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ICANAS 2019

ABSTRACT BOOK

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Dear Friends and Colleagues,

We would like to thank you all for your interest to participate in the International Conference on Advances in Natural and Applied Sciences (ICANAS 2019) which will be held in Ağrı (İbrahim Çeçen University), Turkey, June 19-21, 2019.

This year we are happy to organize the 4th International Conference on Advances in Natural and Applied Sciences on the international platform in collaboration with İbrahim Çeçen University of Ağrı. Our Conference aims to provide an atmosphere for colleagues from all over the world to share expertise, experience and scientific studies and industrial experiences that describe significant advances in the following areas, but are not limited to; Chemistry, Physics and Biology, Mathematics and Statistics, Agricultural and Aquatic Sciences, Biotechnology and Nanotechnology, Engineering, Computers Sciences, Physics, Chemistry, Biology and Mathematics Education. The conference program includes plenary speakers, workshops, paper presentations and poster presentations.

ICANAS 2019 is an international meeting for International Conference on Advances in Natural and Applied Sciences from all over the world working in Natural and Applied Sciences to present their latest research results, to exchange new ideas and application experiences face to face, to discuss challenging issues, to establish research relations and to find global partners for future collaboration.

This year, within the scope of the Conference, 267 oral and 22 poster abstracts accepted by the Scientific Committee and Editorial Board will be presented. Selected papers from the ICANAS2019 recommended by the scientific committee will be published in special issues of following journals: International Journal of Education, Science and Technology; Eastern Anatolian Journal of Science; International Journal of Scientific & Engineering Research; International Journal of Applied Sciences and Mathematics; Journal of the Institute of Science and Technology; International Journal of Innovation and Research in Educational Sciences.

I would like to thank honorary chairs Prof. Dr. Abdulhalik KARABULUT (The Rector of Ağrı İbrahim Çeçen University) and İbrahim ÇEÇEN (The Chairman of IC Holding) who contributed to making this conference a great success.

Also, I would like to thank all conference participants who supported the conference with their knowledge, invited speakers, session chairs, authors / presenters, colleagues, conference secretary, sponsors and everybody who has all contributed to this conference with great efforts for months.

I wish every success and fruitful results in their academic lives for all participants of ICANAS 2019 organized Ağrı, İbrahim Çeçen University.

Prof. Dr. Rıdvan DURAK

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INVITED TALKS

ID: 01-IOP

Aminotriphenolate complexes for sustainable catalysis and molecular recognition

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Triphenolamines (TPA) are highly symmetric, modular molecules that form stable metal complexes with a wide variety of transition and main group elements.1 These complexes are highly active catalysts in important reactions like polymerizations, olefin metathesis, CO2/epoxide cycloadditions, and oxygen transfer processes. [1]

Here we will report our latest results related to important applications of TPA metal complexes for the activation of small molecules like H2O2, O2 and CO2. The effective performances of TPA metal complexes as haloperoxidase functional models (sulfoxidation and haloperoxidation) [2] and as sustainable catalysts in the aerobic carbon-carbon cleavage of vicinal diols and lignin related models [3] and for the activation of epoxides in the synthesis of cyclic carbonates will be described. [4] Furthermore, a recent application related to the development and use of a V(V)-TPA based concentration-independent stereodynamic g-probe for chiroptical enantiomeric excess determination will be presented as well. [5]

Keywords: Metal catalysis, molecular recognition, biomass valorization

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ID:02-IOP

Synthesis of Multifunctional Cyclooctenenitriles: Cyclic b-aminoacid Precursors

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Medium-sized carbocycles in natural products have gained attention due to their biological importance. The syntheses of medium-sized carbocycles are still challenging compared to small or large-sized cyclic compounds due to enthalpic and entropic factors. In particular, the cyclic b-amino acids are rare in nature. The first examples of a cyclic b-amino acid is cispentacin which was isolated from Bacillus cereus and Streptomyces setonii and shows antifungal activity. The oryzoxymycine is also the fist hyroxy-b-aminoacid is being found in nauture. They exhibits antimicrobial, antifungal and analgesic activities.

The incorporation of natural and unnatural b-amino acids into peptides increases the stability against enzymatic hydrolysis and also improved biological activity in drug discovery. Although there has been new methods for the enantioselective synthesis of cylooctane b-amino acid, the lack of general methodologies leading to the large scale and synthesis and multifunctional b-cyclooctane amino acids force us to develop the eficient and reliable routes for cycloctane b-amino acids from the simple starting material. Furthermore, due to the difficulties of the the assembling multifunctioanal cycloctane core unit, we seek to discover new methods by starting from the readily available intermediates.

Chlorocyclooctenenitrile was obtained from the 2-cyanocyclooctanone and used as a starting material for the functionalization. The substitution from the allylic position with enantiomerically pure benzyl amine provided the diastereomeric mixture. The diasteromers were isolated in high yield and characterized by X-ray analysis. The isolated diasteromers were used as the starting materials for our journey to do develop new methodologies for the syntheses of b-aminoacids. 2-Clorocyclooctenenitrile was used as an intermediate to explore the new strategies for the multifunctioanlisation of cyclooctane core unit.

Keywords: Cyclooctenenirıles, cyclic b-aminoacid, multifunctional cyclooctenenitriles

ID:03-IOP

Large Scale Dam Break Flow Modelling Using OpenFOAM

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The study of the hydrodynamics of river flow is of great practical importance in solving engineering riverside protection problems and predicting the consequences of possible dam-break flooding flows. One of the main aim of mathematical modelling prediction is the determination of the area of propagation of a dam-break wave, which uses various existing methods of modelling the entire flooding process

The results of the large-scale flooding flows numerical modelling on the complicated topographical terrain were presented in this paper. A mathematical modelling is based on the non-stationary three dimensional Reynolds-averaged Navier-Stokes equations, describing the dynamics of a gas-liquid mixture with a free boundary. The phase interface capturing was performed by the volume of fluid method. General numerical solution of the governing equations is based on the open source package OpenFOAM 6.0 solver interFoam.

The adequacy of the applied mathematical model is verified by the simulation of the partial dam break test case. Particular attention is paid to the accuracy of calculating the level of water flow at various points in the reservoir. The efficiency of used modelling technology was illustrated on the examples of possible flooding flows on the terrain near Snake River Canyon, USA and Ark-Buura river area near Osh city, Kyrgyzstan. It was shown that the used multiphase solver interFoam of the open source package OpenFOAM 6.0 describes the considered problems with acceptable accuracy.

Keywords: Interface capturing, volume of fluid method, OpenFOAM

ID:04-IOP

Gamma Ray Shielding Competence of Borosilicate Glasses Doped with Heavy Metal Oxides

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Nowadays, researchers try to develop new gamma ray protection materials instead of traditional materials such as concrete as well as lead (Pb) with improved performance in gamma radiation protection. For this purpose, heavy metal oxides based glasses attracted much attention for this purposes. The main aim of this work is to study the gamma radiation shielding properties of borosilicate glasses doped with heavy metal oxides. The shielding parameters have been calculated using WinXcom program. The investigated glass systems have the composition: $(70\text{-}x)SiO_2–30B_2O_3–xHMOs$ glass system (where HMOs are TiO_2 and Bi_2O_3 with 0, 1, 2, 3, 4 and 5 mol% of each HMO). Some radiation shielding parameters such as: mass attenuation coefficient (μ/ρ), effective atomic number (Zeff) and half Value Layer (HVL) have been calculated. We discussed the effect of TiO_2 and Bi2O3 on the mass attenuation coefficient values at low energy (i.e. 511 keV). Also, we investigated the influence of TiO_2 and Bi_2O_3 on the effective atomic number between 15 keV and 15 MeV. The results showed that the mass attenuation coefficient (μ/ρ) increases when the content of Bi_2O_3 increases, while it is almost constant for glasses doped with TiO2. Also, we found that the effective atomic number values of the glasses doped with 1 mol% of Bi_2O_3 and TiO_2 are higher than the Zeff of S0 (undoped glass sample).

Keywords: Radiation shielding, borosilicate glasses, heavy metal oxides

ID:05-IOP

Fuat Sezgin and His Contributions to the History of Islamic Science

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Civilizations leave traces in lands they pass by. Following these traces is the job of the historians. The history of science traces the scientific thoughts inside history. As a historian of science whon traces the Islamic science and technique inside history, Prof. Dr. Fuat Sezgin is one of the biggest scientists of the last century who dedicated himself with the help of his studies to overcome the inferiority complex this nation has been reduced to. Having a brilliant command of several languages, Fuat Sezgin and his studies on hundreds of libraries, thousands of books and documents clearly reveal that the missing link between the first and second enlightenment periods is Medieval Islamic Civilization. Have the Muslims left traces only in European lands in the middle ages? No. In the study we discuss, Fuat Sezgin explicitly reveals with evidence the fact that Muslim sailors have discovered the American continent at least two centuries earlier than the European sailors have. Along with examining here in this study the main motives for Muslims to go to countries beyond the seas, the life of Fuat Sezgin, his works and through the maps belonging to the 13th and 15th century, the attempts of Muslim sailors to go beyond Atlantic will be discussed.

Keywords: Fuat Sezgin, pre-columbian discovery, America

ID:06-IOP

Evaluation of Cognitive Functions in Asthmatic Children

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The aim of this study is to compare the degree of the effects of hypoxic attacks caused by asthma and the effects of course of chronic disease on cognitive functions and academic achievement with the control group. The results were to be evaluated according to mood changes, clinical findings of asthma and demographical characteristics and to determine related factors. 55 children, fulfilling the study criteria, aged between 6-16 years with diagnoses of mild to moderate persistent asthma followed at Baskent University Clinic of Pediatric Allergy and 55 healthy age and sex matched children were included in the study. A written informed consent was obtained from all subjects. Wechsler Intelligence Scale for children - revised edition (WISC - R), The Visual - Aural Digit Span Test and Bender Gestalt Visual Motor Test were used to assess cognitive functions. Child Anxiety Sensitivity Index (CASI), State - Trait Anxiety Inventory for Children (STAI - C), Child Depression Inventory (CDI) were used to evaluate both groups.

Visual - perceptional abilities and cognitive functions related with visual attention and visual memory of children with asthma were found to be unfavourably effected with increasing severity of disease. For this reason, the effects of cognitive functions in asthmatic cases should be taken into account during follow - up. We suggest that this approach would be useful in controlling the disease and may increase compatibility to chronic disease process by providing supportive interventions.

Keywords: Childhood asthma, hypoxia, cognitive functions

ID:07-IOP

Role of Plant Microbiome in Plant Health and Sustainable Agriculture

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Intensive research attempts are underway to mitigate the impacts of climate change, improve salt tolerance and disease resistance of plants using organic farming practices, including biofertilizer which eventually improve degraded soils. In addition it will form part of integrated environmentally friendly approach for nutrient management and sustainability in ecosystem functions. The rhizosphere is colonized more intensively by microorganisms than the other regions of the soil. These microbes can be beneficial, neutral or pathogenic. They compete for nutrients and niches under strongly varying conditions. These plant growth-promoting rhizobacteria (PGPR) are able to promote plant growth, and can help plants to adapt to a number of environmental stresses. Moreover, they are able to control various plant diseases and stimulate production of secondary metabolites such as total phenols, alkaloids, tannins, and antioxidant activity. The mechanisms of plant growth promotion and disease suppression such as induced systematic resistance and competition for nutrient and niches, production of ACC deaminase enzyme, siderophores, antibiotics, phytohormones by PGPR have provided a greater understanding of mode action which opens new doors to propose strategies for improving the efficacy of PGPR agents. In this presentation I will describe some of these interactions and detail processes such as root colonization, plant growth stimulation, biological control of fungal disease. Finally, I will list some challenges for future research.

Keywords: Auxin, colonisation, osmolytes, rhizobacteria, salinity

ID:10-IOP

Mathematical Modeling and Analysis of Gene Knockout Compensation in Pancreatic Beta-Cells

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Insulin is secreted from Pancreatic beta-cells in an oscillatory fashion in response to elevated blood glucose. Oscillatory secretion results from the Ca^{2+} oscillations driven by the bursting electrical activity of beta-cells and has physiological importance for normal blood glucose regulation. In the initiation and modulation of the oscillations, ATP-sensitive K_+ ion channels (K(ATP) channels) play the key role by coupling cell metabolism to the membrane potential. In humans, defects in K(ATP) channel expression leads to spontaneous beta-cell activity and excessive insulin secretion, resulting in congenital hypoglycemia. However, in genetically engineered $SUR1^{-/-}$ mice beta-cells (KO cells), which also do not express K(ATP) channels in their plasma membranes, Ca_{2+} oscillations persist and these mice have almost normal blood glucose levels. This is surprising because in the wild type mouse beta-cells (WT cells) when K(ATP) channels are blocked with pharmacological agents oscillations are terminated. This shows that mice can compensate for the loss of K(ATP) current by employing alternative mechanisms in their beta-cells. In this combined modeling and experimental study, we investigated these compensatory mechanisms. We demonstrated that an inward rectifying K_+ current (Kir2.1 current) is upregulated in the KO cells. Using mathematical modeling we showed that this upregulated current can rescue slow Ca^{2+} oscillations through a cAMP-dependent pathway in these cells. We analyzed the dynamics of the model in detail and tested our model predictions with *in vitro* experiments. We then addressed the question of how a beta-cell determines the right level of Kir2.1 channel expression to restore homeostasis. We showed that a calcium oscillation frequency sensitive gene regulation network can set the Kir2.1 channel expression to the right level and restore bursting oscillations.

Keywords: Dynamical systems, computational biology, bifurcation theory

ID:11-IOP

Boron Based Coatings for Strategic Applications: Typical Research Results

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Boron-based nitride thin films have good properties like high hardness and low CoF, making them the crucial material in strategic applications. For this reason, c-BN is used especially in places where high hardness required for high temperatures and low CoF. However, c-BN film has low adhesion due to its high compressive internal stress. To overcome this problem, R&D studies are carried out. The hexagonal structure of the TiB_2 consists of a planar stacking of Ti and B atoms with a strong covalent bond. Since Ti-B-N nanocomposite coatings have protective coatings with excellent mechanical, chemical and thermal stability properties. By controlling the boron and nitrogen content of the coatings it is possible to control the properties of the TiBN coatings. BCN films are of great interest due to the structural similarity with carbon and boron nitride. h-BN is generally used as solid lubricant due to the layers are stacked together via van der Waals interactions and sp^2 bonded. h-BN can be used in a vacuum, which is essential for aerospace applications. B_4C is one of the most stable compounds in the world. The boron-based coatings are typically grown with PVD. A comparison has been made between dc, pulsed-dc and HiPIMS, it was observed that boron-based coatings coated by HiPIMS have higher adhesion properties. In this study, detailed R&D results about boron-based nitride thin films coated with dc, pulsed-dc and HiPIMS methods are given. Structural, mechanical and tribological properties of boron-based nitride thin films were compared for dc, pulsed-dc and HiPIMS methods.

Keywords: Boron-based coatings, HiPIMS pulsed-dc, adhesion-hardness

CHEMISTRY
ORAL PRESENTATIONS

ID:3-COP

Semi-synthesis and Biological Activities of Eugenol Derivatives

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Drug development based on natural product especially on monoterpene and phenylpropanoid becomes a subject of interest due to their simple skeletal structures. In this study, fourteen eugenol derivatives were synthesized via structural modification of eugenol. Each derivative was characterized by normal spectroscopic techniques of FTIR, UV-Vis, NMR and MS. The spectroscopic data of FTIR gave out few significance peaks which corresponds to v(C-H), v(C=C)aromatic and v(C-O) stretches appeared for both ether and esters derivatives at the range of 3092-2960 cm-1, 1600 cm-1 and 1455-1256 cm-1; and additional stretch of v(C=O) around 1700 cm-1 for ester derivatives. All compounds were further investigated for their anti-bacterial and cytotoxicity activities. The anti-bacterial activity were tested via well-diffusion method against Gram-positive (Bacillus subtilis, Staphylococcus aureus and Staphylococcus epidermidis) and Gram-negative (Escherichia coli and Staphylococcus typhimurium) bacteria. Eugenol derivatives showed broad spectrum for anti-bacterial activity with compound 67 emerged as the potential anti-bacterial agent since it was susceptible for both Gram-positive and negative bacterial strains. The in vitro cytotoxicity was assayed against hepatocellular carcinoma, human cells line using MTS Cell Proliferation Assay Kit (Calorimetric) for selected derivatives (11, 61 and 67). Among three tested compounds, 61 exhibited cytotoxicity against targeted cells line with IC50 values of 12.5 µg/ml.

