeneration frequency, and shoots per explant. İn vitro regenerated shoots were rooted successfully on MS medium supplemented with IBA. Later on, these plants were transferred to pots containg torf for acclimatization.

Keywords: In vitro, Adventitous, Regeneration, Cotyledonary leaves

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Poster Presentation

Biotechnological approches for genetic ımprovement of cowpea (*Vigna unguiculata* L. Walp.)

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Abstract

Cowpea (*Vigna unguiculata* L. Walp.) is one of the most important and widely cultivated legumes in many parts of the world, particularly in Africa, Europe, Latin America and some parts of Asia and the United States. It is an excellent substitute for animal proteins by resource-poor people and vegetarians because of its high seed protein content (about 25%) and rich amino acids. Almost 80-90% production of total cowpea ğroduction is confined to African countries. However, scaricity of water and other biotic and abiotic factors are the major reason of low production per unit. In recent years, number of biotechnological and molecular biology tools has been employed for its improvement in order to increase yield. The emergence of "omic" technologies and the establishment of model legume plants are promising strategies for understanding the molecular genetic basis of stress resistance, which is an important bottleneck for molecular breeding. Biotechnology tools such as marker-assisted breeding (Quantitative Trait Loci (QTL), RAPD, RFLP, AFLP, SSR), plant tissue culture techniques (Other tissue-culture derived techniques ; somaclonal variation, in vitro mutagenesis, doubled haploids culture, and wide hybridization), and genetic transformation can contribute to solve or reduce some of these constraints. However, only limited success has been achieved so far. This study revealed the use of different biotechnological techniques and tools for the genetic improvement of cowpea.

Keywords: Cowpea, Biotechnology, Genetic improvement, *Vigna unguiculata*

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Poster Presentation

Interactive effects of hydropriming and light emitting diodes (LEDs) on germination and growth of black chickpea (*Cicer arietinum*) under in vitro conditions

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Abstract

Chickpea (*Cicer arietinum*) is third most consumed edible legume after bean and pea worldwide. The production of chickpea covers more than 20% of total legume production. The production of chickpea is limited due to several biotic and abiotic factors. Light is an important factor that affects the growth and development of plants. In recent years, there is an increasing pattern of using light-emitting diode (LED) lights in different colours in lab and green house studies to check the exact demand of light for plant. On the other hand, priming techniques provides an alternative way to enhance seed germination and plant growth on problematic soils especially against salt stress. The black chickpea is an important medicinal plant due to its benefits on human health but lesser known than other varieties of chickpeas. In this study, the combined effect of various LEDs lights and hydropriming on the germination and development of black chickpea under in vitro conditions. Black chickpea seeds were surface sterilized with 3.5% NaOCl for 15 min followed by 5 min rinsing with distilled sterilized water for three times. Thereafter, seeds were primed with water for 1, 2 and 4 hrs and cultured on MS medium supplemented with 3% sucrose and solidified with 0.65% agar. Seeds were divided into three groups and placed under blue, red and white LEDs lights for photoperiod of 16 h dark and 8 h light at room temperature. Control experiment was also conducted by placing non primed seeds under different LEds lights on MS medium. Data regarded germination and plant growth and development were taken after 15 days of culture. Results indicated that 100% germination was recorded within one day irrespective of hydropriming and LEds type. Whereas, plant growth and development was statistically affected by both hydropriming and LEds type.

Keywords: Hydropriming, light-emitting diode (LEds), Black chickpea, Germination

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Poster Presentation

Upregulation of heat shock protein in response to thermal stress and UV-A irradiation in Egyptian cotton leafworm, *Spodoptera littoralis*

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Abstract

Heat shock proteins (HSPs), highly conserved protein families, are best known with being quick responsive to not only raising temperatures but also to the most of stress conditions including biotic and abiotic stresses such as microbial agents, cold shock, UV exposure, etc. HSPs are molecular chaperones that function in folding/unfolding of proteins, and also protect cells against stress. They comprise five families based on their molecular masses, referred as HSP60, HSP70, HSP90, HSP100, and small HSPs. *Spodoptera littoralis*(Boisd.), also known as the Egyptian cotton leaf worm, is a polyphagous organism that found extensively in Mediterranean and Asian countries. The pest causes economic losses in a wide range of crops including cotton, corn, and tobacco. In this study, we examined expression levels of heat shock protein 70 gene of *S. littoralis* (SpliHSP70) in response to heat shock (42°C), cold shock (0°C) and UV-A radiation in third instar larvae. Heat and cold shock treatment showed an increasing effect on SpliHsp70 while transcript level of heat shock treatment was found much more effective than cold shock treatment. Upregulation of SpliHsp70 was monitored in all time periods from 30 to 180 minutes in response to UV-A radiation with the highest level occurred after 60 minutes of exposure.

Keywords: BHeat shock protein (HSP), *Spodoptera littoralis*, abiotic stress, gene expression

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Poster Presentation

Effect of different carbon and nitrogen sources on decolorization efficiency and laccase activity of fungal pellets in repeated–batch system

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Abstract

Textile industry uses dyes with different chemical structure. Reactive dyes are used extensively in the textile industry. Dyestuff causes serious environmental pollutions. The objective of this study was to investigate the decolorization of Reactive Green 19 and Reactive Blue 171 dyes by white rot fungal pellets in order to confirm the possibility of practical application via repeated-batch cultivation. Additional nitrogen and carbon source was used and high decolorization rates were achieved in dye-contained media without pH adjustment. The degradation of textile dyes by white rot fungi is a process associated with metabolic and / or extra-intracellular enzymes and additional carbon and nitrogen sources are increasing the yield. Reactive Green 19 was decolorized at the rate of 80 and 78 % within 4 hr by Trametes versicolor, and *Funalia trogii* free pellets, respectively. These values were 80 and 71% for Reactive Blue 171, in this respect. When the peptone, yeast extract, glucose and copper were added at different concentrations, the decolorization efficiency was increased. Maximum laccase activity of *F. trogii* pellets (7.47±0.37 U/ml) was obtained after first use in copper-contained media. After separation by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE), the molecular weight of *T. versicolor* and *F. trogii* laccase bands was determined as approximately 64 and 61 kDa, respectively. Green bands were obtained by the activity staining process with laccase substrate (ABTS) after gel renaturation step. Additional nutrients affected the removal of the color of the dyes positively.

Keywords: Reactive dyes, Fungal pellets, Additional nutrients, Laccase, Decolorization

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Poster Presentation

Influence of Lupin (*Lupinus albus* L.) hull flours on some properties of cake

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Abstract

Lupin (*Lupinus albus* L.) is member of the family *Leguminosea*. The hull of the lupin contains high amount of ash, dietary fiber, antioxidant substances and mineral matter. In this study, lupin hull flour (LHF) was used for production of high fiber cake production. LHF was replaced with wheat flour at 5, 10, 15 and 20% ratio in cake formulation. Cake samples were also prepared with and without additives (guar gum and diacetyl tartaric esters of mono and di glycerides). Effect of LHF level and additive usage on some physical (crust and crumb colour values, firmness, volume index, symmetry index and uniformity index), chemical (moisture, ash, protein, cellulose and minerals) and sensory properties of cake samples was determined. While moisture, ash, cellulose and Ca, Fe, Mg and Mn content of the cake samples increased with LHF usage, a significant decrement was observed in protein content. High utilization ratios of LHF had an adverse effect on volume index values of the cake samples. This adverse effect was partially eliminated by the use of additives. Cake samples containing additives presented more attractive crumb colour values. As a result of the technological and sensory properties, it was recommended that LHF can be used in cake formulation successfully up to 10 % addition level without additives, and up to 15% level with the aid of additives.

Keywords: Lupin bran, cake, guar gam, diacetyl tartaric esters of mono and di glycerides

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Poster Presentation

Screening of newly introduced wheat cultivars to Jordan environment

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Abstract

Wheat is a major cereal crop in the world, it has high nutritional value. Wheat growth and productivity are influenced by biotic and abiotic stresses. Drought and salinity can reduce wheat productivity by more than 80%. In this study, the effect of drought and salinity on newly introduced cultivars of wheat (Mamorai, Um rabee, Acsad1315) studied and compares their stress tolerance to local cultivars (Horani, Acsad65, Sham1). Different physiological and biochemical parameters were investigated. ISSR analysis showed significant differences between studies varieties.

Keywords: Wheat, ISSR, proline

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Poster Presentation

Effect of different nitrogen source on growth and lipid accumulation microalgae *Chlorella variabilis*

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Abstract

Nitrogen is one of the major elements required for growth and other physiological activities of microalgae. Microalgae can use different forms of nitrogen such as nitrate, nitrite, ammonium, and urea. Although the type of nitrogen used by microalgae depends on the species, microalgae usually prefer ammonia as a nitrogen source and the usual order of preference is ammonium, urea, nitrate, and nitrite. However, types of nitrogen sources and their concentrations affect the growth of microalgae cultures and their biochemical structures. It has been reported in many studies that microalgae accumulate more lipids under nitrogen- starvation growth conditions. Therefore *Chlorella variabilis* microalgae growth and lipid accumulation behaviour under different types of nitrogen source [sodium nitrate ($NaNO_3$), ammonium chloride (NH_4Cl) and urea ($(NH_2)_2CO$)] in growth medium (BG11) was investigated in this work. Microorganism growth was periodically monitored spectrophotometrically at 660 nm. After 17 days of incubation maximum growth rate (μmax =0.44 h-1) and lipid productivity (4.20 mg/L.day) were obtained in the presence of NaNO3 in the growth medium as the nitrogen source. Compared to the other nitrogen sources (NH_4Cl, $(NH_2)_2CO$-), $(NH_2)_2CO$ did not significantly change the growth rate and the lipid productivity, however, increased the doubling time of the microorganism (23h). According to the results, use of microalgae as a raw material in the production of renewable energy resources is hopeful in the future.