Keywords: Eugenol derivatives, HepG2 cell, antibacteria

ID:49-COP

Fluorescence Quenching Study between Bovine Serum Albumin and Coumarin 151 dye

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In this study, the interactions between Coumarin 151 (C151) dye compound and Bovine Serum Albumin (BSA) protein was investigated by steady state fluorescence spectroscopy technique. Photophysical parameters such as Stokes shifts, fluorescence quantum yield values and quenching constants were determined. It was clarified that the protein was exposed to quenching by C151 dye. At the same time, a strong blue shift was observed at the fluorescence band maximum of BSA accompanying the quenching. The interactions were determined by using the classical Stern-Volmer equation with working at 3 different temperatures. Stern volmer quenching constants were calculated as 0.55, 0.62, 1.26 μM^{-1} at 298, 303 and 313 K temperatures, respectively. It was determined that the quenching occurring between BSA and C151 walked through the dynamic quenching because of the increase in the quenching constant values with increasing temperature. Fluorescence quantum yields of BSA/C151 system were decreased with the increasing concentration of C151 by fluorescence quenching. The thermodynamic parameters of the BSA/C151 system were calculated using Van't Hoff equation. Negative ΔG values are an indication that the event will take place without the external effect. Negative ΔH and ΔS values for C151 and BSA interaction indicate that binding was essentially van der walls and hydrogen bonding.

Keywords: Bovine serum albumin (BSA), coumarin 151 (C151), fluorescence quenching

ID:58-COP

Antioxidant Activity Analysis of *Origanum munzurense* Kit Tan & Sorger Extracts Obtained by Subcritical Water and Soxhlet Methods

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Origanum munzurense Kit Tan & Sorger (*O. munzurense*) was analyzed for its total polyphenol content, antioxidant activity and mineral and trace element composition. The amount of phenolic content of acetone, water, ethanol, methanol and subcritical water extracts was determined using Folin-Ciocalteu method in mg GAE/100g dry plant as 231.17, 184.20, 178.59, 319.28 and 1051.94, respectively. DPPH and Cuprac assays were performed to determine its antioxidant activity. In DPPH assay, IC50 value of gallic acid was determined as 0.02231 mg mL^{-1}. IC50 values of soxhlet extracts of O. Munzurense were found as 0.110 mg mL-1, 0.397 mg mL^{-1}, 0.181 mg mL^{-1}, 0.534 mg mL^{-1}, 1.205 mg mL^{-1}, 1.446 mg mL^{-1} and 0.340 mg mL^{-1} using water, ethanol, methanol, acetonitrile, chloroform, acetone, tetrahydrofuran solvents, respectively. Also, IC50 value of subcritical water extract was found as 0.115 mg mL-^{1}. The results of Cuprac assay were given in TEAC (Trolox equivalent antioxidant capacity) coefficient. TEAC values of soxhlet extracts of O. Munzurense were found as 0.766, 1.826, 0.395, 1.254, 0.984 and 2.197 using water, acetone, acetonitrile, ethanol, methanol and tetrahydrofuran solvents, respectively. Also, TEAC value of subcritical water extract was found as 1.722.

Acknowledgements: This work was funded by Mersin University Research Fund (Project No: BAP 2018-1-TP3-2809).

Keywords: Antioxidant activity, *Origanum munzurense*, subcritical water extraction

ID:63-COP

Controllable Electrochemical Synthesis and Photovoltaic Performance of Metal Oxide/Graphene Oxide Nanostructure Arrays

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Transparent, flexible and conductive electrodes are prepared by reduction of the graphene oxide (GO) films which were electrodeposition coated on semiconductor metal oxide substrates1. On the reduced graphene oxide (GO) films, metal oxide nanoflower films with good crystallinity have been electrochemically deposited and then characterized. Meanwhile, the effect time of the deposition on the morphology, structure, and property of the electrochemical deposited metal oxide has been studied. This graphene oxide modified metal oxide electrode was fabricated succesfully using a electrochemical method and characterized by potential-controlled electrochemical deposition, scanning electron microscopy (SEM), energy dispersive spectroscopy (EDS), X ray diffraction techniques (XRD), Raman measurements. The experimental results show that this electrochemical approach from aqueous metal oxide/graphane oxide suspensions allows us to control the morphology and size of the electrodeposited metal oxide/graphane oxide nanostructures by adjusting the deposition time. The resulting nanostructured metal oxide/graphene oxide electrode exhibits good photovoltaic properties and could be used for applications in solar energy conversion. Our results provide a possible way to replace the indium tin oxide (ITO) or gold electrodes with GO films in the electrochemical synthesis, and make it promising to synthesize semiconductor metal oxides on GO films for future flexible photovoltaic applications.

Keywords: Conductive electrode, graphene oxide, metal oxide,

Acknowledgement: This work was supported by Ataturk University.

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ID:68-COP

Reduction of p-nitrophenol, o-nitroaniline, 2,4-dinitrophenol and 4-nitro-1,2-diaminobenzene by Ag(0) stabilized on chitosan-microfungal spores microcapsules support

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This work reports the preparation of silver catalyst for reduction of p-nitrophenol, o-nitroaniline, 2,4-dinitrophenol and 4-nitro-1,2-diaminobenzene compounds by sodium borohydride. Chitosan-microfungal spore composite microcapsules were prepared and used as the catalyst support. The chitosan-Ustilago digitariae spores microcapsules were prepared by following the method reported elsewhere [1]. U. digitariae spores, about 10 µm in size, served to increase the surface area, the mechanical strength and the binding sites of chitosan microcapsules. Metallic silver particles were deposited in the microcapsules matrix by thermal treatment of silver nitrate solution and chitosan-U. digitariae spores microcapsules. The Ag(0)-chitosan-U. digitariae spores microcapsule system was used to catalyse the reduction of the nitro compounds by NaBH4. 36 mg of the catalyst was used to reduce 0.2 µmol nitro compounds by 0.1 mmol of NaBH4 to amino compounds. The reduction of the nitro compounds by the catalyst was followed spectrophotometrically. The results of the study was presented in the following table. The Ag(0) catalyst can be used for reduction of nitroaromatic compounds by NaBH4.

Nitroaromatic compounds	Reduction time for the fresh catalyst in minute.	Reduction time for the used catalyst in minute.
p-nitrophenol	7	35
o-nitroaniline	2.5	18
2,4-dinitrophenol	73	123
4-nitro-1,2-diaminobenzene	4	38

Keywords: Nitroaromatic, catalytic reduction, chitosan

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ID:90-COP

Investigation of Antioxidant Activity of Aqueous Extracts of *Paeonia arietina* Leaves Extracted by Subcritical Water Extraction Method

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Species of the genus *Paeonia* are famous known for their rich germplasm resources with various flower colors, flower types and plant heights. Also, members of this genus have important medicinal value due to their wound-healing roots. It has been used in traditional medicine for long years. In this study, one of the species of *Paeonia* genus, *Paeonia arietina* (*P. arietina*), was reported for its use in the treatment of diabetes in the folk medicine in Ovacık (Tunceli) and in East Anatolia in Turkey. In addition, it was reported that its root's infusions are used for the treatment of epileptic seizure and cough. The Subcritical Water Extraction (SWE) method was used in the extraction of *P. arietina* leaves. SWE is an eco-friendly method and it is widely used by researchers to investigate the content of many matrices. P. arietina leaves were analyzed for its total polyphenol content and antioxidant activity. The amount of total polyphenol content in subcritical water extract was determined as 1249.50 mg GAE/100g dry plant by using the Folin-Ciocalteu method. DPPH and Cuprac test were performed for antioxidant activity analysis. In DPPH assay, IC50 values of gallic acid were determined as 0.02231 mg mL-1, respectively. The IC50 value of P. arietina leaves was found as 0.05343 mg mL-1 for subcritical water extract. The results of Cuprac assay was evaluated using TEAC (Trolox equivalent antioxidant capacity) coefficient. TEAC value of *P. arietina* leaves was found as 2.145.

Keywords: *Paeonia arietina*, subcritical water extraction, antioxidant activity

ID:111-COP

Synthesis and Enzyme Activity of Pyridine-2,6-Dicarboxamide Sulfonamide Compounds

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Heterocyclic compounds are widely distributed in nature, they are found in amino acids, hormones, vitamins and have become vital building blocks in medicinal and synthetic chemistry.1 The compound pyridine is one of the most extensively studied heterocyclic compounds, it is found in a large number of drugs with biological activities such as antiviral, antifungal, antidiabetic, and anticancer. 2,3 In recent years, the pyridine dicarboxamide scaffold has become a focus point of many researchers. Our research focused on preparing a series of pyridine dicarboxamide derivatives and testing them as potential carbonic anhydrase inhibitors.

The newly synthesized compounds were fully characterized and preliminary enzyme activity results shows that the pyridine-2,6-dicarboxamide sulfonamide derivatives (IC50 values in the range 12.8-46.7 nm) compare favourably to the clinically used carbonic anhydrase inhibitor, acetazolamide (IC50 = 51.0 nm).

Keywords: Pyridine-2,6-dicarboxamide, sulfonamide compounds

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ID:129-COP

Effects of Oleuropein on Ketamine-Induced Cardiotoxicity in Rats

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The aim of this study is to investigate the effects of oleuropein on ketamine-induced cardiotoxicity in rats. 28 wistar albino rats were divided into 4 groups. Groups were created as follows; Control; (DMSO p.o), Ketamine; (Ketamine 60 mg/kg i.p) At the 7th day of the experiment, 60 mg/kg dose and intraperitoneal ketamine injection was performed every 10 minutes was continued for 3 hours. Oleuropein; (Oleuropein 200 mg/kg p.o) Oleuropein administered 200 mg/kg oral gavage daily for 7 days, Oleuropein + Ketamine; (Ketamine 60 mg/kg- i.p. + Oleuropein 200 mg/kg – p.o): Oleuropein administered 200 mg/kg oral gavage daily for 7 days. On the 7th day of the experiment, 60 mg/kg dose ketamine was performed intraperitoneal every 10 minutes was continued for 3 hours. At the end of the study, biochemical parameters (MDA, GSH, GSH.Px CAT) and TNF-α, IL-6, Cox-2, Nrf-2 and NF-kB levels in heart tissues and their gene expression with qPCR and serum biochemicals (CK, CK-MB, Troponin) were evaluated.

According to the data obtained with ketamine administration, MDA, TNF-α, IL-6, Cox-2 and NF-kB levels were increased, but with the application of Oleuropein + Ketamine, these parameters were found to be at the same level with the control group. As a result of the application of ketamine, Nrf-2 ($P<0.05$) and GSH ($P<0.05$) levels, GSH.Px ($P<0.001$) and CAT ($P<0.05$) activities decreased, whereas in Oleuropein + Ketamine group these parameters have reached the same levels as the control group. Serum biochemicals, Troponin-T ($p<0,001$), CK ($p<0,01$), CK-MB ($p<0,001$) levels were increased with ketamine administration and it was determined that these parameters were at the same level with the control group in Oleuropein+Ketamine group. As a result, the application of oleuropein

has been shown to have protective effects on the heart by reversing the table of increased oxidative stress and inflammation with ketamine.

Keywords: Oleuropein, ketamine-induced, cardiotoxicity

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The Synthesis Of 7-Imino Based Dimethoxyindole Systems And Biological Evaluation As Antioxidant Agents

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The indole is an important class of heterocylic compounds which has been subjected in many synthetic studies. Due to the presence of indole based compounds in many natural products, the studies have been directed into the investigation of biological properties of the natural indolic systems and a range of medical usage have been identified. Apart from the biological importance of these structures, activated indole systems have been used in many synthetic studies as valuable intermediates for the building of targeted complex structures. A range of reactions such as formylation or halogenation can be performed at different locations on indole systems. These intermediates can then be readily converted into other functional groups allowing the production of indole based macro cyclic compounds.

In the present work, methyl 4.6-dimethoxyindole-2-carboxylate was synthesised by the Hemetsberger indole synthesis method. The Vilsmeier Hack formylation was used to attach the aldehyde functionality at 7-position. A range of aromatic amine compounds were condensed with the aldehyde group on the indole structure via Schiff base reaction. The designated imine systems were evaluated for the antioxidant properties by the use of three different assays, namely DPPH, ABTS and CUPRAC. It was also shown that the 7-formyl-metyl-4,6-dimethoxindole-2-carboxylate was an important intermediate for the valuable synthetic compounds. A range of synthetic examples derived from the designated formylated indole were given.

Keywords: Dimethoxyindole, imine, antioxidant

ID:143-COP

Effects of Thymol on Methotrexate-Induced Experimental Toxicity in Rats

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In this study the protective effects of thymol were investigated on the methotrexate-induced experimental toxicity. For this purpose, 24 Wistar albino rats were randomly divided into four groups. Groups were created as Control (DMSO), MTX (Methotrexate 20 mg/kg i.p 4th day single dose), Thymol (Thymol 20 mg/kg p.o), MTX + Thymol (Methotrexate 20 mg/kg i.p 4. Day single dose + Thymol 20 mg/kg p.o). The study was continued for 7 days for all animals. At the end of the study, biochemical parameters (MDA, GSH, GSH.PX, CAT) and serum biochemical parameters (AST, ALT, Ure, Creatinine, CRP) of liver and kidney tissues of animals were investigated.

According to the data obtained, it was observed that the levels of MDA increased significantly ($p<0.01$) in liver and kidney tissues with MTX administration, while it was found to be at the same levels in the MTX + Thymol group ($p<0.01$). Liver tissue GSH levels, GSH.Px and CAT activities and kidney tissue GSH.Px activities were significantly decreased ($p<0,05$) compared to the control group by MTX administration, but these parameters came up with the control group levels in the MTX + Thymol group ($p<0,05$). Serum biochemical parameters were examined; Serum AST ($p<0.01$), ALT ($p<0.001$), Ure ($p<0.05$), Creatinine ($p<0.05$) and CRP ($P<0.05$) levels increased with MTX administration. However in the MTX + Thymol group, these parameters were found to be at the same level with the control group.

As a result, MTX administration caused increased lipid peroxidation, decreased antioxidant activity in liver and kidney and negative effects on serum biochemical parameters compared with control group. However, significant improvements were observed in lipid peroxidation level, antioxidant activity and serum biochemical parameters of MTX together Thymol group when compared to MTX only. The findings of this study clearly suggest that Thymol has protective effect against toxicity induced by MTX.

Keywords: Methotrexate-induced, thymol, toxicity

ID:157-COP

Synthesis and Characterization of N-(methyl) benzylidene-4-fluoroaniline Derivatives by Microwave Method

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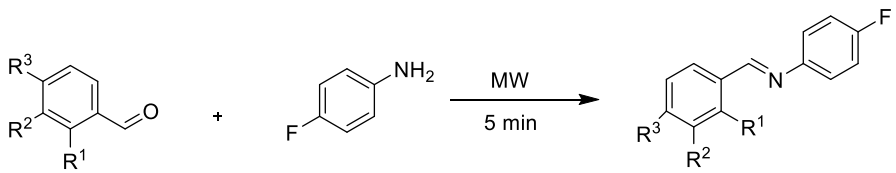
In this study, N-(methyl) benzylidene-4-fluoroaniline Schiff bases derivatives (3a-c) was obtained from the condensation reaction with 2-methlybenzaldehyde (1a), 3-methlybenzaldehyde (1b), 4-methlybenzaldehyde (1c) and 4-fluoroaniline (2), was synthesized by microwave-irradiation method. Schiff bases are formed by the nucleophilic addition reaction of compounds, amines, aldehydes or ketones, and carbon nitrogen forms a double bond (-CH=N-)1.The bond formed by the reaction of the aldehyde is called "azomethine or aldimine", which is called "imine or ketamine", which is formed by ketone2-3. Having flexible and variable structural characteristics, it provides diversity in the areas of use has been a preferred method4-5.The chemical structure of the compound was characterized using elemental analysis, HRMS, 1H NMR and 13C NMR techniques.



1(a-c) 2 3(a-c)

1a R^1=CH_3, R_2= H, R_3=H,
1b R^1=H , R_2= CH_3,, R_3=H
1c R^1=H , R_2= H, R_3=CH_3,

3a R^1=CH_3, R_2= H, R_3=H,
3b R^1=H , R_2= CH_3,, R_3=H
3c R^1=H , R_2= H, R_3=CH_3,

Keywords: Schiff bases, microwave, synthesized

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ID:169-COP

Synthesis and Biologic Applications of (E)-(4-(((3,4-difluorophenyl)imino)methyl)phenyl) Boronic Acid

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Schiff base condensation is an important reaction for the building of synthetic compounds containing imine functionality which is crucial for the interaction with the biomolecules. Synthetic compounds derived from the reaction between boronic acid and aromatic amines resulted a valuable classes of systems which have attracted great attention of many researchers due to the crucial biological properties such as anticancer, antitumor, antioxidant and fungicidal[1-3]. An intense research on Boron Neutron Capture Therapy (BNCT) for the cancer treatment has encouraged the synthesis of novel boron derivative compounds. In the present work, we have synthesized Schiff-based boronic structure. The Ishikawa endometrial cancer and antioxidant activities were examined. The boronic based Schiff compound has revealed various results against cancer cells and mild antioxidant effect according to reference compounds.

Keywords: Boronic acid, Schiff base, antioxidant

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ID:194-COP

Determination of Phenolic Content of Apricot Kernel Oil and Investigation of Antioxidant Capacities

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Structural degradation of DNA, proteins, carbohydrates and lipids occurs as long as the excessively reactive oxygen species formed in metabolism are not inhibited. Accordingly, both the stabilization and the function of the cell membrane are impaired and many degenerative diseases occur [1]. The essential oil contained in citrus is an oil that finds use in the cosmetics sector, the food sector, the sweetener, and the pharmaceutical sector. Apricot kernel oil is used in cosmetics for night creams to make it easier to close surgical wounds because of the cell renewal feature it contains [2]. Antioxidants are known as substances that prevent or completely stop the oxidation of biomolecules and have a very common use. For these reasons, it is aimed to determine the antioxidant capacity of apricot kernel oil in our study. The amounts of phenolic acids such as caffeic acid, ferulic acid, syringic acid, ellagic acid, quercetin, α-tocopherol, pyrogallol, p-hydroxybenzoic acid, vanillin, p-coumaric acid, gallic acid and ascorbic acid in the apricot kernel oil samples were measured by high performance liquid chromatography (HPLC) and tandem mass spectrometry (LC-MS/MS). The most abundant compound found in apricot kernel oil was vanillin as apricot kernel oil at 390.0 mg/kg. This is followed by ferulic acid as 5.0 mg/kg apricot kernel oil. We studied their ABTS•+, DPPH·, DMPD•+, H_2O_2, superoxide anion radical (O2•-) scavenging effects, Fe^{3+}, Cu^{2+} and $[Fe^{3+}\text{-}(TPTZ)_2]^{3+}$ reducing ability, and Fe2+ chelating activity. Also, α-tocopherol, BHA, trolox, and BHT were used as positive controls. It has been observed that the antioxidant capacity of apricot kernel oil is close to the standards.

Keywords: Antioxidant, apricot kernel oil, lc-ms/ms

ID:201-COP

(E)-N-Benzilidendeneaniline, (E)-N-benzylidene-(4-bromo-phenyl)-amine, (E)-N-benzylidene-(4-chloro-phenyl)-amine by Microwave Method the Synthesis and the Characterization

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In this study, (E)-N-Benzylideneaniline, (E)-N-Benzylidene-(4-bromo-phenyl)-amine, (E)-N-Benzylidene-(4-chloro-phenyl)-amine Schiff bases was obtained from the condensation reaction with benzaldehyde and anilin, 4-bromo anilin, 4-kloro anilin, was synthesized by microwave-irradiation method. Schiff bases are used in many industries such as pharmaceutical, healthcare, cosmetics, agriculture, paint and polymers, plastics industry, electrical and electronics industry, aircraft industry. Recently the use of microwave in organic synthesies has emerged as a new method due to unique. There has been an increase in the use of the microwave method in the pharmaceutical industry to facilitate the synthesis of organic compounds to reduce environmental damage. Since less byproducts are produced in the synthesis studies by the microwave method, the product quality also increases, thus providing an advantage for purification processes. Microwave has provided a new perspective in the use of more eco-compatible chemicals and methods that are more sensitive to society and the environment in order to reorganize chemical syntheses and prevent pollution in solving environmental problems. The syntheses were carried out in high efficiency in a short time without using solvent in a domestic microwave oven. The structure of the synthesized Schiff base derivatives was elucidated by 1H-NMR, 13C-NMR and FTIR spectroscopy techniques.

Keywords: Schiff, microwave, spectroscopy, aniline

ID:221-COP

Determination of Antioxidant Capacity of Xanthurenic Acid

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Xanthurenic acid is produced from 3-hydroxycurene, an intermediate product of tryptophan metabolism. This substance has been reported to produce a stimulating effect by increasing the level of intracellular calcium concentration in the brain [1, 2]. Xanthurenic acid is a molecule that can cross the blood-brain barrier. Therefore, it can also play a role in nerve conduction [3]. Unless the active oxygen forms formed in metabolism are prevented, it causes structural degradation in DNA, protein, carbohydrate and lipids. Consequently, both the structure and function of the cell membrane are disrupted and many degenerative diseases occur. Antioxidants are substances that inhibit or completely stop the oxidation of these biomolecules and are of widespread use [4]. To this end, different bioanalytical methods such as reducing capacity by Fe^{3+}-Fe^{2+} transformation method, Fe^{3+}-TPTZ reducing capacity by FRAP method, Cu^{2+}-Cu^{+} reducing capacity by CUPRAC method, the ferric ions (Fe^{2+}) chelating activity by using bipyridyl reagent, DPPH, ABTS, DMPD radical scavenging activities have been used [5]. Also, BHA, BHT, α-tocopherol and trolox have been used as reference antioxidants [6]. The IC50 value of the ABTS radical removal activity for this substance was calculated as 8.45 µg/mL. Reference antioxidants such as BHA, BHT, α-tocopherol and trolox exhibited ABTS radical removal inhibitions at 3.16; 3.18; 3.65 and 38.5 µg/mL, respectively. Our studies have shown that Xanthurenic acid is an effective antioxidant.

Keywords: Xanthurenic acid, antioxidant activity, radical scavenging

ID:251-COP

Facile and Highly Efficient Hydrogenation and Dehydrogenation of N-Heteroarenes under Mild Conditions Catalyzed by Mesoporous Graphitic Carbon Nitride Supported CoPd Alloy Nanoparticles

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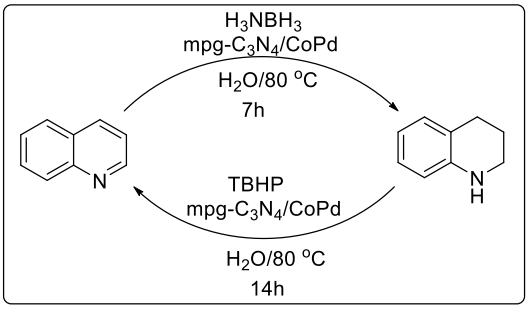
Catalytic dehydrogenation and hydrogenation reactions of organic molecules are fundamental and important processes in organic chemistry.[1] The catalytic hydrogenations and dehydrogenations of N-heterocycles are particularly important transformations, as both saturated and unsaturated heterocycles are important structural units in natural products and pharmaceuticals.[2]

In this work, 1,2,3,4-tetrahydroquinoline derivatives were synthesized by new, efficient and environmentally sensitive transfer hydrogenation method developed in aqueous medium by using H_3NBH_3 as hydrogen source in the presence of mpg-C_3N_4/CoPd catalyst. In the second part of the study, 1,2,3,4-tetrahydroquinoline analogs were oxidized with TBHP by using bimetallic mpg-C_3N_4/CoPd.[3]



Keywords: Hydrogenation, dehydrogenation, nanoparticles

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Determination of Antioxidant Effects of Some Phytochemicals

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The substances that prevent oxidation caused by free radicals are called antioxidants. They are capable of capturing and stabilizing free radicals. Also, free radical is has one or more unpaired electrons in the outermost shell. Free radicals are very reactive. Due to unpaired electrons they reacts with other substances. As is known, free radicals cause serious damage to metabolism. The most dangerous of these damages is lipid peroxidation. For prevent damage caused by free radical are needed to antioxidant molecules particularly natural origin. In order to prevent serious diseases that are directly related to the level of oxidant substances, it should be ensured that oxidant substances are balanced with antioxidants. As known, phytochemical molecules are involved in the solution of problems such as cancer, cardiovascular problems, hypertension, hormonal disorders and diabetes. Therefore, we investigated the antioxidant capacities of some natural phytochemicals in our study. For this reason evaluating antioxidant and radical scavenging capacity of some phytochemicals (such as Indole-3-carbinol (IC3) and 3,3'-diindolylmethane (DIM)), $Fe3^{+}$-Fe^{2+} reducing capacity, cupric ion (Cu^{2+}) reduction capacity by Cuprac method, reducing capacity by FRAP method, 2,2´-azino-bis(3-ethylbenzthiazoline-6-sulfonic acid) radical (ABTS•+) scavenging and 1,1-diphenyl-2-picryl-hydrazyl free radical (DPPH·) scavenging were performed separately. BHA, BHT, α-tocopherol and trolox were used as the reference antioxidant compound. As a result of in vitro studies, these phytochemicals were found to have a strong antioxidant and antiradical effect. When the results were evaluated, these phytochemicals were found to be power than that of other standard antioxidants.

Keywords: Phytochemicals, antioxidant, radical scavenging

ID:273-COP

Investigation of Anticholinergic, Antidiabetic and Antioxidant Activities of Cinnamon (*Cinnamomum Verum*) Bark Extracts

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Cinnamon (*Cinnamomum verum*) is predominantly employed in cuisine as a condiment and flavoring material. It has been widely used in traditional folk medicine for a long time. Cinnamon is used for several situations like flatulence, diarrhea, amenorrhea, toothache, ever, leucorrhea, common cold and headache. Also, cinnamon had some therapeutic effects including its antimicrobial, antifungal, antiviral, antihypertensive, antitumor, antilipemic, antidiabetic, gastroprotective, and immunomodulatory effects. In the current paper, the antioxidant properties of the Methanolic (MEC) and aqueous (WEC) extracts of cinnamon (Cinnamomum Verum) were evaluated by using different in vitro bioanalytical antioxidant methods. Also, its inhibition effects were determined against enzymes linked to different diseases (including Alzheimer's disease, obesity and type 2 diabetes mellitus) namely acetylcholinesterase, butyrylcholinesterase, α-glycosidase and α-amylase. For the estimation of the antioxidant capacities of the WEC (Cinnamomum verum) and MEC (Cinnamomum verum), DPPH· and ABTS•+ scavenging activities, as well as Fe3+-Fe2+, and Cu2+-Cu+ reducing assays were studied. The IC50 values of the WEC and MEC indicated

that they were potent effective DPPH· (21.25 and 15.71 µg/mL) and ABTS•+ (6.52 and 5.79 µg/mL) scavenging and as well as AChE (221.33 and 110.26 µg/mL), BChE (461.69 and 94.93 µg/mL), α-glycosidase (206.86 and 220.00 µg/mL) and α-amylase (189.86 and 200.86 µg/mL) inhibition effects.

Keywords: Cinnamon, *Cinnamomum verum*, antioxidant activity

ID: 290-CPP

Phytochemical Investigations of Rosaceae Sanguisorba Armena

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Antioxidants are molecules that neutralize the effects of free radicals and prevent chain reactions that can cause cancer, heart disease and premature aging.

In this study, it was aimed to determine the andioxidant capacity of Rosaceae Sanguisorba Armena by various methods and to determine the quality and quantity of various antioxidants in the structure of this plant.

In DPPH and ABTS assays, extracts showed values close to Trolox and BHA standards. In the DPPH radical scavenging experiment, IC50 values of water and methanol extracts were determined as 25.02 and 20.11, respectively. In the ABTS radical scavenging experiment, IC50 values of water and methanol extracts were determined as 32,6 and 45,2, respectively. The results are expressed graphically and in IC50.

Total phenolic content for water and methanol extracts were expressed as 229,2±0,06 and 222,3± 0,02 mg gallic acid / gram extract respectively. The total flavonoid content for water and methanol extracts was expressed as 205,5±3,53 and 250,5±0.07 mg Quarcetin / gram extract respectively.

As phenolic profile, gallic acid, catechin, caffeic acid, siringic acid, epicatechin and rutine were determined by HPLC analysis.

Rosaceae Sanguisorba Armena can be used as preservative ingredients in the food and/or pharmaceutical industry. It also gives hope in further studies.

Keywords: Rosaceae sanguisorba armena, antioxidant activity, HPLC

ID:301-COP

Determination of Inhibition Effect of Plantago Major Plant Extract on Monoamine Oxidase Isoenzymes (MAO-A and MAO-B)

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Monoamine oxidase (MAO; EC 1.4.3.4) is a flavoenzyme containing flavin adenosine dinucleotide found in the outer membrane of the mitochondria of different cells. Oxidation of important neurotransmitters and intracellular plays an important role in the regulation of concentration. MAO has two isophores of the enzyme (MAO A and MAO B). In the treatment of Parkinson's disease, selective inhibitors of the enzyme MAO-B (monoamine oxidase-B) are used, whereas the inhibitors of MAO-A enzymes are widely used for the treatment of Alzheimer disease. Monoamine oxidase inhibitors (MAOI) are able to strongly inhibit the mitochondrial enzyme MAO isoforms and some other enzymes. Monoamine oxidase inhibitors (MAOI) are particularly important in the treatment of neurodegenerative diseases.

In this study, the inhibition effects of *Plantago major* plant extract on MAO isoenzymes (MAO A- B) were investigated. *P. major* has been used for different purposes and for traditional treatment throughout the world. Therefore, different biological activities of the plant have been investigated in scientific studies.

As a result of our studies, *P. major* methanol extract inhibited MAO-A enzyme 10 times better than MAO-B enzyme. IC_{50} values of *P. major* methanol extract was found 2.174 and 21.051 (µg/ml) for MAO-A and MAO-B, respectively. According to results, *P. major* methanol extract is selective MAO-A inhibitor, it can be used in the treatment of depression and anxiety disorders.

Keywords: *Plantago major*, monoamine oxidase, MAO-A, MAO-B

ID:305-COP

The First Synthesis of Novel Sulfonamides Derived from Dopamine Incorporating Urea

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Sulfonamide and urea functional groups have been using for several biological and synthetic purposes. Compounds containing sulfonamide functional group are not only known as antibacterial drugs but also have a wide range of studies in the fields industrial and pharmaceutical chemistry. For example, some sulfonamides exhibit herbicidal and fungicidal activities. Many organic compounds incorporating sulfonamide functional groups have the effect of anti-inflammatory, antiepileptic, antimigraine, anticancer, antitumor. They form potent inhibitors of carbonic anhydrases for the treatment of glaucoma and cysteine protease inhibitors for the treatment of Alzheimer's disease. They are also used as UV protection agents in the textile industry. In addition, many urea substituted compounds are used for diverse applications such as antimicrobial drug, tyrosine kinase inhibitors, anion and cation sensor etc. The aim of this study is to perform the first synthesis of dopamine analogue compounds containing both sulfonamide and urea functional groups. In this study, seven novel biologically active methoxylated dopamine analogues that functionalized with urea and N-alkyl sulfonamides were synthesized. Four N-alkyl substituted sulfonamides were converted into their phenolic derivatives. For this purpose, N-alkyl substituted sulfonamides derivatives 4-10 were synthesized on three steps starting from 3,4-dimethoxy phenethylamine. Some these compounds 4-7 were converted into their phenolic derivatives 11-14 via O-demethylation of arylmethyl ethers with excess BBr3.

Keywords: Ureas, sulfonamides, dopamine, acetylcholine esterase inhibitör

ID:306-COP

Design and Synthesis of Novel Asymmetric N-Amino Acid Substituted Sulfonamide Derivatives of Dopamine Incorporating Urea Moiety

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Compounds containing urea and sulfonamide groups are used for the treatment of various diseases. In this study, three urea analogues incorporating dopamine moieties that functionalized with asymmetric amino acid substituted sulfonamide were synthesized. For this goal, firstly 3,4-dimethoxy phenylethylamine was converted into N, N-dimethyl urea analogue in the presence of N, N dimethyl carbamoyl chloride and NEt3. The reaction of N, N dimethyl urea analogue with excess HSO_3Cl was yielded sulfonyl chloride derivative. Obtained sulfonyl chloride derivative was directly used for the synthesis of L-amino acid methyl ester substituted sulfonamides. The hydrolysis of amino acid methyl ester substituted sulfonamides was carried out under alkali basic condition. The result of this reaction gave amino acid substituted sulfonamides as a single enantiomer in moderate yield. These derivatives' structures were characterized by IR, 1H-NMR, 13C-NMR and elemental analysis. The synthesized novel asymmetric result products' enantiomeric excess was determined by using chiral HPLC.

Keywords: Amino acid, ureas, sulfonamides, dopamine, asymmetric synthesis

ID:315-COP

Investigation of the Effect of Leucine and Arginine Inhibitors on the Corrosion of CT-3, CT-10 and CT-20 Steels

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Due to its industrial importance, the corrosion inhibitors have been the subject of intensive research in recent years. So, the identification of effective inhibitors is of great importance in this respect. Amino acids are among potentially significant corrosion inhibitors due to their molecular structure. The aim of this study was to investigate the effect of Leucine and Arginine inhibitors on the corrosion of CT-3, CT-10 and CT-20 steels. For this purpose, gravimetric method, polarization and electrochemical impedance spectroscopy (EIS) methods were used. Gravimetric analyzes were performed with oil and gas condensate containing 3% NaCl, 0.04% CH_3COOH and 0.1N HCl. It was investigated the effect of the variables such as the molecular bonding state, molecular structure, temperature, pH and type of steel on the inhibition of the amino acids. Electrochemical parameters such as bk, Rp, Ks were calculated from the obtained data. In addition, Nyquist diagrams were drawn. Parameters such as Rt, Cit were calculated. The findings showed that these amino acids had significant effects on the corrosion of the steel species. Finally, corrosion velocity and mechanism were discussed according to the suggested models. It was determined corrosion velocity depends on medium temperature, electrolyte concentration, pH, electrolyte conductivity and concentration of inhibitors.