Keywords: lipid, microalgae, nitrogen, renewable energy

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Poster Presentation

Effect of ıron loading factor on magnetic relaxivity properties of magnetoferritin

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Abstract

Different sizes of magnetic iron oxide (composed of mostly magnetite and/or maghemite (Fe_3O_4 − γ-Fe_2O_3) nanoparticles were synthesized with various theoretical iron loadings from 500 to 5000 iron atoms per protein molecule by using recombinant human H-chain ferritin protein as a biotemplate for the evaluation as a magnetic resonance imaging (MRI) contrast agent. The biomaterial called magnetoferritin is comparable in size to other commercially available ultrasmall superparamagnetic iron oxide contrast agents for MRI, but with the unique features such as excellent homogeneity of particle size and providing further modification to impart cell-specific targeting. The effect of iron loading factor on the R_1 and R_2 relaxivity of magnetoferritin samples were determined by a magnetic resonance scanner under 90 and 300 MHz at room temperature. It was seen a clear size dependence of the nanoparticles on their relaxivity and an increase in R2 relaxivity with the iron loadings. The sample with the highest iron loading of 5329 Fe/cage (experimentally found iron loading factor) has R_2 value of 165.2 $mM^{-1}.s^{-1}$ at room temperature and at a frequency of 300 MHz. This high R_2 value demonstrates that magnetoferritin nanoparticles may serve as T_2 contrast agent in MRI with high efficiency when compared with commercially used iron oxide MRI contrast agents. However it does not show a considerable change in R1 relaxivities with various loadings. The sample with the highest iron loading of 5329 Fe/cage has R_1 value of 1.98 $mM^{-1}.s^{-1}$. R_1 and R_2 values were slightly higher when lower frequency (90 MHz) was used.

Keywords: Magnetoferritin, MRI, Contrast Agent

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Poster Presentation

In vitro antioxidant and antiproliferative activities of gypsophila aucheri: Analysis of its phenolic compounds by RP-HPLC

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Abstract

The genus *Gypsophila* L. having 126 species worldwide is mainly distributed in the Irano-Turanian and Mediterranean regions and it is the third biggest genus of Caryophyllaceae family in Turkey, possessing 55 species in the country and represented by 58 taxa, 33 of which are endemic. The aim of this study was to investigate the antioxidant and antiproliferative activities of *Gypsophila aucheri* extracts as well as their phenolic contents by using the reversed-phase high performance liquid chromatography (RP-HPLC) technique. Antioxidant potentials of the extracts were evaluated by four different methods namely, 1,1-diphenyl-2-picrylhydrazyl (DPPH) and 2,2′-azinobis-(3-ethylbenzothiazoline-6-sulfonic acid) (ABTS) radical scavenging capacity tests, cupric ion reducing antioxidant capacity (CUPRAC), and metal chelating assay. Antiproliferative activities of the extracts were tested against human breast carcinoma (MCF-7), cells. The antioxidant assay results showed that methanol extract of Gypsophila aucheri displayed more pronounced antioxidant activity than water extract together with its higher phenolic content, revealed by RP-HPLC analysis. In paralel to the antioxidant activity, methanol extract exhibited more promising cytotoxic activity against the tested cancer cell line. However, both extract displayed moderate antiproliferative activity when compared to 5-Fluorouracil and Vincristine, which are chemotherapy drugs used to treat several different types of cancer. The obtained data suggest that methanol extract of *Gypsophila aucheri* could be evaluated as a promising source for food and nutraceutical industries due to its striking antioxidant and moderate antiproliferative potentials together with high phytochemical profile.

Keywords: *Gypsophila aucheri*, phenolic compounds, antioxidant activity, antiproliferative activity, MCF-7 cells.

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Poster Presentation

Synthesis and characterization of biodegradable microcryogels

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Abstract

Cryogels are the gel matrices fabricated at sub-zero temperatures using monomeric or polymeric precursors. Cryogels can be obtained by forming homogeneous or heterogeneous polymer networks cross-linked physically or covalently. Today, cryogels are used in a variety of areas of biotechnology such as carriers for immobilization of molecules and cells, chromatographic materials, matrices for cell separations and cell culture. In this study, cryogels were synthesized in a micro-level using a solid template having microwells. The 6% (w/v) gelatin was dissolved in deionized water at about 40°C and glutaraldehyde was added as a cross-linker to this mixture. The solution was rapidly poured into microwells of the solid template and both sides of the template were covered with 10 cm x 10 cm sized glasses. Polymerization was carried out at -16°C for 24 hours. At the end of the 2-hour lyophilization process, the microcryogels were gathered from the solid template. Swelling tests, optical microscopy, scanning electron microscopy, surface area and macroporosity were performed in order to characterize the surface and bulk morphologies of the microcryogels. *In vitro* hydrolytic degradation of microcryogels was also investigated in phosphate buffered saline buffer (pH 7.4) at 37°C. Size of microcryogels were found between 400-600 μm with the macropores between 20-80 μm. Degradation of the microcryogels were completed around 35 days.

Keywords: Biodegradable, Biotechnology, Gelatin, Microcryogel

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Poster Presentation

The effects of Mig1/2 and Nrg1/2 repressors on trehalose accumulation in *Saccharomyces cerevisiae*

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Abstract

Trehalose is deposited by *Saccharomyces cerevisiae* as a storage carbohydrate and as a stress protectant. The regulation of trehalose level in yeast cell is strictly controlled by trehalose synthesis and degrading enzymes. The biosynthesis of trehalose is catalyzed by TPS complex and the breakdown of trehalose is catalyzed by neutral trehalase enzyme. The trehalose content of yeast cells increases in response to nutrient starvation and different environmental stresses. Mig1 and Mig2 are zinc-finger DNA binding transcription factors that are involved in glucose repression. Nrg1 and Nrg2 repressor proteins have also zinc-finger DNA binding domain in order to bind STRE and PDS elements on the promoters. Both Mig1/2 and Nrg1/2 are involved in regulation of genes controlled by glucose. In our research, the effect of Mig1/2 and Nrg1/2 repressor proteins on the accumulation of trehalose were investigated by using Δmig1, Δmig2, Δnrg1, Δnrg2 mutants and their isogenic wild-type yeast strain. The trehalose content of exponentially growing Δmig1 yeast cells was 6 fold higher than that of wild type and other mutant yeast cells. Nitrogen starvation triggered trehalose accumulation both in wild type and mutant yeast cells except Δmig1 mutant cells. Also the trehalose content of Δmig2, Δnrg1 and Δnrg2 mutant yeast cells were 3-4 times higher than wild type in nitrogen deprivation. These results showed that Mig1 transcription factor is essential for maintainence of trehalose level both in standart and stress conditions, while Mig2, Nrg1 and Nrg2 repressor proteins are essential under stress conditions.

This work was parts of different projects that supported by Çanakkale Onsekiz Mart University The Scientific Research Coordination Unit, Project numbers: FYL-2014-301 and FYL-2016-829.

Keywords: Mig1, Mig2, Nrg1, Nrg2, Trehalose, *Saccharomyces cerevisiae*

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Poster Presentation

Synthesis of chiral tetraoxocalix[2]arene[2]triazine (R)- naphthylethylamine derivative as organocatalyst for asymmetric direct aldol reactions

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Abstract

Asymmetric aldol reaction is one sort of the most important carbon–carbon formation reactions, which can generate many valuable biologically optically active β-hydroxy carbonyl compounds and it has tremendous utility in organic synthesis. Up to now, three direct procedures can be performed to achieve chiral aldol products. They are biocatalysis methods, procedures catalysed by chiral metal especially zinc-involved complexes, and the asymmetric organocatalytic protocols. Among these methods, the third one is currently the most important and interesting procedure. Many highly efficient small molecular organocatalysts have been developed and the asymmetric organocatalytic aldol reactions have rapidly grown to their adolescence from infancy. Tetraoxocalix[2]arene[2]triazine-based organocatalysts were readily synthesized and applied to the direct asymmetric aldol reactions of ketones and aromatic aldehydes. Under preparative conditions, corresponding adducts is formed in high yield and with enantioselectivities up to 88% ee.

Keywords: Tetraoxocalix[2]arene[2]triazine, Asymmetric aldol reactions, Enantiomeric excess

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Poster Presentation

The investigation of ıschemic modified albumin levels in acne vulgarised cases

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Abstract

Acne vulgaris is a common skin disease. When acne is untreated, it can cause social isolation, difficulty in finding jobs, depression and suicide as a result of emotional and physical scar formation. Ischemia-modified albumin (IMA) is a novel marker of tissue ischemia. IMA is serum albumin in which the N-terminus has been chemically modified. The diagnostic albumin Co2+ binding test is based for IMA on the observation that the affinity of serum albumin for Co2+ is reduced after N-terminus modifications. Nowadays, IMA is accepted as a marker of oxidative stress. It has been proposed that reactive oxygen species such as superoxide (•O2−) and hydroxyl (•OH) radicals generated during ischaemia modify the N-terminus of serum albumin resulting in IMA formation. This study was performed on 88 women, 58 women with severe acne vulgaris and 30 healthy women. IMA level was measured by a colorimetric assay based on measurement of unbound cobalt after incubation with patient serum. Increased amounts of IMA results in less cobalt binding and more residual unbound cobalt available for complex with a chromogen [dithiothreitol (DDT)], which can be measured photometrically. We observed a significant increase in the serum IMA levels in women with severe acne vulgaris as compared to healthy women ($p < 0.01$). In conclusion, this study revealed oxidative mechanisms may play an important role in etiogenesis and progression of the severe acne vulgaris, but there is a need to work more on this.

Keywords: Acne vulgaris, oxidative stress, ischemic modified albumin

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Poster Presentation

Effects of ozonated water on dough reology

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Abstract

Ozone is one of the agents that have potential applications in the food industry. It is used in different areas, as an oxidizing and sterilizing agent. In this study, ozonation (3.5 mg / hour) was applied to water for 5, 15 and 30 minutes with an ozone generator using atmospheric air. The effects of ozonated water on the rheological properties of dough were investigated by using Mixolab® and the analyses performed using with ozonated water instead of pure water. Ozone application increased the values of C1, C2, C3 and C4 according to the control. As the duration of ozonation increased, the C5 values increased significantly. It has been determined that ozone application is effective on kneading, viscosity and retrogradation parameters.