Keywords: Corrosion, amino acids, inhibitors

ID:316-COP

Investigation of the Effect of Glycine and Glutamic Acid Inhibitors on the Corrosion of CT-3, CT-10 and CT-20 Steels

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Corrosion is an industrially important problem and identification of effective inhibitors is of great importance in this respect. Amino acids are among potentially significant corrosion inhibitors due to their molecular structure. The aim of this study was to investigate the effect of Glycine and Glutamic acid inhibitors on corrosion of CT-3, CT-10, CT-20 steels. For this purpose, gravimetric method, polarization and electrochemical impedance spectroscopy (EIS) methods were used. Gravimetric analyzes were performed with oil and gas condensate containing 3% NaCl, 0.04% CH_3COOH and 0.1N HCl. It was investigated the effect of the variables such as The molecular bonding state, molecular structure, temperature, pH and type of steel on the inhibition of the amino acids. Electrochemical parameters such as bk, Rp, Ks were calculated from the obtained data. In addition, Nyquist diagrams were drawn. Parameters such as Rt, Cit were calculated and the effects of inhibitors on corrosion process were evaluated. The findings showed that these amino acids had significant effects on the corrosion of the steel species. Finally, corrosion velocity and mechanism for each amino acid were discussed according to the suggested models. It was determined corrosion velocity depends on medium temperature, electrolyte concentration, pH, electrolyte conductivity and concentration of inhibitors.

Keywords: Corrosion, amino acids, inhibitors

ID:327-COP

Synthesis and Investigation of Dielectric Properties of Copolymer-Carbon Nanotube Composites

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In this work, multi-walled carbon nanotube (MWNT) polymer grafting was performed by grafting to the surface. The copolymers of commercially purchased 2-hydroxyethyl methacrylate (HEMA) monomer and ethyl methacrylate monomer containing 5% and 10% HEMA were prepared. Polymerization reactions were carried out using the free radical polymerization method using the AIBN initiator. In the second stage of this study, multi-walled carbon nanotube was reacted with HNO_3 / H_2SO_4 oxidizing acids to form –COOH group on multi-walled carbon nanotube. The carbon nanotube functionalized with MWNT-COOH was then converted to the acylchloride derivative by reaction with thionyl chloride (SOCl2). Nanocomposites were prepared with poly (HEMA-co-EMA) synthesized at different percentages with MWNT-COCl. The synthesized structures were characterized by FT-IR and 1H-NMR. The DSC and TGA curves of the nanocomposites were obtained and the thermal behavior of the structures was investigated. SEM images were used to investigate the morphology of the structures. The electrical properties of the nanocomposites were investigated in terms of frequency. The nanocomposite samples weighed in a certain amount were pelleted under 5 tons pressure and the thickness of the pellet was measured with a caliper and both surfaces of the pellet were covered with aluminum foil. Samples were placed between gold plates. Dielectric parameters such as dielectric loss factor (DF), dielectric constants, conductivity and logarithm of conductivity were measured at different frequencies. It has been observed that dielectric constant and dielectric loss factor values of polymers decrease with increasing frequency values. The dielectric constant and dielectric loss factor tend to noticeably decrease in the low frequency range.

Keywords: Carbon nanotube, copolymer, dielectric properties

Acknowledgement: This work was supported by Firat University (Project No: FF.17.11)

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Synthesis, Characterization and Dielectric Properties of Copolymer Bearing Phenyl Hydrazine

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In this work, schiff base derivatives were obtained by reaction of commercially purchased phenyl hydrazine compound with hydroxide group bearing aldehyde derivatives. Aldehyde derivative o-vanillin, 3-ethoxy salicyl aldehyde compounds were used. Different monomers with hydrazine side groups were synthesized by reacting the synthesized schiff base derivatives and 4-chloro methyl styrene monomer. These monomers were polymerized by atom transfer radical polymerization and free radical polymerization methods and homopolymers were synthesized. The copolymer was then synthesized with these monomers using different monomers. Methyl methacrylate, ethyl methacrylate, n-butyl methacrylate, styrene, furfuryl methacrylate and 2- (t-butyl amino) ethyl methacrylate were used as monomers. Structural characterization of homopolymers and copolymers was performed. The synthesized structures were characterized by FT-IR, 1H-NMR and 13C-APT NMR. The thermal stability of the synthesized homopolymers and copolymers was investigated. The DSC and TGA curves of the polymers were obtained and the thermal behavior of the structures was investigated. The electrical properties of the polymers were investigated in terms of frequency. The polymer samples weighed in a certain amount were pelleted under 5 tons pressure and the thickness of the pellet was measured with a caliper and both surfaces of the pellet were covered with aluminum foil. Samples were placed between gold plates. Dielectric parameters such as dielectric loss factor (DF), dielectric constants, conductivity and logarithm of conductivity were measured at different frequencies. It has been observed that dielectric constant and dielectric loss factor values of polymers decrease with increasing frequency values.

Keywords: Phenyl hydrazine, copolymer, dielectric properties

Acknowledgement: This work was supported by Firat University (Project No: FF.18.33)

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ID: 334-COP

New, Efficient, Convenient Developed Methods for Synthesis of Hydroxyl Groups in Organic Molecules

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Cyclitols comprising polyhydroxy groups are important class of compounds found in the plants. The cyclitol derivatives possess some intriguing biological activities to plants such as glycosidase inhibition. The natural and synthetic cyclitol derivatives are widely used in pharmaceutical and food industries owing to their high solubility in water, antibiotic and antioxidant activities.[1] There are also several examples of using cyclitols as organic inhibitor in the corrosion and electrodeposition applications. Hence, the demand on the natural or synthetic cyclitol derivatives has been increasing steadily. A facile, efficient and eco-friendly method for the one-pot synthesis of 1,2/3-triols and 1,2-visinal-cis-diols from the allylic hydroperoxides and corresponding alkenes were developed by using cat.OsO4, $KMnO_4$, Na_2MoO_4, OsO4-Chiral Ligands and zeolite-confined osmium(0) nanoclusters as reusable catalyst in water/acetone mixture at room temperature. In these methods, the oxygen atom of the allylic hydroperoxide group was transferred to the double bond of the same molecule via intermediate metal oxides. For synthesis of visinal 1,2-diols in organic molecules, H_2O_2, a green oxidant, is using co-oxidant in oxidations reactions in room temperature. Moreover, a plausible mechanism was proposed for the catalytic oxidation of allylic hydroperoxide to the respective 1,2/3-triols and alkenes to vicinal cis-diols in middle reaction condition. All of the reaction yields were very good yields and the structures of the molecules were determined by 1H- and 13C-NMR spectra.

Keywords: Oxidation, hydroxyl groups, intramolecular atom transfer

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ID: 360-EOP

Investigation of The Effects of Some Nanoparticules on Human Carbonic Anhydras I and II

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Graphene (G) has given hope in many potential applications because of remarkable thermal, mechanical, and electrical properties since its discovery in 2004.[1] Among graphitic materials, graphene oxide (GO) mostly interests a great deal of attention because of their unusual features and easy-processabilities. GO has many oxygen-containing functional groups including hydroxyl, epoxide, carbonyl and carboxyl groups.[2]

Carbonic anhydrases (EC 4.2.1.1, CAs) are a family of metalloenzymes which contains a Zn ion, crucial for catalysis. CAs plays a pivotal role in a number of physiological and pathological processes. They catalyze a variety of reactions including the conversion of CO2 and H2O to HCO3− and H+.[3] Inhibitors of the carbonic anhydrases (CAs) are vital in treatment and prevention of many of diseases such as glaucoma, epilepsy, gastroduodenal ulcers, acid-base disequilibria and neurological disorders.[4,5]

IC50 values of graphen (G) and garphen oxide (GO) were calculated and kinetic investigations of G and GO showed different results compared to reference CA inhibitors. These nanoparticles investigated are encouraging agents which may be used as lead molecules in preparation of novel CA inhibitors that might be useful in medical applications.

Anahtar Kelimeler: Graphen oxide, nanoparticle, inhibition

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ID:362-COP

Bromo Peroxidation on Various Compounds Catalyzed by Tungsten(VI) Amino Triphenolate Complexes

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The important role of halogenated compounds in chemistry, combined with the poor economic and environmental efficiency of the common halogenating systems, makes catalytic haloperoxidation an attractive alternative, and consequently, an important challenge in modern catalysis.[1] In biological systems this reaction is often performed by heme-dependent or vanadium dependent haloperoxidases, in presence of hydrogen peroxide and halide anions, thus avoiding the use of hazardous, toxic, and corrosive molecular halogens.[2] Alkenes are important substrates for investigating active halogenating agents and also used widely in biomimetic studies of haloperoxidation with a metal catalyst. We have reported our previous results on the synthesis of an amino triphenolate tungsten (VI) complex and its catalytic activity in bromo and chloro haloperoxidation reactions.[3] The results have shown amino triphenolate tungsten (VI) complex has much better performances on bromo peroxidations compared as among three different metal complexes bearing the same ligand with vanadium (V), molybdenum (VI) and tungsten (VI).[3] On the basis of these results we decided to show the catalytic activity of the amino triphenolate tungsten(VI) complexes in bromoperoxidation reactions on a wide range of various substrates such as octene, hexine, 2-heptanone, decanal, benzonorbornadiene, benzofuran, indene, naphthalene.

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The Inhibition Effect of Some Indazoles on Human Glutathione S-Transferase Enzyme Activity

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Glutathione S-transferases (GSTs) are taken part of the detoxification of numerous xenobiotic molecules. Generally, environmental toxins, reactive metabolites like drugs, carcinogens, and oxidative stress products are detoxified by GSTs through the conjugation with glutathione, so that GSTs are toxicologically essential enzymes. Indazole-containing derivatives represent one of the most significant heterocycles in drug molecules. The differently substituted indazole derivatives carry various functional groups and exhibit varied biological activities; therefore, they received considerable interest in medicinal chemistry. In this study, GST was purified from human erythrocytes using simple, reproducible procedures, and the effect of indazoles on its activity was determined. It was found that indazoles exhibit inhibitor properties on the purified GST activity. IC_{50} values were found in the range of 0.261-1.125 mM, and K_i values were found in the range of 0.06±0.008 mM-0.93±0.09 mM. It was determined that 1H-indazole, 7-bromo-1H-indazole, 6-bromo-1H-indazole, 6-fluoro-1H-indazole, and 7-chloro-1H-indazole inhibited GST activity competitively while 4-chloro-1H-indazole, 6-chloro-1H-indazole, 4-bromo-1H-indazole 4-fluoro-1H-indazole, and 7-fluoro-1H-indazole inhibited GST activity non-competitive inhibition.

Keywords: Glutathione S-transferases, indazole, enzyme purification, enzyme inhibition

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Anti-Epileptic Drugs inhibit Human Glutathione S-Transferase

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Glutathione S-transferases (GSTs) catalyze the addition of the nucleophilic sulfur atom of GSH at the electrophilic center in a wide variety of hydrophobic molecules. Apart from their catalyticrole. GSTs are also capable of binding a number of exogenous and endogenous compounds noncatalytically. [1,2]. Epilepsy frequently needs long-term antiepileptic drug (AED) therapy. Treatment failure and poor adherence are very common in patients experiencing side-effects due to AEDs.[4] Approximately one third of the patients who are given AEDs as the suitable treatment do not achieve optimal seizure control [3]. In this study, GST was purified from human erythrocytes using simple reproducible procedures and the effect of anti-epileptic drugs (phenytoin, valproic acid, gabapentin and primidone) on its activity was determined. IC50 values were found in the range of 0.0044-0.049 mM and Ki values were found in the range of 0.0077±0.001-0.118±0.027 mM. It was determined that studied all drugs inhibited GST activity non-competitive inhibition.

Keywords: Anti-epileptic drugs, Glutathione S-transferases, enzyme purification, enzyme inhibition

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CHEMISTRY
POSTER PRESENTATIONS

ID:77-CPP

Effect of Temperature on Catalytic Performance of Ag/Chitosan-*Malva sylvestris* Beads in Reduction of 4-Nitrophenol by Sodium Borohydride

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In the study, the catalytic activity of Ag/chitosan-*Malva sylvestris* beads in the reduction of toxic 4-nitrophenol with sodium borohydride to less toxic 4-aminophenol was investigated at varying temperatures. Powdered *M. sylvestris*, an edible wild plant, was first entrapped in chitosan gel beads and then chitosan matrix was cross-linked with glutaraldehyde. The cross-linked chitosan-M. Sylvestris beads used as support for deposition of silver particles. Silver particles were deposited on the surface of the beads through a simple heating treatment of AgNO3 solution in water. Ag/chitosan-*M. sylvestris* beads were used to catalyse the reduction of 4-nitrophenol. The catalytic performance of Ag/chitosan-M. Sylvestris beads was studied at 26, 32, 39, 43 and 48°C. In reduction experiments 10 mg of Ag/chitosan-*M. sylvestris* beads was used to reduce 1.0 mL of 4-nitrophenol solution (1.0x10-4 M) with 7.6 mg of NaBH4. The reactions were monitored spectrophotometrically using Uv-vis spectrophotometry. The results were listed in the following table. Excellent reaction times were observed as the temperature was increased. The study demonstrated that temperature greatly affects the reduction time. The catalyst should be used at elevated temperatures when shorter operation times are required.

Temperature (°C)	Reduction time (min)
26	17.16
32	2.10
39	0.28
43	0.26
48	0.15

Keywords: Nitro group reduction, silver particles, chitosan composite beads

ID:128-CPP

Inhibition Effects of Aryl Methanesulfonates on Cholinesterase Enzymes (AChE, BuChE)

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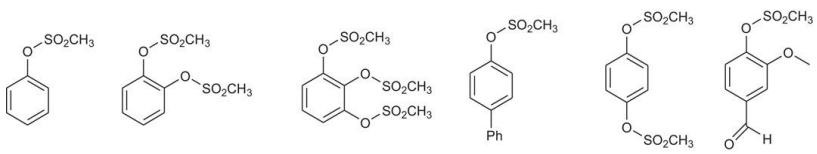
Acetylcholinesterase (AChE) and butyrylcholinesterase (BuChE) are enzymes that play an important role in the communication between nerve cells. Excess hydrolysis of acetylcholine by these enzymes causes loss of communication, decreased brain function and the emergence of Alzheimer's disease (AD [1]). AD treatment is based on adjusting the level of acetylcholine. Therefore, cholinesterase inhibitors are gaining importance in the treatment of cognitive disorders. Donepezil, galantamine and rivastigmine are drugs with cholinesterase inhibitory effect [2]. In this studuy, we invetigate the inhibition effect of aryl methanesulfonates 1-6 on cholinesterase enzymes. Inhibitor 4 displayed high inhibitory effects on (AChE) and (BuChE) with a IC50 value of 0.876 and 0.885 µM respectively [3].



1 2 3 4 5 6

Keywords: Aryl methanesulfonate, cholinesterase, Inhibition,

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Synthesis of Oxopropanenitrile Derivatives from Reaction of Isaxazole Derivatives Compounds with Aryl Bromide in the Presence of $Pd(OAc)_2$

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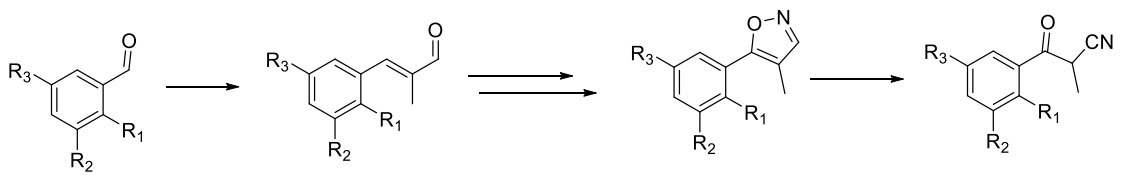
Benzoylacetonitrile is an important group because it can be converted to different heterocyclic compounds such as triazole, imidazole, 4-aminopyrazole, 5-aminoisoxazole, isoxazole and pyridine.1 Also, this compounds were used as starting material for the preparation of biologically active compounds such as antimicrobial,2 anti-inflammatory agents,3 and HIV inhibitors.4

After α,β-unsaturated compounds (3 and 4) were obtained from reactions of 2,3-dimethoxybenzaldehyde (1) and 2,5-dimethoxybenzaldehyde (2), reactions of them with hydroxylamine hydrochloride, DDQ (2,3-Dichloro-5,6-dicyano-1,4-benzoquinone) and aryl bromide in the presence of Pd(OAc)2 gave the products 7 and 8, respectively.