Keywords: Dough rheology, Mixolab®, Ozone gas

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Poster Presentation

Production and investigation of non-toxic titanium binary alloys produced by powder metallurgy method

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Abstract

Titanium and its alloys possess good mechanical properties, excellent biocompatibility and high corrosion resistance. Niobium helps adapting the human bone structure and is a β-stabilizing element. Titanium–niobium alloys is used as a biomaterial which is a non-toxic, non-allergenic and does not react with any microorganism. In this study is to produce Ti-Nb alloys by adding different amounts of Nb and to investigate the antimicrobial effects of titanium. High energy ball milling experiments were carried out at room temperature in a Spex™ 8000D Mixer/Mill. After the milling the powders were consolidated at room temperature using a uniaxial press and sintered at different temperatures such as 750 0C, 950 0C and 1150 0C. Mechanical test such as hardness was carried on as-milled and sintered samples and microstructural characterization was performed with Scanning Electron Microscope (SEM). Antimicrobial activity of samples was quantitatively assessed under dynamic contact conditions in accordance with the ASTM E2149-13a standard. After incubation (at 220 rpm and 37 °C for 90 minutes) of samples in 1 mL of working bacterial suspensions, the numbers of viable bacteria in suspensions before (time 0) and after exposure were determined by plate count technique. The results indicate that the studied samples showed no significant antibacterial activity against S. aureus. Finally, a more rigorous evaluation of cytotoxicity of the samples is needed in order to determine their biocompatibility. This research was supported by Necmettin Erbakan University - BAP under grant number 151219009.

Keywords: Titanium-Niobium Alloys, Non-toxic, Antimicrobial, High Energy Ball Milling

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Poster Presentation

Optimization of fruit bar formulation by mixture design

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Abstract

Snack foods are generally smaller than main meals and mostly consumed by children and young people. These products is estimated to cover 20% of the daily diet, therefore they have a high market value. In recent years, healthy alternatives for these products such as fruit bars, cereal bars, fruit leathers and jellies are researched. In this study, the fruit bar ingredients namely fruits (50-80%), nuts (10-40%) and honey (10-30%) were optimized using mixture design to achieve best sensorial and textural properties. The results showed that sensorial properties (texture, chewiness, taste and general) were better when nut amounts were highest. Similarly, instrumentally determined textural properties (springiness, cohesiveness and chewiness) were also better in high nut products. However, an optimal fruits, nuts and honey combination were needed to achieve low adhesiveness. Using the obtained results, the optimum formulation was calculated using desirability function to achieve highest texture, chewiness, taste, general sensorial properties andspringiness, and the lowest adhesiveness and cohesiveness. The optimum formulation was determined as 50% fruits, 35.6% nuts and 14.4% honey. This optimized formulation can be used in future studies to increase functionality of the fruit bar.

Keywords: Fruit bar, formulation optimization, sensorial properties, textural properties, mixture design

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Poster Presentation

Functional properties of the hawthorn fruits and ıts use ın the food ındustry

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Abstract

Hawthorn (*Crataegus* spp) is a plant belonging to *Crataegus* genus of Rosaceae family and there are 50 species of hawthorn in the northern hemisphere and 17 species in our country. Hawthorn needs to sun for growing, but it can adapt to nearly all climatic conditions. The color of fruits ranges from yellow to red. İt is a traditional medicinal plant and has long been used as a folk medicine. Traditionally, hawthorn leaves, flowers and fruits are dried and then used against many diseases such as throat inflammation, cough, kidney diseases, lung diseases, diarrhea, kidney stones and gout disease. It is mostly used in the treatment of cardiovascular diseases. The antioxidant compounds of hawthorn fruit inhibit the formation of free radicals and regulate the functions of heart. Hawthorn fruits contain protein, vitamin, sugar, cellulose, fat and minerals such as Ca, P, K, Mg and Fe. Moreover they contain functional bioactive compounds such as flavonoids, anthocyanins and triterpene saponins. Therefore, they have recently gained importance in the food industry. The trend towards natural products that are beneficial to human health increased the demand for hawthorn fruit in the food industry. For this reason, the functional properties of hawthorn fruit were reviewed in this study.

Keywords: Hawthorn fruits, functional properties, flavonoids

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Poster Presentation

Effects of terpinolene on antioxidant enzyme system of the fission yeast (*S. pombe*)

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Abstract

Terpinolene is one of the most abundant monoterpens. In this study, we aimed to assess oxidative and cytotoxic effects of terpinolene. We used fission yeast (*S. pombe*) as a uni-cellular model organism, also known as micro-mammal, due to the resemblance of *S. pombe* cells to mammalian cells at the molecular level. We analyzed oxidative stress levels using DCFDA staining and antioxidant response using real-time PCR, in addition to turbidimetric analysis. DCFDA fluorescence gradually increased (1.3, 1.5, 1.7 and 1.9-fold increase) in correlation with increasing concentrations of terpinolene (200-800 mg/L). Real-time PCR experiments showed us 1.5-3-fold increase in SOD1 levels and 1.2-2-fold increase in GPx1 levels in response to gradually increasing doses of terpinolene. mRNA levels were statistically different from control group ($p<0.05$). This data points out antioxidant enzyme system can be (de)regulated by terpinolene via oxidative stress in fission yeast (*S. pombe*). Besides, gradual decreasing trend of cell viability showed by turbidimetric analysis was consistent with increasing amounts of ROS and antioxidant response. In conclusion, terpinolene potentially caused cytotoxicity mediated by oxidative stress which also induces antioxidant enzymes for clearance of ROS. Further studies can be planned to shed light on molecular mechanisms of terpinolene cytotoxicity and consequential cell death.

Keywords: Terpinolene, SOD1, GPx1, ROS, *S. pombe*

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Poster Presentation

The determination of effects of in ovo administrated bisphenol a on the development of thymus and proportion of alpha-naphthyl acetate esterase enzyme lymphocyte by means of histological and enzymehistochemical methods in chicken

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Abstract

Bisphenol A [2, 2 bis (4-hydoxyphenyl) propane; BPA] is a widely used endocrine disruptors and has estrogenic activities. The aim of this study is to the determination of effects of in ovo administrated BPA on the development of thymus and proportion of alpha-naphthyl acetate esterase enzyme (ANAE) lymphocyte in chicken. For this purpose, 310 fertile eggs of Isa Brown laying parent stock were divided into 5 groups as control, vehicle-control, 50,100, and 250 µg/egg BPA. Test solutions were injected into yolk before incubation. At the 13th, 18th and 21th days of incubation, 10 eggs were opened from each group and tissue samples were taken from the embryos. Tissue samples were processed for enzyme histochemical methods in addition to routine histological techniques. BPA-treated groups were found to be retarded embryonic development of thymus tissue compared to the control group. In BPA-treated groups, lymphoid tissue had less cell density and the number of ANAE positive lymphocytes decreased. The percentage of peripheral blood ANAE positive lymphocytes was significantly lower in the BPA-treated groups than in the control groups ($p < 0.05$). It was also noted that BPA had a negative effect on the mast cells in the thymus ($p < 0.05$). It has been found that BPA effects embryonic development of thymus, decreases ANAE positive lymphocyte rate and in mast cell counts. It was concluded that significant disturbances in the immune system function of the treated animals might be occured and legal regulation on the use of BPA should be revised.

Keywords: BPA, Thymus, ANAE, Chicken

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Poster Presentation

Investigation of sensing ability of calixarene coated QCM sensor for ascorbic acid in aqueous media

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Abstract

Ascorbic Acid (AA) which is known as Vitamin C, plays important role in human activity. Inefficacy of AA causes scurvy and hypoimmunity, and also excessive of AA cause diarrheal, hyperacidity, coronary heart diseases. Biosensors are analytical device which is can be used for biological sensing. In biosensor application, there are various methods such as electrochemical, calorimetric, optical, acoustic. Among these methods, Quartz Crystal Microbalance (QCM) is acoustic sensor system which is used for gaseous and aqueous media. QCM technique is defined as frequency change according to mass change on quartz crystal. In sensor application, macromolecules can be used as sensing material. Among these molecules, calixarene can be used for host-guest chemistry for construction of various receptors for charged or neutral molecules. In this study, a modified QCM sensor by means of coating a calixarene derivative onto QCM surface was used for sensing of AA in aqueous media.

Keywords: Ascorbic Acid, , Calixarene, Quartz Crstal Microbalance, Sensor

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KONYA

Poster Presentation

CRISPR/CAS9 system: An effectıve genome edıtıng tool for plants

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Abstract

In genetic engineering, targeted genetic manipulation using artificial nucleases was first provided by zinc finger nucleases (ZFNs) and then by transcription activator-like effector nucleases (TALENs). Both are artificial fusion proteins fused to the nuclease domain of the restriction enzyme FokI containing the DNA binding domain, and they have been successfully used in many organisms including plants. After 2013, these powerful gene editing tools were replaced by the CRISPR/Cas9 system. CRISPR is actually an adaptive immunity system developed by bacteria against viruses. When a bacterium is infected with a virus, it binds its DNA with its complementary CRISPR RNA and cuts it with Cas 9, which works with this RNA.Researchers have shown that when CRISPR RNA is redesigned according to the desired mutation type, it can be cleaved in a targeted manner from the desired region of DNA and the desired mutations can be designed in a simple, efficient and in expensive manner compared to other gene editing methods. Targeted gene editing with the CRISPR/Cas9 system has been tested in many plants, primarily rice, maize, *Arabidopsis thaliana*, and positive results have been observed.This study examined the CRISPR/Cas9 system, its advantages and limitations in other gene editing methods, and some CRISPR / Cas9 studies in plants.

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Poster Presentation

Mechanisms of sister chromatid exchange

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Abstract

Sister chromatid exchange (SCE) is a classic assay used for a long time in toxicology studies which gives reproducibly robust quantitative results. SCEs represent an exchange of a DNA template between the parental strands in the duplicated chromosomes and originate from breakage of two sister chromatids, following an exchange of the fragments, rejoin with one another, during DNA replication in S phase of mitosis. Its frequency is considered a reliable marker of pathological cell situations, as well as a genetic indicator for potential genotoxic/mutagenic compounds. The technique for detecting such exchanges uses advantage of the semiconservative nature of DNA synthesis by growing cells in the presence of 5'-bromo-2'-deoxyuridine (BrdU), a thymidine analogue, for two cycles of DNA replication. Standard culturing techniques and conventional cytogenetic preparations followed by differantial staining with fluorescent plus Giemsa (FPG) technique allows the newly synthesized DNA within a chromatid to be recognized. Since BrdU incorporation results in much weaker staining, sister chromatids visualized as asymmetric chromatid staining or "harlequin" chromosomes. The formation of SCE is elevated by mutagenic agents that form DNA adducts or that interfere with DNA replication. It is show correlation with induction of point mutations, gene amplification, recombinational repair and cytotoxicity. In this brief review, molecular mechanisms of SCE, the role of the single-strand break DNA repair protein XRCC1 in suppressing SCE and key protein "effectors" that regulate the appearance of SCE is also presented.