1) R_1=R_2=OMe, R_3=H
2) R_1=R_3=OMe, R_2=H
3) R_1=R_2=OMe, R_3=H
4) R_1=R_3=OMe, R_2=H
5) R_1=R_2=OMe, R_3=H
6) R_1=R_3=OMe, R_2=H
7) R_1=R_2=OMe, R_3=H
8) R_1=R_3=OMe, R_2=H

Keywords: Bayrak

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ID:291-CPP

Rosmarinic Acid Content and Radical Scavenging Ability of Some Thyme and Oregano Species

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Rosmarinic acid is a natural polyphenolic compound found in many plants such as Artemisia capillaris, Calendulla officinalis, Melissa officinalis, Salvia officinalis. As a result of examinations performed in various tissues, rosmarinic acid has antioxidant, antiviral and anti-inflammatory effects. Considering these properties, it has been suggested that it can be protective by affecting molecular changes in neurodegenerative processes. As a matter of fact, rosmarinic acid was found to have anti-inflammatory effect in Japanese encephalitis, a mosquito-borne viral disease. Also Rosmarinic acid was found to reduce the formation of reactive oxygen species. Many such examples demonstrate the importance of rosmarinic acid.

In this study, rosmarinic acid (RosA) contents of Thymus convolutus, Thymus pectinatus, Thymus vulgaris and Origanum acutidens were determined using HPLC-DAD. According to the result RosA content of plants was ranged 3.78 to 9.55 mg/g extract. Origanum acutidens was found rich in RosA when compared Thymus species. The radical scavenging ability (RSA) of methanol extracts of interested plants were evaluated by DPPH assay. RSA's of the extracts were found to be related to the amount of rosmarinic acid content. IC50 values of DPPH assay were ranged 10.11-26.59 µg/mL. The methanol extract of Origanum acutidens has a great radical scavenging activity when compared Trolox and the others.

Keywords: Rosmarinic acid, thymus convulutus, thymus pectinatus

ID: 336-CPP

Using Graphitic Carbon Nitride as a Sensitizer in Photooxygenation Reactions

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Carbon nitrides are a class of polymeric materials consisting mainly of carbon and nitrogen. They can be obtained from carbon materials, through substitution of the carbon atoms by nitrogen, and become appealing candidates for a variety of applications. Like most carbon materials, carbon nitrides also have a long history, which can be traced back to 1834, when a material prepared by Berzelius was named "melon" (linear polymers of connected tri-s-triazines via secondary nitrogen). However, the potential value of this material was not fully recognized until recent decades, most likely because of its chemical inertness, insolubility in acidic, neutral or basic solvents, and its unrevealed structure. Singlet oxygen can be prepared by physical or by chemical methods. The physical methods of preparative value include electrical corona discharge in O_2 at low pressure (right), direct two-photons excitation, and photosensitization. Among the chemical methods, the most important are the decomposition of hydrogen peroxide by hypochlorite (OCl–) or hypobromite (OBr–) and the decomposition of some ozonides. Direct photoexcitation of $3O_2$ to $1O_2$ is a spin-forbidden transition. Absorption coefficients of oxygen are therefore very low level in reaction media. We use graphitic carbon nitride as a sensitizer in photooxygenation reaction in room temperature in good yields.

Keywords: Graphitic carbon nitride, singlet oxygene, sensitizer in photooxygenation reaction

Acknowledgments; This work was mostly conducted at the Department of Chemistry, Atatürk University and financially supported by the Scientific and Technological Research Council of Turkey (TUBITAK, Project No. 217Z028)

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PHYSICS
ORAL PRESENTATIONS

ID:75-POP

The Analysis of the Electrical and Photodiode Properties of Al/LiF/n-Si/Al

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Abstract: In this study, Al/LiF/n-Si/Al Schottky diode was obtained by used to n-Si wafer which has one side polished, 1-10 Ω/cm resistivity, 400 µm thickness and [100] direction. Firstly, chemical cleaning process of Si wafer was performed and Al metal was evaporated on one surface of n-Si wafer for back contact. Then, Lithium fluoride (LiF) as interface layer was deposited on the other surface of wafer by thermal evaporation. Finally, Al metal were depositedon LiF film by thermal evaporation method. Electrical measurement devices was performed with the current-voltage (I-V) measurements at the room temperature in dark

and 10 mW/cm2. The basic diode parameters such as ideality factory (n) and barrier height (Φb) was calculated of Al/LiF/n-Si/Al device using thermionic emission (TE) theory. Also, ideality factory (n) and barrier height (Φb) and series resistance (Rs) of the device were calculated from I-V measurements by using the Cheung and Norde functions at 300 K. Fermi energy level, diffusion potential, carrier concentration and barrier height were calculated from the capacity-voltage (C-V) measurements of device as a function of frequency.

Keywords: Schottky diode, interface layer, nanodevice

ID:108-POP

Calculation of Absorption Parameters for Some Selected Minerals in the Energy Range of 1 keV to 100 GeV

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Theoretical information about the absorption parameters for different material is very useful for the different research areas such as trace element analysis, medicine, physics, environmental science, etc. In this study, mass attenuation coefficients, molecular cross sections, atomic cross sections, electronic cross sections, effective atomic numbers and

effective electron densities were calculated in the energy range from 1 keV to 100 GeV for $MnCO_3$, $ZnCO_3$, $SrCO_3$ and $CdCO_3$. It has been observed that photoelectric effect, Compton scattering and pair production process are predominate in different energy regions.

Keywords: Mass attenuation coefficient, effective electron density, mineral

ID:119-POP

Validation of OpenFOAM for Modelling of Wind Flow in Urban Areas

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Nowadays, the problem of human interaction with the environment represents a new and actively developing research field of applications of mathematical modeling methods. As the industry, the energy consumption, transport develops, the anthropogenic pollution of the biosphere, caused by human activity, is continuously increasing. Despite the fact that 35% of the population of Kyrgyzstan lives in cities, most of the urban population, as well as throughout the world is exposed to low air quality [1]. Consequently, in order to improve

the air quality in urban areas, strategies for improving urban air quality are need to be evaluated and implemented.

Numerical modeling of the aerodynamic characteristics of various city buildings and structures is quite laborious research because of the complex geometric shapes, as well as because of the complex unsteady flow itself. At the same time, the complexity of the flow involves not a single, but a number of calculations. Interference of the spectrum of different vortex flow structures and scales between different buildings are the main reason of complexity of the problem.

The paper presents the results of mathematical simulation of the incompressible air flow around the different models of a prismatic city buildings. The numerical simulation is based on the stationary three-dimensional Reynolds averaged Navier-Stokes equations. To account for the influence of turbulent pulsations on the characteristics of the average flow field, two-parametric RANS turbulence models were used, which are based on the hypothesis of linear and nonlinear eddy viscosity hypothesis. Numerical calculations were carried out by using an open source package OpenFOAM solver simpleFoam. The numerical results are compared with the data of the Architectural Institute of Japan, Japan.

Keywords: Wind Effect, Natural Obstacle, OpenFOAM

ID:120-POP

Measurement of Electromagnetic Field Emitted by Wi-Fi Modems and Mobile Phones

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Wi-fi systems are known as short-range communications between users and base stations as known. Wi-fi uses Radio Frequency (RF) or infrared technology instead of cable to provide communication between computers and other devices in the network. Mobile phones are based on a large wireless network that includes information exchange between radio frequency (RF) signals and base stations. Wi-fi and mobile phone signals have similar effects. There are more than 1.4 million base stations around the world and this number has increased significantly with the transition to third generation technology. This increase concerns people about the effects of RF waves on mobile phones emitted by mobile

phones, which have become increasingly important in everyday life. Therefore, in this study, it is aimed to measure the electromagnetic radiation emitted by wi-fi modems and mobile phones which are indispensable devices of life and to evaluate the results. Before the measurement, electromagnetic field sources other than mobile phones were removed. The distance-dependent electric field (E), the magnetic field (H), the equivalent plane wave power density (S), were measured using the Spectran HF-6085 V4 portable spectrum analyzer. The measurements were repeated in the same way for the wi-fi modem. The distance of the radiation meter from the mobile phone and the wi-fi modem was adjusted to 1 cm, 10 cm, 30 cm, 60 cm and 100 cm. For each distance, the results were recorded by measuring the electromagnetic radiation emitted by the mobile phone and the wi-fi modem. Measurements were carried out for at least 6 minutes, as indicated by the national and international institutions, in order to ensure that the measurements are reliable. According to the results, it was observed that the electromagnetic radiation emitted by the mobile phones and wi-fi modem decreased as the distance increased.

Keywords: Electromagnetic field, radio frequency, equivalent plane wave power density

ID:121-POP

Investigation of The Change of Instrumental Detection Limit Depending on Atomic Number and Sample Matrix Composition with Using Wavelength Dispersive X-Ray Fluorescence Spectrometry

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The instrumental detection limit (ILD) is the smallest concentration or absolute amount of analyte that has a signal significantly larger than the signal arising from a reagent blank. ILD value varies with sample matrix composition and the atomic number of sample. In this

study, it is aimed to investigate the change of ILD values due to atomic number and sample matrix composition. For this purpose, the elements Ti, V, Cr, Mn, Fe, Ni, Cu, Zn, As, Y, Zr, Nb, Mo, Ag, Cd, Sb, Nd, Gd, Er elements and binary and triple combination of these elements have been used as samples. The determination of ILD has been investigated by using WDXRF (Wavelength dispersive X- ray fluorescence) spectrometry. The detection limit value will worsen as long as the wavelengths or low energies approach. For this reason, elements with an atomic number greater than 20 have been selected for better detection limit values. As a result, it has been observed that the ILD value has reduced because the degree of absorption has reduced when the matrix composition has lightened. In addition, when the change of ILD values due to atomic number has been investigated, it has concluded that as the atomic number increased in the middle wavelength region, the ILD values have better and the ILD values worsened when approaching the short wavelength region.

Keywords: Electromagnetic field, radio frequency, equivalent plane wave power density

ID:124-POP

Measurement of Electromagnetic Radiation Emitted by Devices Used in Office Environments

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In this study, it is aimed to measure the electromagnetic field emitted by the devices used in office environments and to evaluate the results in terms of occupational health and safety. The rapid increase in technology and the increase in the use of electronic devices mean that the electromagnetic field capacity increases rapidly. The electromagnetic field has serious effects on living things. In order for this effect to be minimized, the current situation needs to be determined. In this study, a hand-held device that can take immediate and continuous measurements in a wide frequency range was used and instantaneous and time-dependent measurements were taken at certain regions. In

addition, Dect phones, laptops, desktop computers, photocopiers and printers, such as the distance according to the RF sources of electromagnetic field strength values have been determined. For this, electromagnetic field strength values at different distances, 1 cm, 10 cm, 30 cm, 60 cm and 100 cm, have been determined. Each measurement, has been lasted at least six minutes as advised by national and international organizations to obtain a significant result as a result of the measurements, the measurement values related to the distance did not exceed the occupational exposure limit of ICNIRP. Similarly, a measurement value hasn't been seen above the limit values determined for the single device in our country. However, considering the employees' exposure periods, it has been concluded that the electromagnetic field emitted by the devices could adversely affect the health of the employees and therefore, the employees should be informed about this by organizing trainings in order to take necessary precautions.

Keywords: Electromagnetic radiation, occupational exposure, occupational health and safety

ID:136-POP

Examination of Some Basic Electrical Properties of Au/p-Si/Al, Au/GO/p-Si/Al and Au/Au-RGO/p-Si/Al Structures

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To examine the effects of GO and Au-RGO interface layers on Schottky diode parameters, Au/p-Si/Al, Au/GO/p-Si/Al and Au/Au-RGO/p-Si/Al structures were fabricated at room temperature, respectively. Graphene oxide (GO) and reduced graphene oxide with Au

nanoparticles (Au-RGO) thin films were grown on polished surfaces of chemically cleaned p-Si semiconductor parts by the spin coating technique at 1000 rpm for 1 min, respectively. The GO and Au-RGO were synthesized using graphite powder by modified Hummer's method. Before the GO and Au-RGO thin films were deposited, the ohmic contacts were made to p-Si semiconductors with Al metal. Au metal on the GO, Au-RGO thin films and p-Si was evaporated in vacuum and thus the Au/p-Si/Al, Au/GO/p-Si/Al and Au/Au-RGO/p-Si/Al structures were obtained. The diameter of the circular gold contacts was determined as 1 mm. By using the current-voltage measurements taken at room temperature, rectifying ratio, interface state density and series resistance values of diodes with and without interfacial layer were calculated by means of thermionic emission method. The results were compared and interpreted.

Keywords: Schottky diode

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ID:137-POP

Time-Based Analysis of The Characteristic Parameters of AuAgCu(2:1:1)/n-Si, AuAgCu(1:2:1)/n-Si and AuAgCu(1:1:2)/n-Si Junctions

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AuAgCu (2: 1: 1), AuAgCu (1: 2: 1) and AuAgCu (1: 1: 2) alloys were prepared using Au, Ag and Cu metals by thermal evaporation technique. n-Si semiconductor wafer was used as base material in the fabrication of junctions. The one side of the chemically cleaned n-Si semiconductor wafer, ohmic contact was made with Ti metal. Then the semiconductor was divided into three parts. On the other side of the n-Si semiconductor substrates, these alloys were evaporated and AuAgCu(2:1:1)/n-Si/Ti, AuAgCu(1:2:1)/n-Si/Ti and AuAgCu(1:1:2)/n-Si/Ti junctions were obtained, respectively. These three samples were placed in the sample holders to determine the characteristic parameters as a function of aging time, and the current voltage (I-V) measurements at room temperature and in the dark were performed at certain time periods (1, 7, 15, 30, 90, 180 and 365 days). The characteristic parameters such as ideality factor (n), barrier height (Φb), series resistance (Rs) and leakage current (I0) of these junctions were examined by time with the help of thermionic emission theory.

Keywords: Ohmic contact

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ID:144-POP

Investigation of Pb Dopant Effect on CdO Thin Films

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The undoped and lead (Pb) doped cadmium oxide (CdO) thin films were grown by spray pyrolysis technique on soda lime glass substrate. The undoped and Pb doped CdO thin films have been analyzed with optical, structural and morphological by UV-vis spectroscopy, XRD (X-ray diffraction), and SEM (scanning electron microscope) measurements. The optic band gaps of undoped and Pb doped CdO thin films were calculated with the help of absorption measurements. Absorption measurements of

undoped and Pb doped CdO thin films have showed that the band gap increased of rising Pb dopant in CdO. The optical transmittance spectra measurements have showed undoped CdO thin films varied with the Pb dopant. To be able to know about the crystal structures of undoped and Pb doped CdO thin films XRD measurements were taken and XRD measurements of undoped and Pb doped CdO thin films show the cubic structures and have (111), (200), (220), (311) and (222) peaks. To examine how the Pb dopant effected on the surface morphology of the undoped CdO thin films SEM images of the samples were taken and SEM images illustrate that all of the samples have homogeneous smooth surface and the samples surfaces varied with the Pg dopant.

Keywords: CdO, sprey, pb dopant

ID:147-POP

The Annealing Effects of the Electrical Characteristics in Au-Cu/n-GaAs/In and Ag-Cu/n-GaAs/In Schottky Diodes by Means of Different Ratios Au-Cu and Ag-Cu Alloys

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In this study, the annealing effects of the electrical characteristics in Au-Cu/n-GaAs/In and Ag-Cu/n-GaAs/In Schottky diodes are investigated with different ratios Au-Cu and Ag-Cu alloys. The energy dispersive X-ray analysis (EDAX) spectroscopy was used to characterize Au-Cu and Ag-Cu alloys ratio (25%-75%, 50%-50%, 75%-25%) and it showed that the expected different ratios metal percent exist in the alloys. The Au-Cu/n-GaAs/In and Ag-Cu/n- GaAs/In Schottky diodes have demonstrated clearly rectifying behavior by the current-voltage (I-V) curves at room temperature. The annealing effect on devices parameters such as ideality factor, barrier height, series resistance and rectifying ratio are investigated compared with each other with different methods. It has been shown that the characteristic parameters of these diodes are not remarkably changed in the thermal annealing up to 3000C and the Au-Cu/n-GaAs/In, Ag-Cu/n-GaAs/In Schottky contacts have given further improved Schottky characteristics as a result of sufficiently the annealing temperatures.