Keywords: Genotoxicity, Sister Chromatide Exchange, DNA Damage

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Poster Presentation

Enzyme inhibitory properties of methanolic extract of *Nepeta congesta* var. *congesta* (Lamiaceae)

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Abstract

In this study, enzyme inhibitory properties of methanolic extract from *Nepeta congesta* var. *congesta* (Lamiaceae) were investigated. For this purpose, anti-cholinesterases, anti-tyrosinase, anti-amylase and anti-glucosidase effect of this extracts were studied. Acetylcholinesterase and butrylcholinesterase inhibitory activities of the extracts were found to be 2.69 and 2.99 mgGALAE/g extract, respectively. Antityrosinase effect of the extract was 30.29 mgKAE/g extract. α-amylase and α-glucosidase inhibitory activities of the metanolic extract were determined as 0.36 and 0.67 mmolACAE/g extract, respectively. The results suggest that *Nepeta congesta* var. *congesta* may be considered as a valuable source of natural enzyme inhibitors.

Keywords: Enzyme inhibition, *Nepeta congesta*, Lamiaceae, natural agents

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Poster Presentation

CRISPR is a new tool to better understand population diversity of plant pathogenic bacteria

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Abstract

Various identification and typing techniques are available for plant pathogens. A newly recognized genetic structure called as clustered regularly interspaced short palindromic repeats (CRISPR) contains a family of short DNA repeat sequences in combination with Cas (CRISPR-associated) proteins, are considered to provide acquired resistance against mobile genetic elements in genetic material of diverse group of bacteria and archaea. The arrays of highly conserved direct DNA repeats that are interspersed by unique, similarly sized spacers. CRISPR repeats alter in size from 21 to 47 bp and are splited up with nonrepetitive and regularly-sized spacer sequences. Most of the these spacer share common sequences with bacteriophage, plasmid, and other laterally-transferred DNA sequences. The obtaining of new introduced genes that could offer a discriminating factor is an important determinant in genome evolution. Rezzonico et al. (2011) and McGhee and Sundin (2012) was applied CRISPR for investigating the genetic diversity of E. amylovora that is casual agent of fire blight in rosacea plants and has almost nealy homogeneous species with a low level of genetic diversity. They found high diversity among tested isolates and more considerably discrimination in comparison other performed analysis. For other species, CRISPR genotyping enabled the differentiation of strains that were shown in previous studies. CRISPR can be suggested a very good tool for example, multi host pathogen capable of causing disease on numerous plant specimens in all over the world like Pectobacterium carotovorum that has heteregenous strains and this structured integration of repeates and spacers can allow providing evolutionary history, utilizing for bacterial typing of strains belonging to same species, understanding the epidemiological studies, tracing pathogen movement and clarification the origin of newly introduced pathogens of plants.

Keywords: CRISPR, Genetic diversity, Genome modification

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Poster Presentation

Isolation and identification of cellulolytic bacteria from the carp's intestine and investigation of their cellulolytic activity

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Abstract

Grass carps have good ability to degrade cellulose of aquatic plants with the aid of the cellulolytic bacteria in their gastrointestinal tract. The purpose of this study is to isolate cellulolytic bacteria that have probiotic activity from a grass carp's intestine. For this purpose, 20 cellulolytic bacteria were isolated from the carp's intestine using carboxymethyl-cellulose (CMC) agar media. Two bacterial strains that have higher cellulolytic activity were selected between the isolates by congo red staining and the selected isolates were designated as BH4 and BH9. BH4 and BH9 were identified with firstly Gram-staining then with 16S rRNA sequence analysis method. By gram staining, it was determined that BH4 was gram positive, coc shape whereas BH9 was gram positive, rod shape. According to 16S rRNA sequence, BH4 was identified as Staphylococcus cohnii and BH9 was identified as Bacillus pimulus. To find the activities of carboxymethyl cellulose (CMCase) of the strains, BH4 and BH9 were incubated in nutrient agar that contains 1 % (w/v) CMC at 37 oC for 8 days. Following incubation, the amount of glucose released from CMC by cellulolytic isolates was determined by the dinitrosalicylic acid (DNS) solution. During the CMC degradation studies with these strains, at the end of 8days incubation time, in the medium containing 1 % (w/v) CMC, CMC degradation rate for BH4 and BH9 were determined 25.68 % and 39.64 % and the CMAase activity of the strains were determined as 237.78 µmol/min and 367.04 µmol/min respectively.

Keywords: Cellulolytic bacterium, Probiotic activity, Staphylococcus cohnii, Bacillus pimulus, CMC degradation

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Poster Presentation

The role of HUVEC conditioned medium ın laryngeal cancer cells proliferation

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Abstract

Cancer growth is regulated by stromal cells such as endothelial cells (EC) within the tumor microenvironment. However, the functions of endothelial cells within the microenvironment of head and neck squamous cell carcinoma (HNSCC) remain poorly understood. We hypothesized that ECs may like other stromal cell types, regulate cancer cell behavior and affect cancer proliferation. Thus, here we performed an in vitro non-contact co-cultivation system to analyze the influence of healthy cells (endothelial cell line HUVEC cells) on tumor cells (laryngeal cancer cell line HEp-2). We prepared conditioned medium (CM) from HUVEC cell cultures to mimic the environment of HUVEC cells around the tumor cells. HUVEC cells were plated in DMEM containing 10% FBS and allowed to attach overnight, and the supernatants were collected, centrifuged to remove cell debris, and called as HUVEC-CM that was used to culture HEp-2 cells. Cells were cultured in the presence of increasing concentrations (%0, % 10, %25, % 50, %75 and %100) of HUVEC-CM for 24, 48, and 72h to show the effect of concentration of HUVEC-CM on the proliferation of HEp-2 cells. MTT (Thiazolyl Tetrazolium Blue) proliferation assay was performed to measure cell proliferation. The proliferation assay showed that while %75 and %100 HUVEC-CM inhibited cancer cell proliferation, % 10, %25, % 50 HUVEC-CM increased the cancer cell proliferation compare to the cells in normal medium. We believe that further studies will contribute to our understanding of tumor microenvironment effect in head and neck carcinoma.

Keywords: Endothelial cells, Head and neck squamous cell carcinoma, Tumor microenvironment, Cell proliferation, Co-culture

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Poster Presentation

Effects of *Cinclidotus pachylomoides* (Bryophyta) extracts on relative water contents and photosynthetic pigment amounts in wheat and wild oat

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Abstract

The bryophytes form the ecosystem by affecting the higher plants around them by allelopathic effect of their secondary metabolites. In this study, the extracts of Cinclidotus pachylomoides Bizot in different concentrations (0, 25 and 50 mg.mL -1) and three different solvents (distilled water, ethyl alcohol and ethyl acetate) on relative water contents and photosynthetic pigment amounts of Triticum aestivum L. and Avena sterilis L. seedlings. The relative water content of wheat and wild oat leaves was calculated. In addition, the absorbance values of samples were measured at different wavelengths (663 nm, 645 nm, 652 nm and 450 nm) in the visible spectrophotometer and the pigment (chla, chlb, chla / b, total chl and carotenoid) amounts were determined. The relative water content of the wheat seedlings was increased in ethanol treatments and decreased in the distilled water and ethyl acetate treatment groups to the control. Significant reduction was in the treatment of 50 mg.mL-1 C. pachylomoides distilled water (37.44%). In the case of wild oat seedlings, it decreased in all treatment groups. The maximum reduction was found to be 50 mg.mL-1 C.pachylomoides ethyl alcohol treatment with 56.62% ($p < 0.05$). The highest values for photosynthetic pigment amounts of wheat were determined by treatment of 50 mg.mL -1 ethyl alcohol and 25 mg.mL -1 ethyl acetate. In wild oats, the amount of photosynthetic pigments in all treatment groups decreased. As a result, changes in relative water content and amount of photosynthetic pigment may be due to the allelopathic effect of C. pachylomoides.

Acknowledgment: We are grateful to TUBITAK (Project no: 115O923) for financial support.

Keywords: Allelopathy, Avena sterilis, Carotenoid, Chlorophyll, Triticum aestivum

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Poster Presentation

Rosmarinic acid improves the antioxidant capacity in maize leaves through ascorbate-glutathione cycle under chromium-induced oxidative stress

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Abstract

Organic acids are also important in plants as components of tolerance mechanisms and involve in detoxification of toxic metals. Rosmarinic acid (RA), one of the water-soluble phenolic acids. Chromium (Cr) is known to be a toxic metal that can cause severe damage to plants and animals. Cr-induced oxidative stress involves induction of lipid peroxidation and disturbing the photosynthetic process in plants that causes severe damage to cell membranes. Antioxidant enzymes/nonenzymes like ascorbate peroxidase (APX), glutathione reductase (GR), monodehydroascorbate reductase (MDHAR), total ascorbate (tAsA), oxidized and reduced glutathione (GSH and GSSG), dehydroascorbate (DHA) are found to be susceptible to Cr resulting in a decline in their catalytic activities. The antioxidant activity of RA plays important roles to reduce the risk for cancer, atherosclerosis and other diseases associated with augmented oxidative stress. This study was designed to investigate the protective effects of RA on Cr-induced oxidative stress in maize (Zea mays) leaves. Plants were grown in nutrient solution containing Cr (150 and 300 microM) and/or RA (50 and 100 microM) for 7 days (d). After exposure to Cr stress, the significant reduction in the activities of GR and DHAR and the contents of GSH and GSSG observed in wheat. Also, Cr excess caused an increase in the contents of DHA, tAsA, hydrogen peroxide (H2O2) and lipid peroxidation (TBARS). Under the increased rate of RA application, the oxidative stress induced by Cr treatments was reduced, providing an increase in MDHAR, DHAR, the contents of GSH and DHA, and decrease in H2O2 and TBARS and the contents of GSSG and tAsA when compared to the stress alone. Collectively, these data indicate that addition of RA can provide protection against the adverse effects of Cr stress by modulating ascorbate glutathione cycle in maize leaves exposed to Cr.

Keywords: Antioxidant system; Chromium stress; Lipid peroxidation; Rosmarinic acid; Zea mays

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Poster Presentation

Synthesis and investigation of anticarcinogenic effects of fluorene basedasymmetrical Schiff base

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Abstract

Recently, due to the increasing use of the coordination compound in analytical, bioinorganic, pigment and medicinal chemistry, many researchers have studied these topics, especially, the important role of the complexes of Schiff bases in coordination chemistry. Schiff bases usually synthesized by the condensation of primary amines and active carbonyl groups. Asymmetrical ligands are Schiff bases obtained by stepwise condensation of the appropriate diamine with two different carbonyl compounds. Asymmetrical Schiff base ligands have many advantages over their symmetrical counterparts in the composition, geometry, and properties of transition metal complexes. Asymmetrical Schiff bases may also serve as models of relevance for biologically important species and catalysts for various organic transformations and their magnetic and optical properties are promising for optoelectronic applications and the design of biosensors. Schiff base complexes have suitable biomimetic properties that can mimic the structural features of active sites. Among different types of pharmacologically active Schiff bases, the anticancer agents are one of the hottest topics of research worldwide. Schiff bases have capability of binding DNA and proteins, which resulted with cytotoxicity on tumor cells. In this study, the fluorescent unsymmetrical Schiff base was obtained by the condensation of 1,2-phenylenediamine, 2-hydroxy-1-napthaldehyde and fluorene-2-carboxaldehyde. Synthesized this compound was identified by using spectroscopic methods (FTIR, 1H NMR). Fluorescence properties of this compound was examined towards different metal cations. The anticarcinogenic effect of this compound was also investigated.

Keywords: Condensation, Schiff Base, Fluorescent, Anticarcinogenic

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Poster Presentation

Pyrene-armed calix[4]arene based fluorescent sensor for F^- ions and imaging of living cells

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Abstract

Calixarenes are macrocyclic compounds widely used in supramolecular chemistry as useful basic skeletons for the construction of lipophilic, water-soluble and ionophoric receptors. Their unique three-dimensional structures with almost unlimited derivatization possibilities on the "lower" and "upper" rims, along with a tunable shape, make calixarenes ideal candidates for building blocks or scaffolds in the design of new, more sophisticated molecules. Anions are ubiquitous and play important roles in many biological and chemical systems. There is an increasing interest in the design and development of receptors that selectively recognize specific anions. For instance, considerable effort has been devoted to studies of F- receptors because of the serious effects of F- in the human body. Ionophore is an important component in designing molecular sensors, its donor atoms, conformation, size, steric hindrance etc. determines selectivity. Among various ionophores, calixarenes are an important class of macrocyclic compounds and also an ideal platform for the development of complexing agents for metal ions and anions. In this study herein the synthesis and fluorescent properties of fluorogenic pyrenyl calix[4]arenes chemosensors. The tetrabutylammonium salts of F-, Cl-, Br-, H2PO4- , NO3- , HSO4- , CH3COO- ions were used to evaluate the metal ion binding properties of this compound in CH2Cl2:CH3CN (1:1 v/v). When excited at 325 nm, fluorogenic pyrenyl calix[4]arenes chemosensors revealed emission at 392 nm F- anion quenched the fluorescence of chemosensor. Pyrene based calix[4]arene was applied in fluorescence imaging of living cells.

Keywords: Calix[4]arene, Fluorescent, Living cells

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Poster Presentation

The effects of environmental stress conditions on wheat varieties: morphological, physiological and biochemical

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Abstract

Wheat is one of the most important cereal products in the world and it was first grown in the south-eastern part of Turkey about 10.000 years ago. Wheat has an important place in human nutrition because of the essential amino acids, minerals and vitamins, a large number of antioxidant components in its contain. Different biotic and abiotic stresses caused free radical overproduction in wheat species as other plants. As a result, it is decreased effect of the antioxidant systems while increase reactive oxygen species (ROS) that are toxic, reactive. ROS damage the structure of proteins, lipits, DNA, carbohydrates and the other metabolits. The generation of reactive oxygen species (ROS) is one of the earliest biochemical responses of biotic and abiotic stresses. Environmental stresses, such as drought, salinity, cold, salinity, heavy metals and heat trigger a series of morphological, physiological, biochemical and molecular changes. To minimize the harmful effects of ROS, wheat have a strong antioxidant defend system. This system includes such as non enzymatic antioxidants (glutathione, ascorbate, carotenoids) and enzymatic antioxidants (superoxide dismutase (SOD), peroxidase (POD), catalase (CAT), ascorbate peroxidase (APX). All of this affects the growth, development and ultimately yield of wheat species resulting in severe economic losses and a food crisis.

Keywords: Wheat, Antioxidant System, Growth, Yield, ROS

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Poster Presentation

Formulation and nutritional evaluation of new diet soup powder using Pinar Melkior (*Lactarius piperatus*) mushroom

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Abstract

Pınar melkior (*Lactarius piperatus*) mushroom has been specifically chosen to improve the formulation due to its high antioxidant, protein and fibrous content in our diet soup making research. Mushroom soup is commonly made and consumed among the public. However, since white flour is put into the inside, white flour has been processed, so the content of protein and fiber has fallen and the proportion of carbohydrate has increased. This causes the glycemic index to suddenly increase after it is eaten, as it facilitates digestion of the soup. This is an important risk factor for both obesity and diabetes mellitus. For this reason, instead of white flour, we prepared a diet soup formulation using endemic Pınar melcior which is known as a medicinal herb, using polymer carbohydrate derivatives which are difficult to digest and obtained from by products of the organic fruit sector. The amount of moisture, amount of ash, amount of protein, antimicrobial activity has been tested to analyze the chemical properties of prepared soup. Also the antioxidative activity of the soup, (with ferric cyanate reduction method Fe^{3+}-Fe^{2+} reduction activity, along with cuprac method, cupric ions (Cu^{2+}) reducing capacity, according to FRAP method) was determined. The test results suggest that the prepared formulation will provide a wide range of use in the food industry due to its long shelf life due to the content of both mushroom and polymeric carbohydrates and its intestinal system is hardly digested due to its fibrous structure.

Keywords: Pınar melkior (Lactarius piperatus), Diet soup, Antioxidat activity, Antimicrobial activity

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Poster Presentation

Formulation of dietary *Plurotus ostreatus* mushroom soup powder and investigation of it's antioxidative and antimicrobial activities

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Abstract

The *Pleurotus ostreatus* mushrooms is a renewable fungus belonging to *Pleurotaceae* family. *Pleurotus ostreatus* is one of the mushrooms that are popular among the public, consumed extensively and are of high economic value. In this study; It was aimed to develop a formulation of quick diet soup product by using oyster (*Pleurotus ostreatus*) mushroom and to evaluate the importance of functional food production and healthy nutrition. The mushroom soup formulation was developed at two different concentrations of mushrooms and it was lyophilized using the freeze drying method. Then, the moisture content, the amount of ash, the amount of protein, the antimicrobial activity of the dried soup were tested. In addition, the content of diet ready soup, total phenolic compound amount assign, total flavonoids amount assign, along with ferric cyanate reduction method Fe^{3+}-Fe^{2+} reduction activity, along with cuprac method, cupric ions (Cu^{2+}) reducing capacity, according to FRAP method was determined. It was determined that the soup form of the high mushroom content soup had higher reduction activities and antimicrobial activity. When the findings are taken into account; the formula we have prepared is thought to be a successful diet product due to its low calorie and high fiber content, which causes a feeling of satiety due to polymer-forming carbohydrates.

Keywords: *Pleurotus ostreatus* mushrooms, Formulation of diet soup, Antimicrobial activity, Antioxidant activity

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Poster Presentation

Green synthesis of ıron nanoparticles and their bactericidal activity

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Abstract

Iron, the most ubiquitous of the transition metals and the fourth most plentiful element in the Earth's crust. Iron has a great deal to offer at the nanoscale, including very potent magnetic and catalytic properties. Various chemical and physical methods are being applied to obtain iron nanoparticles of specific sizes and morphologies. However; in recent years, more environmentally friendly techniques have gained great attention. These techniques are carried out through plants containing antioxidants like green tea (*Camellia sinensis*). The nanoparticles such as silver and iron obtained with green tea, are included in the literature. Studies proceeded with silver are common, however, the toxic effects of silver are being discussed lately. Therefore, the antimicrobial activity of iron nanoparticles has become under focus for this purpose. In this study iron nanoparticles that has been synthesized by employing different plant sources is characterized. The iron oxide particles that has been obtained by this simple and environmentally friendly method was tested as an antimicrobial structures against as common mildly pathogenic bacteria species -*Escherichia coli, Bacillus subtilis, Enterococcus faecalis, Pseudomonas aeruginosa* and *Staphylococcus aureus*- and showed bactericidal effect on all abovementioned species at different concentration.

Keywords: Iron nanoparticles, Green synthesis, Antimicrobial activity.

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Poster Presentation

Determination of antimutagenic effects of some plantago extracts using *Ames/E.coli* WP2 test system

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Abstract

The *Plantago* genus is rich in secondary metabolite-rich components. In this study, antimutagenic effect of aerial parts of methanolic extracts of five species/subspecies of Plantago genus grown in Turkey (*P. major* subsp. *intermedia*, *P. major* subsp. *major*, *P.scabra, P. holosteum, P. lagopus)* using the Ames and *E. coli* WP2 test system. *S. typhimurium* TA 98, TA 100 and TA 102 strains were used in the Ames test system and *E. coli* WP2 uvrA strains was used in the *E. coli* WP2 test system. According to the results obtained in the study, it was shown that P.major subsp. major were determined as the highest antimutagenic effective plant since all tested concentrations of extract were shown antimutagenic activity at varying ratios in TA102, TA100 and *E. coli* wp2 strains. In particular, the antimutagenic effects of the extracts of P. major subsp. intermedia (48%, 400 µg/plate) and *P. major* subsp. *major* (47%, 100 µg/plate; 45%, 25 µg/plate) on *E. coli* WP2 uvrA strain was remerkable. The extract of P. scabra was moderately antimutagenic in all tested concentrations (39% inhibition, 100 µg/plate) in the TA 100 strain. The *P. lagopus* extract showed a weak antimutagenic effect for all strains at the concentration of 400 µg / plate, whereas it was found to be moderately antimutagenic in the TA102 strain at 100 µg/plate. *P. holosteum* extract showed a weak antimutagenic effect on TA 100 strains. As a result, extracts obtained from *Plantago* species/subspecies were found to be effective in terms of their antimutagenic activity.