Keywords: Different ratios of Au-Cu and Ag-Cu alloys, schottky diodes, thermal annealing

ID:148-POP

Different Ratios of Au-Ag and Au-Cu Alloys for Electrical Characteristics of Au-Ag/n-GaAs/In and Au-Cu/n-GaAs/In Schottky Diodes in the Wide Temperature Range

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In this paper, we report the preparation and characterization of Au-Ag /n-GaAs/In and Au-Cu/n-GaAs/In Schottky diodes with different ratios of Au-Ag and Au-Cu alloys. The Au-Ag and Au-Cu alloys ratio (25%-75%, 50%-50%, 75%-25%) have been characterized by energy dispersive X-ray fluorescence (EDXRF) spectrometry and expected metal percentages were found approximately in the alloys. The I-V characteristics of the Au-Ag/n-GaAs/In and Au-Cu/n-GaAs/In Schottky diodes have been studied in the temperature range of 100-320 K by steps of 20 K, using thermionic emission theory to calculate the Schottky diode parameters. The barrier height was found to increase, while the ideality factor and the series resistance were found to decrease with increasing temperatures. The strong temperature dependence behavior of barrier height and ideality factor is attributed to the Schottky barrier inhomogeneities.

Keywords: Au-Ag and Au-Cu alloys, schottky diodes, temperature dependent

ID:170-POP

Synthesize and Characterization of NZT: Eu Glasses for Optoelectronic Applications

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Glasses containing lanthanides have an important role in optoelectronics. In this study glass series of Nb_2O_5.ZnO.TeO_2:Eu_2O_3 (NZTE) that is considered to be used in optoelectronic applications has been synthesized with melt-quenching method at an approximate temperature of 900℃. In the series, Eu_2O_3 changed placed with ZnO in the interval of 0-3% mole. Structural, optical and some basic physical properties of the

synthesized glasses were examined. Structural properties were examined with XRD, FTIR and DSC. XRD patterns show that samples have amorphous structure far from crystallization. Glass network containing high ratio of TeO_2 was determined to consist of TeO_4 trigonal bipyramide (~570-600 cm-1) and TeO_3 trigonal pyramide (~660-760 cm-1) structural units by FTIR analysis. Tg, Tc, Tm and Delta T thermal parameters were obtained with DSC measurements. According to this, Tg changed within the region of 340-345oC, and Tc changed within the region of 465-529 oC with Eu_2O_3 doping. Optical property characterization was determined with optical property characterization and by evaluating absorption values. In the optical absorption spectra of glasses containing Eu_2O_3, 7 basic bands were determined in the visible region and the intensities of these bands were observed to increase with the increasing amount of Eu^{+3} within the structure. While optical band gap decreased regularly from 3.40 eV to 3.13 eV, Urbach energy showed a regular increase with increasing amount of Eu_2O_3 and changed between the interval of 0.177-0.2 eV. Refraction index due to band gap was calculated to be within the interval of 2.290-2.363. Density among the basic physical parameters increased regularly with increasing amount of Eu_2O_3, however on the contrary molar volume decreased. As a result, a new glass structure was successfully synthesized to be used in optoelectronic applications and their characterization presenting their various properties was performed.

Keywords: Tellurite glasses, lanthanides, Nb_2O_5

ID:176-POP

About Depletion Time Constant of Differential Depletion Region When the Parallel Magnetic Field Applied to Interface of Schottky Diode

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This work is contained to issues of “depletion time constant” on the Schottky MS contact into MS interface under the strongly parallel magnetic field. Schottky diodes were

produced by us. Trio metal (Co, Fe, Ni) was used onto the n-type semiconductor as front contact. I-V and C-V data were saved under the variable magnetic field as parallel to MS plane. The variable magnetic field was occurred by a tiny cubic part. Magnet part applied by fives step. Magnetic field measured as very strong at the end of the experiments when applied magnetic part from 5 to 30. Then, differential depletion resistance and tDTC = RDL.Cp calculated in the case of forward bias. Then differential time constant versus applied voltage graphic was drawn. It was shown that the first, slope decreases to the built-in potential value, the second, it increases. So, the slope has got to a triangulation point on the built-in potential value. The same result was shown up in the case of reverse bias. The slope decreases nearly linear in built-in potential value. Then, it increases exactly linearly to zero (from left to right). Briefly, a Schottky diode has got the four regions; Schottky contact, depletion region, semiconductor base and Ohmic contact base. In addition, depletion resistance is to parallel to "parallel capacitance" in any equivalent Schottky diode circuit. As a conclusion, differential time constant is obtained in term of voltage and magnetic part number. Significant and interesting results were come out.

Keywords: Depletion time constant, differential depletion resistance, schottky diode

ID:177-POP

A Comparison Differential Depletion Length by Debye Length for Schottky Diode under the Incident Light

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This research is examined to issues of "differential depletion length and Debye Length" on the Schottky MS contact into MS interface under the incident white light onto the semiconductor side. Schottky diodes were yielded by us us. Quartet metal (Au, Co, Ni and Pd) was used onto the n-type semiconductor as front contact. I-V and C-V data were saved. Then differential depletion length and the Debye Length ratio calculated relative to applied voltage. When Debye length connected with a differential depletion length, depletion length could be understandable. Generally, a Schottky diode has got the four regions; Schottky contact, depletion region, semiconductor base and Ohmic contact base. In addition, metal-semiconductor contact has interfacial region between metal side and semiconductor side. That it calls "space charge region". That region contains interior regions. One of them is Debye length or Debye region. Debye length depends on some important parameters. Its formula is LDebye-Length= (ɛɛskT/NDe2)1/2. This formula works for the semiconductor material. Also, the Debye Length formula is different for electrolyte solution and plasma. The Debye length arises naturally in the thermodynamic description of large systems of mobile charges. Debye length explains by the Debye-Dukel theory. Debye formula describes the effective distance a lot of the mobile charges or ions. As a conclusion, differential depletion length has been examined in terms of Debye length. Significant and interesting results were obtained.

Keywords: Debye length, differential depletion length, schottky diode

ID:178-POP

Attenuation coefficients of gamma rays for Cu2WS4 composite at different photon energies

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X- and gamma rays have been used widely in different nuclear, medicine and industrial technologies such as radiation therapy, diagnostic imaging, radiological, nuclear and industrial applications. Therefore, the necessity of shielding materials gains rapid attention to attenuate the biological effects of such radiation. For this aim, unidirectional basalt fiber reinforced epoxy resin matrix composite composited of different concentrations of Cu_2WS_4 nanocrystal fillers have been fabricated through a simple and low-cost hot-injection technique. Gamma ray attenuation coefficients for Cu_2WS_4/epoxy composite have been experimentally investigated as an alternative absorber. The mass attenuation coefficients have been measured at various photon energies between 81 and 1333 keV using a high purity germanium (HPGe) detector based gamma spectrometer. Radionuclides with point geometry namely ^{133}Ba, ^{137}Cs, ^{60}Co and ^{22}Na were utilized as gamma ray sources to count the emitted photons in the shielding measurements. The values of half value layer (HVL) have been estimated and discussed in detail. Additionally, the obtained HVL results have been compared to those of previous published shielding materials and showed that Cu_2WS_4 sample may be a good choice shielding material due to the superiorities provided by the combinations forming composite. The obtained data may be helpful in various radiation shielding applications.

Keywords: Radiation shielding, HPGe, linear attenuation coefficient

ID:183-POP

Determination of High Entropy Alloys AlCoCrFeNi, AlCoFeNi and CoCrFeNi Neutron and Gamma Radiation Absorption Parameters

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High Entropy Alloys (HEA) concentration consist of four basic or more elements ranging from 5 to 35%. It is used in many industrial areas because of its high mechanical and corrosion resistance. In order to use these alloys in nuclear applications, we have determined the parameters of neutron and gamma radiation shielding. The three type High Entropy Alloy samples (AlCoCrFeNi, AlCoFeNi, CoCrFeNi) have been produced by powder metallurgy method. For gamma -rays shield parameters total macroscopic cross section, mass attenuation coefficient and half value layer (HVL), for neutron radiation total macroscopic cross section, mean free path and transmission numbers have been calculated by using Monte Carlo Simulation Geant4 code and WinX-com program. In addition, neutron absorption equivalent dose rates have been determined using 241Am-9Be an average 4.5 MeV energy fast neutron source. Obtained results has been compared with commonly use paraffin and 316LN stainless steel shield materials in the nuclear applications. Both theoretical simulation and experimental results, it shown that, neutron shielding ability of the High Entropy Alloy samples (AlCoCrFeNi, AlCoFeNi, CoCrFeNi) is higher than the 316LN stainless steel and paraffin. Consequently both experimental and theoretical works are show that this (HEAs) alloy samples have the shielding capacity gamma and neutron radiation leaks in nuclear applications.

Keywords: Neutron, shielding, gamma

ID:184-POP

Research of Pharmaceutical Active Ingredients Neutron and Gamma Radiation Absorption Capacity by Monte Carlo Simulation GEANT4 Code

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Radiation is used commonly many areas such as industry, mine, medicine, energy, agriculture, military and archeologic. Radiation leak may during these applications, serious harm to employees and the environment. Any a nuclear accident or in the use of at the nuclear weapon, high radioactive particles such as Xenon-131, Iodine-131, Cesium-137 and Strontium-90 may be released. This particles are emit alpha, beta and especially ionize gamma radiation. These particles are emit alpha, beta and especially ionize gamma radiation. The radiation entering the cell according to its energy can break the DNA chain and ionize the water, resulting in the death of the cell or the genetic damage of the DNA. The cell can be protected from radiation in two ways, either by feeding the cell with various vitamins and proteins, or by using agents that absorb the radiation in the cell. In this study, the neutron and gamma radiation absorption parameters were determined of the five different drug active substance it used commonly in drug production. In this study, the neutron and gamma radiation absorption parameters were determined of the five different drug active substance such as Paracetamol ($C_8H_9NO_2$), Ampicillin ($C_{16}H_{19}N_3O_4S$), Ibuprofen ($C_{13}H_{18}O_2$), Acetylsalicylic acid ($C_9H_8O_4$) and Amoxicillin ($C_{16}H_{19}N_3O_5S$) which these is used commonly in drug production. For gamma -rays shield parameters total macroscopic cross section, mass attenuation coefficient and half value layer (HVL), for neutron radiation total macroscopic cross section, mean free path and transmission numbers have been calculated theoretically by using Monte Carlo Simulation Geant4 code and WinX-com program. As a result, it has been shown that these drug active substances can be used in the production of any drug against radiation by determining these parameters.

Keywords: Neutron, shielding, gamma

ID:185-POP

Improving Neutron and Gamma Radiation Shielding Properties of Polysiloxane/Cr_2O_3 –F_2O_3 Added Composite Material

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Polysiloxanes ($C_8H_{24}O_4Si_4$) are used commonly due to low and high temperature performance, electrical insulation or in high resistance to weathering and chemical corrosion in area such as textile industry, cosmetics, medical/pharmaceutical preparations, paper coatings, defoamers, paints, coatings, waxes, mechanical fluids. The polysiloxanes to use at the radiation shielding field, in this study, eight different composite shield materials have been developed and produced. To increasing radiation shielding capacity of composite materials certain proportions Cr_2O_3 and Fe_2O_3 have been add. Mixing ratios of composite materials have been determined by using the GEANT4 code of the Monte Carlo simulation program. Neutron shielding parameters such as the total macroscopic cross section, mean free path and transmission number have been theoretically calculated by using GEANT4 simulation code. In addition to, experimental absorbed dose measurements have been carried out by using 4.5 MeV energy 241Am-9Be neutron source and BF3 gas detector. To determined gamma radiation shielding parameters, the mass attenuation coefficient and half-value layer (HVL) have been calculated by using VinXCom software. Obtained results have been compared with paraffin, conventional concrete. The results show that both absorbed ability radiation of new composites much better than these reference materials and with the increment of Cr_2O_3 and Fe_2O_3 added, shielding properties increases.

Keywords: Neutron, shielding, gamma

ID:186-POP

Neutron and Gamma Radiation Dose Transmission Measurements for New Refractory Heavy Concrete Samples Including $MgO-Cr_2O_3-Fe_2O_3$

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Radiation is used at the industry, medicine and especially nuclear power plants etc. In the nuclear energy plant is working at the very high temperatures due to fission reactor concepts and fast neutron spectra so high resistance temperature materials are plays an important role at the shielding studies. To be used as radiation shielding in the nuclear power plants, in this study five different concentration new refractory heavy concrete samples have been designed and produced. Natural MgO-Cr_2O_3-Fe_2O_3 have been used in production of the samples. Mixing ratios have been determined by Monte Carlo simülation program Geant4 code. Fast neutron total macroscopic cross section, mean free path and transmission number have been calculated by Geant4 code. Moreover neutron absorbed dose measurements have been carried out by using average 4.5 MeV energy 241Am-9Be fast neutron source BF3 gas detector. Gamma radiation the mass attenuation coefficient (MACs), mean free path (MFPs) and half-value layer (HVL) have been calculated at the 0.1-10 MeV energy range by VinXCom software. High temperature resistant of the samples have been tested at 600-1100 0C. The results have been compared with paraffin, conventional concrete and hematite heavy concrete. According to these reference samples, the new refractory heavy concrete samples have high absorption ability for both fast neutron and gamma radiation. Thus, this new samples can be used to shielding studies radiation applications.

Keywords: Neutron, shielding, gamma

ID:204-POP

Investigation of the Radiation Attenuation Properties for BiI_3 Doped Polymer Concretes

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Polymer concretes using polymers as binders have higher tensile strengths and higher compressive strengths than normal concretes. Polymers such as polymethyl methacrylate, polyester, epoxy and furan are used as binders in this type concretes. Because the polymer concretes have a high strength and elasticity modulus, they are used in bridge, and floor constructions and tunnels, highways and mining constructions which need to be done immediately. Concretes are excellent protective materials which have satisfactory mechanical properties and are relatively low in cost, used in both neutron and gamma-ray attenuation. Since the polymer concrete is a material with better properties than normal concrete in many subjects, polymer concrete samples were selected in the present study.

In this study, 5%, 10% and 20% BiI_3 additive polymer concrete samples were prepared by replacing with polyester resin to investigate the gamma-ray attenuation characteristics. To investigate the gamma radiation attenuation properties of these samples, some parameters such as mass attenuation coefficient, linear attenuation coefficient, radiation protection efficiency, half-value layer, tenth value layer, mean free path and effective atomic number were obtained experimentally and theoretically at 22 different energies ranges from 59.54 keV to 1408 keV. The experiments were carried out using a HPGe detector with a resolution of 380 eV at 5.9 keV, 585 eV at 122 keV and 1.8 keV at 1330 keV, and gamma-rays emitted from the 241Am, 152Eu, 137Cs, 133Ba, 60Co, 57Co, 54Mn and 22Na radioisotope point sources at transmission geometry. When the obtained results were examined, it was observed that coded with BiI_3(20%) sample had better gamma radiation attenuation characteristics than the other selected samples.

Keywords: Radiation shielding, gamma-rays, polymer concrete

ID:212-POP

Calculation of Radiation Interaction Parameters for Commonly Used Polymers in Daily-life

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Polymers is a chemical compound with molecules bonded together in long repeating chains. Because of their structure, polymers have unique properties that can be tailored for different uses and they can be prepared in the laboratory or naturally occurring. Polymers are used in a wide range of fields from automotive industry to packaging, medical equipment and building materials. In this study, cellulose, natural rubber, high density polyethylene and polycarbonate samples which are widely used in daily-life were selected. Cellulose is a polymer used in the production some materials such as paper, artificial silk and explosives. Rubber is used wheel manufacturing due to its durability, long-lived, water and heat resistance. Furthermore, natural rubber is used in the production of thousands products in industries such as construction, healthcare, mining and weapons. High density polyethylene is a widely used petroleum thermoplastic. They are used in the production of plastic bottles, toys, chemical containers and pipes. Finally, polycarbonates are used in many fields such as glasses, medical devices, automotive parts, protective clothing and digital discs (CD, DVD and Blu-ray).

In the present study, the radiation interaction parameters such as mass attenuation coefficient, linear attenuation coefficient, half value layer, mean free path and molar extinction coefficient for the abovementioned polymers were calculated in the photon energy range of 1 keV to 100 GeV. It has been observed that these parameters change with increasing photon energy. The observed changes were interpreted by photoelectric absorption, Compton scattering and pair production events.