Keywords: *Plantago*, Ames test, *E. coli* WP2 test, antimutagenicity

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Poster Presentation

Solar light driven photocatalytic degradation of atrazine using TiO2/bismuth nanoparticle/polyoxometalate nanocomposite

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Abstract

In this study, we were synthesized a novel nano composite containing TiO2 nanoparticles (TiO2NPs) and bismuth (BiNPs) by using polyoxometalate (H3PW12O40, POM) without any reducing agent and tested in photocatalysis to remove atrazine (ATR) from aqueous solution. Transmission electron microscopy (TEM), X-ray photoelectron spectroscopy (XPS), and X-ray diffraction patterns (XRD) showed the formation of the nanocomposite (TiO2NPs / BiNPs / POM). The BET surface area increased after intercalation of TiO2NPs and BiNPs. The effects of operating variables such as initial atrazine (ATR) concentration, pH and contact time in adsorption were studied. The kinetics, isotherm and thermodynamic parameters for the removal of the atrazine (ATR) were also investigated. In addition, TiO2NPs / BiNPs / POM also shows high photocatalytic activity for degradation of ATR from aqueous solution. The combination of adsorption and photocatalysis using the nano composite is demonstrated as a more effective technique for removal of pesticides from aqueous solution.

Keywords: Photocatalysis, adsorption, nanoparticles, polyoxometalate, kinetics

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Poster Presentation

A new method for the determination of valproic acid ın human plasma by Hplc-Uv: Application to a therapeutic drug monitoring study

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Abstract

In this study, a high-performance liquid chromatography method was developed and validated for quantitative analysis of VPA in plasma. The validity of the method was monitored in real plasma samples of 34 patients under epilepsy treatment using VPA. For the optimization of HPLC and UV detector conditions; column, mobile phase, injection time, retention time, UV wavelength, pump flow rate and pressure, and effect of internal standard were evaluated. The chromatographic separation was carried out with a reverse-phase C18 analytical column (4.6 x 250 mm, 5 µm particle size), at 40 °C. The mobile phase prepared as a mixture of 20 mM KH2PO4 (1% triethylamine) and acetonitrile (52.5:47.5, v/v) was isocratically apply to the column at 1 mL/min flow rate and ultraviolet detector was set at 213 nm and 230 nm VPA and diazepam which used as an internal standard. Accuracy and precision were found between (-8.76) - 7,87 (RE%) and 2.84 - 6.59 (RSD%), respectively for intraday and interday reproducibility study. The detection and quantitation limits were 2.19 and 6.63 µg/mL, respectively. Plasma recovery values at 20, 60 and 120 µg/mL ranged from 81.44% and 106.37%. VPA levels were found in the range of 2.85 to 116.35 µg/mL in blood samples taken from volunteer patients who were under epilepsy treatment with VPA between 500 and 1500 mg/day.The method developed, validated and successfully applied to patient samples is a simple, rapid, reliable method that can be used in both therapeutic drug monitoring study and overdose toxicological analysis of patients using VPA.

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Poster Presentation

Investıgatıon of plasma signal transducer and activator of transcription 3 (Stat3) and Bcl-2 associated X protein (Bax) levels ın rats fed hıgh fat and hıgh sucrose dıet

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Abstract

Consumption of a diet high in saturated fats and sucrose is an important factor in the increasing occurrence of these metabolic disorders. *Signal transducer and activator of transcription 3* (STAT3) and *Bcl-2 associated X protein* (Bax) are multifunctional protein that are important for immune responses, cell survival, apoptosis, and proliferation. However, ıt is unknown about the relationship between the STAT3/ Bax and high sucrose/ high fat diet. In this study, samples from 28 adult male wistar albino postnatal (8-12 weeks) male rats were used. These rats were grouped as high sucrose fed, high fat fed, high fat and high sucrose fed. Plasma STAT levels of fed with standard feed, fed with high sucrose diet, fed with high fat diet and fed with high fat and high sucrose diet were found as (X + SD) 0.25 ± 0.007, 0.26 ± 0.02, 0.27 ± 0.02 and 0.29 ± 0.04 pg/ml respectively. Plasma Bax levels of fed with standard feed, fed with high sucrose diet, fed with high fat diet and fed with high fat and high sucrose diet were found as (X + SD) 0.35 ± 0.02, 0.34 ± 0.02, 0.35 ± 0.01 and 0.33 ± 0.01 ng/ml respectively.There were no significant differences between plasma STAT3/ Bax levels of the groups. Our findings show that there was no relationship between the STAT3/ Bax and high sucrose/ high fat diet

Keywords: High fat diet, high sucrose diet, *STAT3*, Bax, Bcl-2

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Poster Presentation

Detection of *Alicyclobacillus acidoterrestris* in apple juice by a PCR-based technique

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Abstract

Alicyclobacillus species cause spoilage in highly acidic foods, especially those protected by pasteurization, such as fruit juices. Apple juice is the most important economical commodity among the fruit and vegetable juices in worldwide. *Alicyclobacillus acidoterrestris* creates unpleasant odor in apple juice and concentrates which causes considerable economic loss in apple juice industry. Conventionally Alicyclobacillus species can be identified by chromatography and conventional microbiological methods. Identification of *Alicyclobacillus acidoterrestris* by classical microbiological methods are time consuming and sometimes not capable of objective determination. In this study, a PCR-based identification method was established by species-specific DNA probes with high sensitivity and accuracy. Comparing with the classical methods, PCR-based methodology is capable of identifying *Alicyclobacillus acidoterrestris* in apple juices within a day which is very good advantage whereas conventional protocols take more than a week. The newly developed methodology presented in this work is very promising for Alicyclobacillus species identification in acidic beverages.

Keywords: Fruit juice, microbial contamination, microorganism detection

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Poster Presentation

Toxicity of graphene oxide in maize (*Zea mays* L.) seedlings

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Abstract

Graphene oxide (GO) is widely used in various industrial and biological applications. Although the increase in the use of graphene oxide and the release of it into the environment, the effects of GO on plants have been investigated in a few studies. In the present study, the impact of GO on the root and shoot growth, total chlorophyll content, reactive oxygen species formation and antioxidant enzyme activities of maize was investigated using a concentration range from 500 to 2000 mg/L. The treatment of GO has significantly increased the root and shoot elongation, however, total chlorophyll content has been found to decrease. GO application caused significant increase in the superoxide production (O2.-), the amounts of hydrogen peroxide (H2O2) and malondialdhyde (MDA). Superoxide dismutase (SOD) and peroxidase (POD) activities increased by 500 and 1000 mg/L GO applications and decreased by 2000 mg/L GO application when compared to control. Glutathione reductase (GR) activity was also increased by GO application in a dose-dependent manner. The results of the study indicated that GO has the potential to cause detrimental effects on plants during its release in the environment.

Keywords: Glutathione reductase, Graphene oxide, Hydrogen peroxide, Peroxidase, Superoxide dismutase

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Poster Presentation

Biosynthesis of ruthenium nanoparticles using chitosan immobilized *Bacillus cereus*: Nanocatalytic studies

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Abstract

In this paper, the biosynthesis study of ruthenium nanoparticles (RuNPs) using chitosan immobilized on *Paenibacillus macerans* (PM/C) was performed via bioreduction without any reducing agent. Transmission electron microscopy (TEM) showed that the RuNPs were formed as uniformly sized and shaped in the range of 10–30 nm. Scanning electron microscopy (SEM), x-ray photoelectron spectroscopy (XPS) and x-ray diffraction patterns (XRD) confirmed the formation of the PM/C/RuNPs. XRD diffraction patterns revealed that ruthenium ions on the Bc/C was reduced to Ru (0). This situation shows successful RuNPs synthesis using PM/C. In the bioreduction studies, the effects of operating variables such as initial metal concentration, pH and contact time were also investigated. The RuNPs formed on PM/C were used as a bionanocatalyst for the reduction of 4-nitrophenol (4-NP). The kinetic models and the thermodynamic parameters were investigated to reveal the reduction mechanism.

Keywords: Biosynthesis; ruthenium nanoparticles; chitosan; *Paenibacillus macerans*

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Poster Presentation

Prototype model biogas power plant

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Abstract

Biogas is among the renewable energy sources and the prospect is not yet recognized. Today, Turkey biogas producing only 0.84% of the total power generation *. The reason for this is that organic wastes cannot be assessed. In order to solve this problem, one house must have a prototype of the biogas plant. In this study, 'Prototype Model Biogas Power Plant' will be able to produce biogas by using only organic garbage to everyone's home, and a research has been carried out to realize heating, cooking and electricity generation with this produced gas. As a working principle, a biogas plant is reduced to small sizes and the wastes thrown into it are fermented for a certain period of time, and CO2 and CH4 gas are released as reaction result. This produced biogas can be stored in storage tanks and used whenever desired. In this study, occupancy rate will be observed by means of the indicator of the gas reservoir to avoid overfeeding. The waste that is decomposed at the end of the production will be recovered as fertilizer. In this way, it is aimed to reduce environmental pollution, to enable everyone to produce their own energy, and to reduce the need for fossil resources. The system in this study will mainly consist of waste tank, gas storage and gas connection valve. Thanks to the valve, we produce according to our needs by connecting to the equipment such as the hob heater, generator. In this way, all organic wastes taken as domestic waste will be recovered and high efficiency fertilizer will be obtained. This system with low cost will provide endless energy to the houses using the average LPG tube.

*Ministry of Energy in Turkey (2018) Electricity Transmission Company data

Keywords: Biogas Production, Prototype Model, Clean Energy

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Poster Presentation

Biosorption of reactive dyes from aqueous solution by Paenibacillusmacerans: Kinetic, thermodynamic and equilibrium studies

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Abstract

Batch studies were conducted for thermodynamic, kinetics and equilibrium studies on the biosorption of Reactive red 198 (RR 198) and Reactive Blue 4 (RB 4) from aqueous solution by Paenibacillusmacerans. The operating variables studied were initial dye concentration, biomass concentration, contact time, temperature and solution pH. Results show that the pH value of 1 is favorable for the biosorption of dyes. The biosorption data have been analysed using Langmuir, Freundlichand Tempkin isotherms. The isothermal data for biosorption followed Langmuir Model. The biosorption processes conformed to the pseudo-second-order rate kinetics. Thermodynamic parameters such as enthalpy, entropy, and Gibb's free energy changes were also calculated and it was found that the biosorption of dyes by Paenibacillusmacerans was a spontaneous process. The biosorption mechanism of biomass was explained by FT-IR spectroscopy and the FT-IR spectrum confirmed the presence of –COOH, C O, and –NH2 groups in the biomass structure. The maximum adsorption efficiency of RR 198 and RB 4 is 98.95 mg g^{-1} and 97.43 mg g^{-1}, respectively.

Keywords: Biosorption, reactivedyes

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Poster Presentation

Quantification of biofilm structures on laser treated titanium ımplants by the novel computer program COMSTAT

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Abstract

The structure of biofilm formation on Titanium treated with Laser surface was analysed by a novel computer program, COMSTAT, which comprises ten features for quantifying three-dimensional biofilm SEM and Flouresence Microscopy image stacks. In situ 24h biofilms of same volunteree results were used for analysed. Analysis by the COMSTAT program of four variables describing biofilm structure – mean thickness, roughness, substratum coverage and surface to volume ratio –showed that the four different Titanium surface represent different modes of biofilm growth. Titanium polished surface had a unique developmental pattern starting with single bacterial layer on the surface growing into more colonies. Titanium polished surface had a stronger tendency to form micro-colonies and uniform biofilm formation . Titanium polished after treated with Laser surface had thin biofilm formation and more less bacterial colonies. Finally, the biofilm structures of Titanium etched after treated with Laser surface had a more thickness biofilm layer and different type of phenotype bacteria. Analysis of biofilms of a different type of Titaium surface growing in situ 24h showed that mean biofilm thickness related with surface topology. The laser treated surface had characterized less adherence surface for dental bacteria. Moreover, biofilm roughness decreased with etcehed surface, whereas surface to topology ratio increased with treated surface mean that polished titanium after laser treated surface had not useful for bacterial adherence.

Keywords: COMSTAT, Ti, Biofilm formation, dental implant

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Poster Presentation

The ınvestigation of apoptosis ın rats fed high fat and high sucrose diet

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Abstract

High-fat and high-sucrose intakes were shown to contribute to syndromes such as hyperlipidemia, glucose intolerance, hypertension, and atherosclerosis. Numerous studies showed that a high-fat and/or high-sucrose diet induces insulin resistance in rodents. The effect of a long-term high-fat, high-sucrose diet on the apoptosis has not been clarified. This research project aims to investigate plasma Caspase 3 (CASP3) levels in High-fat and High-sucrose Fed Rats. For this purpose, Konya Necmettin Erbakan University, KONÜDAM Experimental Medicine Research and Application Center which was available from 28 adult Wistar albino postnatal (8-12 weeks) male rats fed, accompanied by a high-fat, high-sucrose or standard chow. It was divided into several groups, in its blood (plasma) CASP3 levels (markers of apoptosis) were studied with the ELISA method. The plasma CASP3 levels of fed with standard feed, fed with high sucrose diet, fed with high fat diet and fed with high fat and high sucrose diet were found as (X + SD) 0.34 ± 0.007, 0.36 ± 0.03, 0.36 ± 0.01 and 0.35 ± 0.02 ng/ml respectively. There were no significant differences between plasma CASP3 levels of the groups. Our findings shown that high fat and high sucrose diet may not cause apoptosis. We belive that our finding will contribute to further understanding of the etiopathogenesis of feeding a high-fat and high-sucrose diet-related diseases.

Keywords: CASP3, high fat diet, high sucrose diet

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Poster Presentation

A novel magnetic iron and cobalt nanoparticles anchored carbon nitride nanotubes recyclable nanocatalyst for the reduction of nitrophenol compounds

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Abstract

In this study, a novel catalyst based on FeNPs / CoNPs bimetallic nanoparticles involved carbon nitride nanotubes was prepared and characterized by transmission electron microscope (TEM) and x-ray photoelectron spectroscopy (XPS). The nanomaterial was used in catalytic reductions of 4-nitrophenol and 2-nitrophenol in the presence of sodium borohydride. We were studied various and different experimental parameters such as temperature; the dosage of catalyst and the concentration of sodium borohydride were studied. The rates of catalytic reduction of the nitrophenol compounds have been found as the sequence: 4-nitrophenol > 2-nitrophenol. The kinetic and thermodynamic parameters of nitrophenol compounds were determined. The nanomaterial was separated from the product by using a magnet and recycled after the reduction of nitrophenol compounds. We suggested to present reduction mechanism take advantage of the kinetic models and the thermodynamic parameters. The recyclable of the nanocatalyst is economically significant in industry.

Keywords: Photocatalysis, nanoparticles, carbon nitride nanotube, kinetics

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Poster Presentation

Adsorption of reactive red 120 on chitin

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Abstract

Textile industry is one of the most important sources of pollutants in liquid form. Approximately 70% of all the dyes used in industry are azo dyes . Moreover, azo dyes are used in paper, food, leather, pharmaceutical and cosmetic industries. Untreated textile effluents cause environmental pollution and public health problems. Chitin, poly (b-(1-4)-N-acetyl-D-glucosamine) is the most abundant biopolymer after cellulose. Chitin is found in the exoskeleton of arthropods and cell wall of fungi. Chitin was used for removal of environmental pollutants such as cadmium, orange G, orange IV and xylenol orange. In this study azo dye reactive red 120 was removed from aqueous solutions using chitin as adsorbent. Dye adsorption studies were carried out as function of pH, biomass dose, initial metal concentration contact time and temperature. The adsorption models were evaluated for Langmuir and Freundlich models, although adsorption process obeys both of the models, the linearity was observed for Freundlich model rather well.

Keywords: Chitin, textile dye removal, adsorption

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Poster Presentation

A novel impedimetric biosensor based on silver nanoparticles involved carbonnitride nanotubes for detection of DNA arrays

Mehmet Lütfi Yola, Bahar Bankoğlu, Canan Onaç, Necip Atar,Ahmet Kaya

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Abstract

A highlysensitive method for detection of DNA hybridization was developed. This method was based on the modification of glassy carbon electrode with silver nanoparticles (AgNPs) involved carbonnitride nanotubes (C3N4NTs). This nanocomposite was used as a platform for impedimetricgeno sensing using 5′-TA GGG CCA CTT GGA CCT-(CH2)3-SH-3′ single-stranded probe (ss-DNA), 5′-AGG TCC AAG TGG CCC TA-3′ (target DNA), 5′-SH-C6-TAG GGC CA-3′ (non-complementary-1) and 5′-SH-C6-TGC CCG TTA CG 3-′ (non-complementary-2) oligonucleotide sequences. The film exhibited excellent properties for immobilizing DNA probes and sensing DNA hybridization. The DNA immobilization and hybridization on the film were studied by cyclic voltammetry (CV), and electrochemical impedance spectroscopy (EIS), and found that the charge transfer resistance (Rct) of the electrode increased with the concentration of the target DNA hybridized with thes s-DNA. The linear detection range was from 1.0 × 10−13 M to 1.0 × 10−7 M and the detection limit was 1.50 × 10−13 M (n = 6). Compared with the other electrochemical DNA biosensors, the proposed biosensor showed its own performance of simplicity, good stability, and high sensitivity.

Keywords: DNA arrays, biosensor, impedimetry, nanocomposite

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Poster Presentation

Histologic investigation of ışgın (*Rheum ribes* L.) in diabetic rats

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Abstract

Rheum ribes L. (Işgın) is a perennial plant of the Polygonaceae family and has many bioactivity. It is known that one of these bioactivities has an antidiabetic effect.The phenolic component profile of Rheum ribes L. And the flavanoids it contains make this plant potentially an antioxidant source. Oxidative stres plays an important role in the pathogenesis of complications of diabetes mellitus. In our study, it was aimed to histologically examine the effects of Rheum ribes L. plant on liver tissue in rats with experimental diabetes model.In this study 36 rats were divided into 6 different groups.Group I is the control group, Group II diabetes group and Streptozotocin was administered intraperitoneally at 40 mg / kg. Diabetes was formed in Group III and the infusion of Rheum ribes L. Plant was given to the animals in this group by gavage for 15 days. In group IV diabetes was induced and ethanol extract of Rheum ribes L. plant (50 mg / kg) was administered by gavage for 15 days.Group V diabetes was not induced but the infusion of Rheum ribes L. Plant was given to the animals in this group by gavage for 15 days. Group VI, diabetes was not induced , but the animals in this group were given ethanol extract (50 mg / kg) of Rheum ribes L. for 15 days by gavage. As a result of these applications, the experimental animals were sacrificed and liver tissues were removed.Tissues were prepared and visualized for electron microscopy. Comparing Group II with Group I, lipid vacuoles increased in the presence of edema in the mitochondria. In some areas fibrosis areas are encountered.Group IV and Group II were compared, similar structures were observed in both groups.Group III and group II were compared, an increase in lipid vacuoles was not observed in this group. The bile duct channels between the other organelles and hepatocytes in the hepatocytecyto plasm were normal.As a result of the study, we think that infusion of *Rheum ribes* L. Plant against the damage at the cell level caused by diabetes may have a the rapeutic effect.

Keywords: Oxidative stress, diabetes, Işkın, electron microscopy

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Poster Presentation

Quantitative determination of synthetic dyes in cosmetic products by HPLC

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Abstract

In this study, we developed and optimized a method for simultaneous quantitative determination of tartrazine (TRZ), sunset yellow (SY), allura red (AR), brilliant blue (BB) and erythrosine-B (Ery), which have toxicological important. For the preparation of the cosmetic products, 10 mg and 25 mg were added to the water-MeOH mixture (1: 1 v / v), then dissolved in the ultrasonic bath at 60 ° C for 1 hour. Finally, the dissolved samples filtred with a 0.45 µm filter were loaded into HPLC as 20 µL volume. Detection limits of methods for TRZ, SY, AR, BB and Ery were calculated as 3S/b (n=7), 0.16, 0.12, 0.14, 0.15, and 0.12. The relative standard deviations of method between 3.6 % and 4.8 %. Dyes were quantitatively determined by HPLC coupled by a diode array detector. The separation was performed gradiently on a Zorbax C18 reverse phase analytical column (4.6 x 250 mm, 5 µm) with 20 mM ammonium acetate buffer/acetonitrile/methanol as a mobile phase mixture, at 30°C. Mobile phase rate was 1 mL/min. Detection wavelengths were set to 428, 480, 510, 630 and 530 nm for TRZ, SY, AR, BB and Ery, respectively. The retention times were 8.5, 12.7, 14.4, 17.8, 23.1min for SY, AR, FG, Ery and QY, respectively.