Keywords: WinXCOM, polymer, HVL

ID:218-POP

A Theoretical Study on Optical Properties of Y Doped SnO_2

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Tin dioxide (SnO_2) is an n-type broad-band gap (3.6eV) oxide semiconductor with high chemical and mechanical stabilities. SnO_2, which has outstanding optical, electrical and mechanical properties, is a versatile material and has wide usage as the most attractive material for gas sensor applications as a catalyst during the oxidation of organic compounds, as a key component in rechargeable Li batteries and as a master element in opto-electronic devices. We have conducted a first-principles study of the optical properties of Y doped SnO_2 using the Full-Potential Linear Muffin-Tin Orbital (FP-LMTO) method within the Generalized Gradient Approximation (LDA) technique, in order to describe the exchange correlation energy. First of all, we build supercell and replaced one Sn atom with Y atom. After then, we run volume optimization to obtain the best theoretical lattice constants and and bulk modulus which are obtained through fitting the total energy data with the Birch and Murnaghan of state. The optical properties of Y doped SnO_2 depending on interested axes are calculated via Wien2k software and obtained results were compared with un doped case to see effect on Y elements on optical properties. As seen from calculated results, optical properties of compound varies with doping elements.

Keywords: SnO_2, density functional theory, optical properties

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ID:220-POP

Experimental and Theoretical Analysis of the Electron Momentum Distributions of $Cu_{0.6}Zn_{0.4}$ and $Cu_{0.58}Zn_{0.4}Pb_{0.02}$ Alloys

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It is known that copper-zinc based alloys called as brass. In some engineering applications, in order to increase tribological properties, the brasses can contain other alloying elements such as Lead (Pb) besides the content of Cu and Zn. In the present study, the electron momentum distributions (Compton profile (CP)) of the CuZn and CuZnPb alloys were examined both experimentally and theoretically. For this reason, $Cu_{0.6}Zn_{0.4}$ and $Cu_{0.58}Zn_{0.40}Pb_{0.02}$ alloys were prepared using sintering technique. In the experimental CP measurements, a Compton spectrometer with an annular ^{241}Am (5 Ci) radioactive source and a HPGe detector were used. The total resolution of the experiment including geometrical broadening was 0.66 a.u. The live time was set to 1.4 x 10^5 s to obtain good counting statistics. To obtain final electron momentum distributions of the investigated alloys, the systematic corrections such as deconvolution of detector resolution function, detector efficiency, sample absorption, relativistic scattering cross section and multiple scattering are applied using the data reduction code of Warwick group. Lastly the obtained Compton profile data were normalized to the number of electrons in per unit cell of the alloys. The experimental results were compared with the theoretical CPs obtained by the Hartree-Fock (HF) method. It was observed that, the experimental and theoretical results were in good agreement with each other except the low momentum range. As a result of the study, in addition to the causes of the discrepancy between experiment and theory in the low momentum region, it is explained how the addition of Pb metal affects the electron momentum distribution of the alloy.

Keywords: Electron momentum distribution, brass, x-ray scattering

ID:224-POP

Investigation of the Effect of Molybdenum Oxide on Oxychloride Glasses by Energy-Based Effective

Electron Density, Effective and Equivalent Atomic Numbers and Radiation Shielding Parameters

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Molybdate glasses are used for high-density memories, light modulations, large area display devices such as smart windows and other electrochromic systems and contains the highest oxidation level of oxyion and molybdenum.[1]. In this study, gamma radiation from 15keV to 15MeV was investigated for expand the application areas of these glasses which molar compositions of samples changes with (90-x)Sb2O3 : xMoO3 : 10ZnCl2 (x = 10; 20; 30; 40; 50) chemical formula. For this purpose, we calculated mass attenuation coefficients (MAC), linear attenuation coefficients (LAC), half value layers (HVL), mean free paths (MFP), effective electron densities (Neff), effective conductivities (Ceff), atomic and electronic cross sections (ACS and ECS), effective and equivalent atomic numbers (Zeff and Zeq) and fast nourton removal cross sections (FNRCS). Also; the same calculations were made for the comparison with Schott RS 253 radiation armor glass which is frequently used in isotope production facilities, nuclear power plants, reprocessing units, waste disposal units, nuclear research institutes and conventional concrete (OC). In the results we found the molybdate glasses provides higher efficiency protection and this situation was supported by the MFPs and Neff calculation results in all calculated energies. The all calculations were done by using Phy-x / PSD (Photon Shielding and Dosimetry) software, which can calculate all shielding parameters at wide energy range.

Keywords: Molybdate, radiation shielding, electrochromia

ID:230-POP

Biosynthesis of Complex Nanoparticles MgSe and Fabrication of MgSe thin Film as an Interlayer for Au/MgSe/p-Si Structure

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In this research simple, ecofriendly, inexpensive and a new approach, bacterial biosynthesis is used for deposition MgSe thin film for the first time. MgSe complex nanoparticles were synthesized by using a selected special type of bacteria in Luria-Bertani medium under dark conditions. Then nanoparticles were removed from the cellular material by a chemical and biological cleaned procedure. The synthesized MgSe nanoparticles in solution dropped on glass and p-Si substrates and then they were dried for the formation thin film structure in 65°C temperature. Optical properties of the MgSe thin film have been investigated by UV-Vis. Spectrophotometer method. Band gap of MgSe thin film obtained as 2.42 eV. Structural characterization of the thin film was investigated by X-ray diffraction (XRD), Field-emission scanning electron microscopy (FE-SEM) with energy dispersive techniques (EDS) and Atomic force microscopy (AFM) techniques. MgSe thin film had good nano-crystalline nature. Then rectifying and ohmic contacts were performed on direct MgSe thin film and p-Si substrate, respectively. Au/MgSe/p-Si/Al structure was obtained and its electrical properties were investigated by current-voltage (I-V) measurements. Some electrical parameters of the Au/MgSe/p-Si/Al structure as ideality factor (n), saturation current (I_o) and potential barrier height (Φ_b) were calculated of 2.12, 1.68×10^{-10} and 0.74 eV, respectively. Au/MgSe/p-Si/Al structure has good and stabile rectifying properties.

Keywords: Nanoparticles, bacterial synthesis, MgSe, thin film, I-V

ID: 231-POP

Calculation of Electrical Parameters of The $Ag/SnO_2/n\text{-}InP/In$ Schottky Diode

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Tin oxide (SnO_2) belongs to the II - VI semiconductor family with a wide band gap of 3.5 eV. It has been revealed that SnO_2 is n-type direct band semiconductor. In this study, we have investigated the electrical characteristics of Ag/ SnO_2/n-InP/ In Schottky diode by using current – voltage (I–V) and capacitance - voltage (C–V) techniques at room temperature. Initially, the ohmic contact has been made on n - InP semiconductor with In metal. After this process the Tin oxide (SnO_2) interface layer was grown with dc magnetic sputter technique on the n - InP semiconductor substrate, and then the contact area is determined by sputtered Ag metal to surface of InP in DC sputtering system at about 10-6 Torr. The I–V and C–V measurements of diode performed by the use of a KEITLEY 487 Picoammeter / Voltage Source and HP 4192A (50–13 MHz) LF Impedance Analyzer at room temperature and in dark, respectively. The electrical parameters of this diode such as ideality factor and the barrier height values are calculated from I-V measurements and the carrier concentration, Fermi energy and the diffusion potential and barrier height values were extracted from reverse bias C-2–V measurements at various frequencies and room temperature by using thermionic emission theory.

Keywords: Tin oxide, schottky diode, interface layer

ID:237-POP

Analysis of Eu-152 X-Ray Fluorescence Transition Spectrum Radioactive Source with Artificial Intelligence Algorithm on NodeJS Platform

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X-rays can reveal specific properties of elements. For this reason, they are widely used in elemental analysis. The analysis of the peaks in the experimental spectrum is done by matching the specific energy values accepted as standard with these peaks. In this study, the artificial intelligence algorithm was produced on the NodeJS platform which using gamma transition energies[1] of radioactive sources published by Laboratory National Henri Becquerel (LNHB) and X-ray emission energy values of the elements[2] published by Lawrence Berkeley National Laboratory. In this work, x-ray fluorescent spectrum which containing channel-count values converted into meaningful data sets and matched Eu-152 radioactive source. The effectiveness of the analysis results produced by the algorithm. The data conversation of the spectrum used for the accuracy and performance test. In total, 7175 peak values of 221 radioactive sources were analyzed. Eu-152's 14 peak values obtained from source spectrum were investigated by calculating the range ratios of 28.058 matching groups. In the results we examined 392812 probabilities. Peak values with the highest ratios were determined by artificial intelligence and included in the test results. The Eu-152 radioactive source spectrum and LNHB reference dataset for this nuclide compared in approximately ~0.5 seconds. This results was compared by the Eu-152 radioactive source spectrum analyze with other methods.

Keywords: Spectrum analysis, artificial Intelligence, NodeJS

ID:239-POP

The Theoretical (n,γ) Cross Section Calculations of Selected Structural Materials Used in Nuclear Reactors

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Structural materials used in both fission and fusion reactors; takes place in all stages from energy production to transferring energy to external systems. Since, the physical and chemical conditions to which the structural materials will be exposed will vary according to the environment in which they will be used, proper material selection is vital for nuclear reactors.

Since shielding systems are one of the most important part of nuclear reactors, proper material selection of shielding systems is very important.

Shielding systems are very important for nuclear reactors. Besides providing electronic and thermal shielding for electromagnetic systems, shielding systems also provide biological shielding, which must be safeguard both health of individual and public.

Neutron and gamma rays have high energy and penetrating power and that's why they have a priority in radiation research. For this purpose, concrete is one of the shielding materials commonly used in nuclear reactors as a shielding material against neutron and gamma rays.

In this study (*n,γ*) cross section calculations were performed for some elements such as ^{26}Mg, ^{27}Al, ^{28}Si, ^{31}P and ^{56}Fe used in concrete in *2-20 MeV* energy region. We used PCROSS and Alice/Ash computer programs for calculations. Moreover, we compared our results with experimental and evaluated data obtained from literature.

Keywords: (n, γ), reactions, cross-section, nuclear reactions

ID:241-POP

Comparison of Radiation Parameters of Stainless Steels 316L, 310, 304, 430 for Different Energies

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It is a fact that we must protect from radiation that is harmful to living beings and confronted in many areas such as science, medicine and nuclear power plants. Especially long-term exposure to high-energy x-rays and neutrons with a high penetration property can cause serious health problems. New materials and studies are constantly being carried out to eliminate these hazards. Materials with high atomic number (Z) such as lead, steel and concrete are generally used to absorb radiation in areas with high radiation such as nuclear power plants. The use of high temperature and radiation resistant materials in nuclear power plants is very important. In particular, it is known that stainless steels are resistant to corrosion and temperature. In this study, photon interaction parameters such as experimental effective atomic number, effective electron density, mass attenuation coefficient, and half value layer (HVL) were determined for stainless steels 316L, 310, 304, 430. Stainless steel have been calculated by using have been determined experimentally via Energy Dispersive X-ray Fluorescence Spectroscopy (EDXRF) system for different gamma ray energies, 53.16 keV, 59.54 keV, 79.26 keV, 81 keV, 276.4 keV, 302.85 keV, 356 keV and 383.85 keV. The theoretical calculations were found using the WinXCom program. Then experimental and theoretical calculations were compared.

Keywords: Stainless steels, gama ray, radiation shields

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Ab-initio Study of Electronic structure of $LaMn_2X$ (X=Si and Ge)

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First-principles calculations with full - potential linearized augmented-plane-wave method within the generalized-gradient approximation are performed to study electronic structure of ThCr2Si2-type structure, which can be described as a stacking of atomic layers in the direction of the c-axis with the sequence of Cr – Si – Th – Si - Cr, LaMn2Ge2 and LaMn2Si2 compounds which are ferromagnetic below 326 K. Both material have (I 4 / m m m) (space group number= 139) tetragonal crystal structure and they have 5 atoms in unit cell. Wie2k software has been employed to determine electronic band structure of compound. Initial parameters, which are required by wien2k to build structure file, were taken from previous studies. After inserted parameters, we run volume optimization progress and to obtain the best theoretical lattice constants. Recently, extensive studies have been done for these compounds because of their interesting magnetic properties. But there is none of theoretical studies to be performed to obtained electronic structure of compounds. According to obtained result, both compound have similar electronic band structure and they are classified as a metal material. Therefore, we have not study optical properties due to metallic character of compound. We hope that the work could be guide for researchers who likes to devote more effort on compounds.

Keywords: $La(MnX)_2$, density functional theory, electronic properties

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Some Ternary Intermetallic Compounds as a Protective Material Against Gamma-rays

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Isotopes of gamma ray have been used in different areas such as gamma-ray therapy, sterilization, medicine, high-level radioactive research facilities, manufacture, medical diagnosis, scientific research and food irradiation. Gamma-rays are electromagnetic radiation in the environment; they can transfer so fast and cover distances of kilometers within part of a second. These radiations can be dangerous to human bodies and surrounding environment due to its high penetrating power. Developing new shielding materials in recent years against gamma-ray emitting sources has become increasingly importance due to the high demand on better shielding for creating a safe environment. The material used for shielding from source has an ability to attenuate these radiations upto some extent In this study, the ternary intermetallic RMn_2X_2 (R= Ce, Gd, Er; X= Ge, Si) compounds which are antiferromagnets at high temperature and attract interest due a number of temperature induced magnetic phase transitions have been studied the gamma- ray shielding parameters. The mass attenuation coefficient (μρ), have been calculated using WinXCom program in the wide energy range (1 keV–100 GeV). The obtained values of μρ were utilized to calculate the effective atomic numbers (Zeff), electron density (Nel), half value layers (HVL) and mean free path values (MFP) of compounds. The variations on shielding parameters of interested materials were discussed.

Keywords: Shielding, ternary intermetallic compounds, gamma-ray

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Photo-neutron Cross Section Calculations for Some Nuclear Reactor Structural Materials

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Shielding the radiation caused by high neutron and gamma flux produced in nuclear reactor core is one of the most important subject for nuclear reactor safety. Shielding systems have to slow down fast neutrons, absorb instantaneous gammas produced by thermal and slow neutron reactions. Also, they have to decrease secondary gamma production. The structural materials of shielding systems has an important role in nuclear technology to achieve desirable goal.

Nuclear reactions in structural materials effects not only life time of a reactor but also maintenance of reactor. Under high radiation materials transmutate to radiative isotopes and it is very important to determine what kind of reaction takes place and to calculate cross section to choose proper material which will be used in a nuclear reactor.

To use nuclear technology in efficient and safety aspect, we need lots of experimental and theoretical data and in the situations that can't obtaining experimental data or doing experimental research, theoretical cross section data gets an important role. Moreover, estimation of photonuclear reactions is also very important for physics and technology of fission and fusion reactors and radiation properties of reactors structural materials.

In this study, theoretical photo-neutron reaction cross sections of the reactor structural materials such as 26Mg, 27Al, 31P, 45Sc and 65Cu in the range of 0-40 MeV were determined using Cascade Exciton Model (CEM) and Weisskopf Ewing Model (WE). For comparation purpose, we used experimental data set obtained from EXFOR and TENDL-2014 JANIS database.

Keywords: Photo-neutron, cross-section, nuclear reactions

ID:266-POP

Transferring of Graphene Obtained on Copper Foil by Chemical Vapour Deposition(CVD) Technique and Investigation of Its Optical, Structural and Characteristic Parameters

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In this study, graphene was obtaıned on copper foil using methane 250/1000 sccm and hidrogene 500/1000 sccm gases by CVD technique at 1000 °C. Graphene obtaıned on copper foil was etched in iron chloride prepared with deionized water and rinsed in 3 different containers for half an hour. Decomposing of graphene from the copper foil was transffered from the glass and silicon substrate. And than structural, optical and chracteristical parameters of graphene was investagated. For optical, structural and characteristic properties of graphene was used respectively Uv-Vis Spectrophotometry, Atomic Force Microscopy(AFM) and Raman Spectroscopy and X-Ray Diffractometer.

Keywords: Graphene, CVD technique

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Electrical Characteristic of Au/Graphene/p-Si/Al Schottky Diode Depend on Annealing Temperature

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In this work, graphene, growth with Chemıcal Vapour Deposıtıon was transferred on p-Si substrate. In order to get Au/graphene/p-Si/Al schottky diode, firstly ohmic contact and then schottky contacts were obtained. To observe electrical charactersitic of Au/graphene/p-Si/Al structure was annealed from 150 to 300 oC by 50 oC steps. I-V characteristics of Au/graphene/p-Si/Al was investigated for each annealing temperature. Than the basic parameters of Au/graphene/p-Si/Al schottky diode was calculated using the Norde and thermo ionic emission theory.