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Poster Presentation

Molecular characterization of *Satsuma dwarf virus* (SDV) at east mediterranean region in Turkey

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Abstract

SDV, the type species of the genus Sadwavirus, has polyhedral particles that are ca. 26 nm in diameter and has two separate positive-strand RNA genome components, RNAs 1 and 2. This virus is widely spread and cause serious damage to citrus production in Japon. SDV is a definite virus species in the genus Sadwavirus, and CiMV and other related viruses are classified as strains of SDV. SDV is one of the virus in satsuma (*Citrus unshiu*) production areas in Turkey.To obseved the presence and distribution of SDV,a survey was conducted in150 satsuma orchard and 38 citrus nurseries from east Mediterranean Region(EMR) in Turkey from May 2014 to April 2018. Sesame seedlings were used for biological indexing. Molecular detection of SDV FW 5'-ACTAGGGATAGCGCCCTAG-3', R-5'-GGACCGATATTGGGCCAT-3' were used at RT-PCR to amplify of SDV RNA2 gene.The infected plants showed the expected size of CPsV coat protein fragment (342) which was absent in the healthy plants. Blast analysis showed that nucleotide sequences had greater than %98 nucleotide identity with corresponding region of SDV reference genomes in NCBI genbank.

Keywords: *Citrus inshiu*, SDV, Satsuma, Citrus virus, Turkey

Poster Presentation

Karyologıcal and morphologıcal examınatıon of the populatıon of blınd mole rats (spalacıdae: nannospalax) ın Adana

Tuncay Tuluk

Abstract

In this study, blind mole rats of Adana province were examined in detail in terms of karyology and morphology. As a result of the karyological studies, it was determined that the 3 cytotypes belonging to N. ehrenbergi were 2n = 53 NF = 66, 2n = 54 NF = 70 and 2n = 56 NF = 70. Four cytotypes in the N. xanthodon species, 2n = 46 NF = 68, 2n = 54 NF = 74, 2n = 58 NF = 72 and 2n = 60 NF = 74 show spread in the province of Adana. From these cytotypes 2n = 46 NF = 68, 2n = 53 NF = 66 and 2n = 54 NF = 70 cytotypes were defined for the first time. In addition, the first hybrid form 2n = 53 NF = 76 was determined for mole rats in Turkey.

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Poster Presentation

Enzymatic hydrolysis of waste filter coffe ground oils

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Abstract

Filter coffee wastes are continually rising as a result of the increasing food consumption around the world. It can be considered as an alternative waste raw material for the production of renewable energy sources because of the oil content of about 10-15%. It is anticipated that in the last years, it will be possible to provide a biodiesel and bio-lubricant of approximately 340 million gallons if the coffee waste consumed in the world is evaluated by this method. Hydrolysis of oil and fat is a remarkable industrial processes. The products, fatty acids, and glycerol are basic raw materials for a wide range of applications. Fatty acids are used as raw materials in cleaning, cosmetics, textile, paint and lubricating oil industry. Glycerin has a wide use in the cosmetics and pharmaceutical industry. Fatty acids structures can be degraded due to the high temperature and pressure of the current chemical hydrolysis process. In addition, the product purification process is difficult and the cost of process equipment is high. In spite of that, enzymatic processes are more attractive and environmentally friendly than traditional chemical hydrolysis because of that lipases can work under milder processes conditions. In this study, the effect of important parameters such as lipase (Lipozyme TL IM) amount and temperature were investigated on hydrolysis of waste filter coffee ground oils (WFCO). The WFCO was obtained from dry coffee wastes by soxhlet extraction using hexane as solvent. WFCO was heated to 100°C and filtered for remove water and impurities before using. WFCO hydrolysis reactions were implemented that in 50 ml flasks with oil:water mass ratio of 1:10 at 400 rpm, 24 hours at different biocatalyst amount (0-100 mg) and temperatures (25 - 55 °C). The fatty acids obtained were determined by NAOH titration. As a result of the experimental studies, in the presence of 40 mg lipase and 25 °C temperature, 96% free fatty acids were obtained. The free fatty acids obtained from hydrolysis will be used as raw materials in the biolubricant and biodiesel synthesis in future studies.

Keywords: Biolubricant, waste coffe, hydrolysis, lipase

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Poster Presentation

Comparison of preoperative and postoperative ADMA, SDMA, L-NMMA, arginine, citrulline levels in morbid obese patients undergoing laparoscopic sleeve gastrectomy

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Abstract

Asymmetric dimethylarginine (ADMA) is the major inhibitor of nitric oxide biosynthesis in humans. Clinically, high concentrations of ADMA have been associated with a range of diseases, particularly cardiovascular disease and more recently obesity. The aim of our study was to compare preoperative and postoperative ADMA, SDMA (symmetric dimethylarginine), L-NMMA (NG-monomethyl-L-arginine), arginine, citrulline levels within the first six months term in morbid obese patients who have operated with laparoscopic sleeve gastrectomy (LSG) method. The study population consisted of 23 morbid obese patients who had operated with LSG method in Selcuk University Faculty of Medicine Department of General Surgery between April-November 2015. Plasma samples were collected. All parameters were analyzed by Applied Biosystems MD SCIEX (USA) API 3200 mass spectrometer (LC-MS/MS) instrument coupled with Shimadzu LC-20AD (Japan) high performance liquid chromatography. Paired sample t test was used for statistical analysis. $p < 0.05$ was taken to be statistically significant. There was no significant difference between $ADMA^0$-$ADMA^6$; $SDMA^0$-$SDMA^1$; $SDMA^0$-$SDMA^6$; $L\text{-}NMMA^0$-$L\text{-}NMMA^1$; $L\text{-}NMMA^0$-$L\text{-}NMMA^6$; arginine0-arginine1; citrulline0-citrulline6 terms ($p=0.718$, $p=0.331$, $p=0.054$, $p=0.167$, $p=0.906$, $p=0.088$, $p=0.420$), respectively. It was seen a significant reduction between BMI0-BMI1; BMI^0-BMI^6; $ADMA^0$-$ADMA^1$; $arginine^0$-$arginine^6$; $citrulline^0$-$citrulline^1$ terms ($p=0.001$, $p=0.001$, $p=0.038$, $p=0.005$, $p=0.010$), respectively. Studies in obese individuals indicate a strong link between ADMA and obesity. When the results obtained in our study were evaluated, it was observed that in the short term ADMA and citrulline levels decreased, in the long term arginine levels decreased in the patients who were operated with LSG method.

Keywords: ADMA, SDMA, L-NMMA, arginine, citrulline

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Poster Presentation

Identification and Isolation of Wax Related Genes from *Gossypium arboreum* to Breed CLCuV Resistance in *Gossypium hirsutum*

Zunaira Sher, Muhammad Umair Majid, Bushra Rashid, Sameera Hassan, Muhammad Azam Ali, Adnan Iqbal and Tayyab Husnain

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Abstract

Cotton is the backbone of agriculture based economy in Pakistan. There has been a significant loss in cotton yield and quality due to Cotton Leaf Curl Disease (CLCuD) caused by cotton leaf curl virus (CLCuV). Whitefly is the only vector which transfers this virus. *Gossypium hirsutum*/ (American cotton) is well known of its fiber quality and yield characteristics while *Gossypium arboreum* is a wild relative and a resourceful species in terms of its stress resistant gene pool. Most of the local varieties of *G. hirsutum* are under attack of whitefly while transmission of CLCuV in *G. arboreum* is hindered to a great extent due to the presence of thick wax layer which acts as a physiological barrier in viral transmission. Gene identification and applications of plant genomics are being used for crop improvement such as disease and insect pest resistance, yield and quality improvement etc. Therefore, this study has been carried to isolate and characterize the wax related genes from *Gossypium arboreum* which is a great option to provide us resourceful candidate genes that can be transformed to economically important cotton cultivars. The results showed that the transgenic plants containing wax abundant gene have increased wax content and resistance against CLCuV. The experiments were effective to equip the local cultivars of cotton with improved resistance against CLCuV which is a great success for the agricultural community. This resistant behavior is also confirmed by bioassays with whiteflies. The study also exposed some other aspects to avert the persistent and highly devastating threat of CLCuV to the cotton crop.

Keywords: *Gossypium hirsutum, Gossypium arboretum*, cotton leaf curl virus (CLCuV)

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Poster Presentation

Determination of the effects of bisphenol a given in ovo on Bursa fabricii development and proportion of acid phosphatase positive lymphocyte in chicken using histologic and enzyme histochemical methods

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Abstract

Bisphenol A [2,2-bis (4hydroxyphenyl) propane, BPA], which one of the endocrine disrupting chemicals, is the object of great concern because of its widespread use throughout the world. In this study, it was aimed to determine the effects of in ovo administrated BPA on the embryonic development of bursa of Fabricii and proportion of acid phosphatase positive lymphocyte in peripheral blood by means of histological and enzyme histochemical methods. For this purpose, 310 fertile eggs of Isa Brown laying parent stock were used. The eggs were divided into 5 groups as control, vehicle control, 50, 100, 250 µg/egg BPA. At the 13th, 18th and 21th days of incubation, eggs were opened until 10 living embryos were obtained from each group and blood and bursa of Fabricii tissue samples were taken from the obtained embryos. Tissue samples were processed for enzyme histochemical methods in addition to routine histological techniques. It was observed that, in BPA-treated groups, embryonic development of bursa Fabricii was retarded, the lymphoid tissue had less cell density and the number of ACP-az positive lymphocytes decreased. It was also indicated that the percentage of peripheral blood ACP-az positive lymphocytes significantly decreased ($p<0.05$).

Keywords: ACP-az, BPA, bursa Fabricii, chicken embryo

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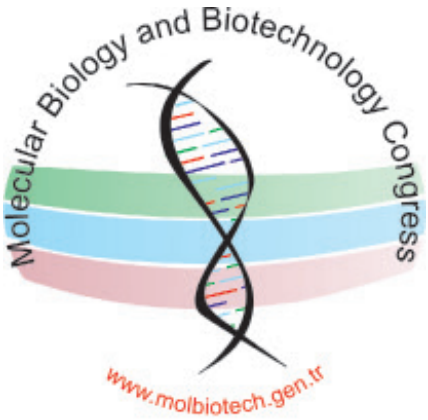

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