Keywords: Graphene, CVD technique, schottky

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ID:271-POP

Determination of Radiation Shielding Properties of Co-Based Heavy Metal Alloy

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In parallel with the increasing applications of high energy photons such as X and Gamma rays, the need for radiation safety is increasing day by day. Although Pb is the most well-known radiation absorbing element, its use is quite limited due to its low melting point (327 ºC), poor strength and toxic effects. For this purpose, researchers are trying to show whether these materials can be used as radiation shields in nuclear applications by producing new types of glass, concrete, polymers and alloys that do not contain Pb. In this study, the radiation shielding properties of $Co_{0.5}Cr_{0.2}W_{0.15}Ni_{0.1}Fe_{0.03}Mn_{0.02}$ alloy having high density (9.13 g/cm^3) and high melting point (~1365 ºC) were investigated both theoretically and experimentally. Radiation absorption experiments were performed with photons energies of 22.1, 23.1, 25, 25.5, 30.8, 35, 35.8 and 53.1 keV emitted from ^{109}Cd and ^{133}Ba radioisotope sources. The transmitted photons were measured with a SiLi detector with a resolution of 160 eV at 5.9 keV energy. To show radiation shielding properties of the Co-based alloy, mass attenuation coefficients (MACs), linear attenuation coefficients (LACs), half value layers (HVLs), mean free paths (MFPs) and effective atomic numbers(Z_{eff}) were calculated in the measured energy values. In order to understand the shielding properties in the high energy range, theoretical calculations were made by using PSD (Photon Shielding and Dosimetry) software. The results obtained for the Co-based alloy were compared with some standard shielding glasses (RS253 and RS360), ordinary concrete (OC) and basalt-magnetite (BM) concrete. As a result of the study, it was determined that the experimental and theoretical data were in good agreement with each other for all energy values and the shielding properties of $Co_{0.5}Cr_{0.2}W_{0.15}Ni_{0.1}Fe_{0.03}Mn_{0.02}$ alloy were much better than the compared standard shielding materials.

Keywords: ŞAKAR, heavy metal alloy, mass attenuation coefficient

ID:281-POP

Analyzing XRF Parameters and Valence Electronic Structure of the Ti, Cr, and Co Metals Depending on Temperature

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In the present investigation, firstly K X-ray intensity ratios of the Ti, Cr and Co were determined utilizing by 59.54 keV X-rays emitted from 100 mCi 241-Am radioactive annular source at different temperatures as in-situ. K X-ray emission spectra of the metals were obtained changing by 50°C increments with the aid of temperature control device which can be raised up to 500 temperature using a solid state Si (Li) X-ray detector. By evaluating the emission spectra of each metal obtained at different temperatures, K X-ray production cross sections, full width half maximum (FWHM) values, asymmetry index (A_s), peak energies and energy shifts (ΔE) were found in relation to temperature. Moreover, the calculated X-ray intensity ratios for Co, Cr and Ti were compared to the results of Multiconfiguration Dirac–Fock (MCDF) calculations for acquiring the changes of the number of electrons in the orbitals. It has been observed that X-ray intensity ratios and other parameters studied vary depending on the temperature. Generally, K X ray intensity ratios of the metals tended to increase with rising temperature. The valence electron structure of the metals studied was rearranged with increasing temperature. It was seen that the 3d electron numbers of the metals were decreased with increasing temperature. It was concluded that Kb transitions are more affected by temperature change.

Keywords: K X-ray intensity ratios, FWHM, asymmetry index, metal, 3d electron

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An Investigation on Gamma Shielding Features of Commonly Used Cobalt Based Superalloys

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Cobalt based super alloys are used in high temperature exposed parts of gas turbines, nuclear reactor parts, surgical implants, transition channels and interior design of gas turbines. They can be easily formed at room temperature and used for a long time. From this viewpoint, we have investigated the gamma radiation shielding properties of commonly used cobalt-based super alloys in this work. The mass attenuation coefficients (μm) and some related parameters of various selected super alloys are calculated at 1 keV-100 GeV photon energies by using WinXCOM program. It was found that the Haynes 25 alloy had largest μm values compared to other cobalt alloys. The values of effective atomic number (Zeff) and effective electron density (Nel) of the all of the alloys were found in the studied energy region and Haynes-25 own the largest Zeff values among the other alloys. Haynes 25 owes its high Zeff value to excess of tungsten (W) in its content. Besides, Exposure Buildup Factor (EBF) values of the super alloys were also computed for the energy range 0.015–15 MeV up to 40 mean free path (mfp). The largest and smallest values for EBF were obtained for FCC-L19 and Haynes-25, respectively. EBF values were strongly dependent on the constituent elements of the alloy.

Keywords: Superalloy, cobalt, gamma shielding

ID:303-POP

Pressure Effect on the K-shell X-ray Intensity Ratios of Nanostructured Ti and Ni 3d Transition Metals

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Titanium and Nickel elements are two important metals in 3d transition metals. These metals have different levels of dissolution in the alloying process due to the difference in their oxidation levels. Furthermore, the different particle size of these metals can also change many of the specific properties it has. That is, a nano-sized element may has difference properties from its micro-particle size. In addition, when the pelletizing a material in powder metallurgy, the magnitude of pressure applied in the compaction process prior to sintering is very important for the material characteristics. For the reasons aforementioned, in this study, pressure effects on IKβ/IKα X-ray intensity ratios of Ti and Ni 3d transition metals having particle size of 10 nm were investigated using X-ray fluorescence technique. Firstly, pure nanostructured Ti and Ni metal powders were compressed by means of a 13 mm diameter die-set and hydraulic press at pressures of 370 MPa, 740 MPa and 1110 MPa, respectively. Secondly, the pellets obtained were annealed at 1000 0C temperature for 30 minutes. After the annealing process, the Kβ and Kα emission spectra of nanostructured Ti and Ni metals creating following excitation by 59.54 keV gamma-rays from a 200 mCi 241Am radioactive point source were detected with a high resolution Si(Li) solid-state detector. Finally, the IKβ/IKα X-ray intensity ratios of nanostructured Ti and Ni 3d transition metals were calculated for all pressure magnitudes using the results obtained of emission spectra. The results obtained for IKβ/IKα X-ray intensity ratios of investigated samples were evaluated in terms of the magnitude of pressure applied in the compacting process prior to annealing. It was observed that the IKβ/IKα values for nanostructured Ti and Ni metals have opposite behavior with respect to increase in the magnitude of pressure applied. Our experimental results showed that the intensity ratios of Ti metal have decreased while the intensity ratios of Ni metal have increased with increasing of pressure magnitude.

Keywords: Transition metals, x-ray intensity ratios, pressure effect

ID:304-POP

Investigation of Radiation Shielding Performance of Ni50Mn28Ga22: A Magnetic Shape Memory Alloy

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Shape memory alloys (SMAs) exhibit two unique properties, pseudo-elasticity, and the shape memory effect. Magnetic shape memory alloys (MSMAs), also called ferromagnetic shape memory alloys, are particular SMAs that produce forces and deformations in response to a magnetic field. The MSMAs have also the thermal shape memory effect. Typically, the MSMAs are alloys of Nickel, Manganese and Gallium (Ni-Mn-Ga). In this study, it was aimed to investigate the radiation shielding performance of Ni50Mn28Ga22 magnetic shape memory alloy in order to expand the application area of MSMAs. For this purpose, firstly Ni50Mn28Ga22 alloy was irradiated with 133Ba and 109Cd radioactive point sources. The γ and X-rays were counted by a Si(Li) solid-state semiconductor detector connected to Multi-Channel-Analyzer (MCA) in photon transmission arrangement. Later, linear attenuation coefficient (LAC), mass attenuation coefficient (MAC), mean free path (MFP), half-value layer (HVL), tenth-value layer (TVL), atomic cross-section (ACS) and electronic cross-section (ECS) for investigated MSMA were determined experimentally and theoretically at eight different photon energies (22.1 keV, 23.1 keV, 25 keV, 25,5 keV, 30.8 keV, 35 keV, 35.8 keV and 53.2 keV) using transmission results. To be able to make a satisfying assessment about radiation shielding features of investigated MSMA, all calculations were also made theoretically for ordinary and steel-magnetite concretes that most commonly used as shielding material in many nuclear applications. The given experimental data have good agreement with comparing theoretical data evaluated by the WinXCOM software. According to the results obtained, it was clearly observed that the radiation shielding performance of the investigated Ni50Mn28Ga22 MSMA was quite good with respect to the examined concretes. As a result of this study, it can be said that the present MSMA can be used as alternative shielding material for radiation protection applications.

Keywords: Radiation shielding, shape memory alloy, mass attenuation coefficient

ID:309-POP

Determination of Gamma Photon Protection Capability of Ni77Fe14Cu5Mo4: A Magnetic Shielding Alloy

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The present investigation has been undertaken to determine gamma radiation protection performance of Ni77Fe14Cu5Mo4 that is a magnetic shielding alloy (MSA). The MSA has superior properties such as very high permeability, low magnetic reluctance, etc. Besides, the MSA can serve as photon shielding material as it contain heavy metal and its gamma photon protection capability was not investigated so far. For this reasons, photon-shielding parameters of the MSA were calculated both experimentally and theoretically. These parameters calculated are linear attenuation coefficient (LAC), mass attenuation coefficient (MAC), mean free path (MFP), half-value layer (HVL), tenth-value layer (TVL), total atomic cross-section (ACS), total electronic cross-section (ECS). In order to experimental calculation these parameters, firstly, the Ni77Fe14Cu5Mo4 magnetic shielding alloy was irradiated with two radioactive point sources (133Ba and 109Cd) and the transmitted photons were counted using a high resolution Si(Li) solid-state semiconductor detector connected to Multi-Channel-Analyzer (MCA) in a narrow-beam transmission geometry. In order to understand the gamma photon protection capability of the present magnetic shielding alloy, the all parameters were also theoretically made for some standard shielding concretes and glass such as ordinary concrete (OC), steel-magnetite concrete (SM) and RS253 glass. The results obtained were comparatively plotted as a function of photon energy. Consequently, it was observed that the experimental and theoretical results have good agreement for all experimental photon energy and the gamma photon protection capability of the present MSA is quite better than the examined concretes and glass that most commonly used as shielding material in many nuclear applications. Therefore, as a results of this study, it can be said that the present MSA may be an alternative shielding material for nuclear applications.

Keywords: Radiation shielding, magnetic shielding alloy, mass attenuation coefficient

ID:310-POP

Calculation of Mass Stopping Powers and Ranges of Heavy Particle Radiations of $Ni_{77}Fe_{14}Cu_5Mo_4$: A Magnetic Shielding Alloy

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It is known that the formula Bethe-Block (BB) is used to calculate the stopping power for electrons and heavy ion radiation as a function of the kinetic energy of ions. ESTAR (for electrons) and SRIM (for protons and alpha) software can be used to calculate the mass stopping power and range values of the materials examined. Since the neutrons do not have electrical charge, the BB formula cannot be used for this. To reveal the neutron protection properties of any material, it is necessary to use the Monte Carlo simulation code, such as GEANT4, or a simple method described by El-Khyatt. In the present study, it has been investigated the particle radiation shielding properties of the magnetic shielding alloy (MSA) having a composition of $Ni_{77}Fe_{14}Cu_5Mo_4$. For this purpose, the aforementioned ESTAR, SRIM and El Khyatt method have been used for particle radiation absorption. In order to evaluate the particle radiation shielding properties of the given magnetic shielding alloy more easily, all calculations have been compared with the standard shielding materials which are called as ordinary concrete (OC), steel-scrap (SS) and steel magnetite (SM). The calculation results showed that the total mass stopping powers of the MSA was lower in all energy values than in the materials compared. However, given the density effects, the stopping power of this alloy is considerably higher than other materials. Therefore, MSA alloy has a better absorption effect for protons, alpha and electrons at all energy values. The calculated range changes, depend on energy of ions, also support that this alloy has a much better absorption effect compared to other materials. Finally, fast neutron absorption cross-section of MSA was found to be higher than OC, SS and SM. This study shows that, in addition to other good physical properties, MSA alloys have good particle radiation absorption properties.

Keywords: Mass stopping power, Heavy ions, Magnetic shielding alloy

ID: 314-POP

Effects of Technetium and Low Dose Radiation on Human Glucose 6-Phosphate Dehydrogenase Enzyme

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Technetium is a silvery-gray metal. Under oxidizing conditions technetium (VII) will exist as the pertechnetate ion, TcO_4^-. The element is a remarkable corrosion inhibitor for steel. The metal is an excellent superconductor at 11K and below. There are twenty-two reported isotopes of technetium with masses ranging from 90 to 111. All the isotopes of technetium are radioactive. Technetium has three long lived radioactive isotopes: ^{97}Tc ($T_{1/2}$ =2.6 x 10^6 years), ^{98}Tc ($T_{1/2}$ = 4.2 x 10^6 years) and ^{99}Tc ($T_{1/2}$ = 2.1 x 10^5 years). $^{95}Tc_m$ ("m" stands for meta state) ($T_{1/2}$ = 61 days) is used in tracer work. However, the most useful isotope of technetium is $^{99}Tc_m$ ($T_{1/2}$ = 6.01 hours) is used in many medical radioactive isotope tests because of its half-life being short, the energy of the gamma ray it emits, and the ability of technetium to be chemically bound to many biologically active molecules [1]. Glucose-6-phosphate dehydrogenase (EC 1.1.1.49; G6PD) is an essential enzyme in human erythrocytes that catalyzes the first reaction and rate-limiting enzyme in the pentose phosphate pathway (PPP) [2]. The main physiological function of G6PD is the production of NADPH and ribose 5-phosphate, which are essential for reductive biosynthesis and nucleic acid synthesis [3]. In this study, inhibitory effects of $Na^{99m}TcO_4$ (Sodium pertechnetate) and low dose radiation on human erythrocyte G6PD activity were investigated. For this purpose, hG6PD was initially purified about 2089-fold at a yield of 36% using 2′,5′-adenosine diphosphate (ADP) sepharose 4B affinity gel chromatography. The *in vitro* effects of hG6PD enzyme were studied. It was detected in *in vitro* studies that the hG6PD enzyme is inhibited due to $Na^{99m}TcO_4$ and radiation.

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The effect of Pb-dopant on Hausmannite Mn_3O_4 Grown by SILAR

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The undoped and lead (Pb) doped manganese oxide (Mn_3O_4) thin films were grown by successive ionic layer adsorption reaction (SILAR) method at room temperature. The thin films have been analyzed with optical and structural by Ultraviolet Visible (UV-Vis) spectroscopy, XRD (X-ray diffraction) and FTIR (Fourier transform infrared) spectroscopy measurements. XRD measurements of undoped and Pb-doped Mn_3O_4 thin films show that all films have the tetragonal Hausmannite Mn_3O_4 crystal structure. FTIR spectrum of samples illustrate to Pb ion in place of Mn ion in the crystal structure. The optical band gap of undoped and Pb-doped Mn_3O_4 thin films changed with rising Pb dopant.

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Keywords: SILAR, pb doped, Mn_3O_4 thin films

ID:357-POP

Mg-dopant Effect on Mn_3O_4 Thin Films Grown by SILAR

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At room temperature, manganese oxide (Mn_3O_4) thin films undoped and magnesium (Mg) doped were grown by successive ionic layer adsorption reaction (SILAR) method. Structural, morphological and optical properties of the thin films obtained have been analyzed by X-ray diffraction (XRD), FTIR (Fourier transform infrared) spectroscopy and Ultraviolet Visible (UV-Vis) spectrophotometer measurements. XRD measurements from these analyzes showed that thin films grown at room temperature by the SILAR method have the tetragonal Hausmannite Mn_3O_4 crystal structure. Also, the FTIR spectrum of the samples showed Mg ion instead of Mn ion in the crystal structure. It was observed that the optical band gap of Mn_3O_4 thin films changed with the variable Mg contribution.

Keywords: SILAR, mg doped, thin films

ID:365-POP

Determination of Gamma Ray Buildup Factors of Some Enzyme Inhibitors

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Gamma ray energy absorption and exposure buildup factors for Sulindac, Sodium valproate, Etoposide and Roscovitine were calculated using the five parameters (G-P) fitting method. In the calculation, the gamma ray energy absorption and exposure buildup factor values were evaluated in the energy range from 0.015 MeV and 15 MeV up to 40 mfp (mean free path) penetration depths. It has been observed that the buildup factor values change with gamma energy values, mean free paths and chemical composition of enzymes. As seen from results, Roscovitine has generally the biggest values of the energy absorption and exposure buildup factors.

Keywords: Mass attenuation coefficient, G-P fitting method, energy absorption buildup factor, exposure buildup factor

PHYSICS
POSTER PRESENTATIONS

ID:244-PPP

Determination of Atomic Parameters of Some Thermoluminescent Compounds

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In this study, the mass absorption coefficients, effective atomic numbers and electron densities of some thermoluminescent compounds (LiF, NaCl, CaF_2, Fe_2O_3, $AgNO_3$ and etc) were investigated experimentally, quasi-experimental (GEANT4 Monte Carlo Program) and theoretical (WinxCom Program) at 59.540 keV energie of Americium-241 and at 53.161, 79.613 and 80.997 keV energies of Barium-131. The experimental results in this study were compared with the quasi-experimental results and the previous experimental results and were found to be compatible with the quasi-experimental results and the previous studies.

Keywords: Mass absorption coefficient, effective atomic number, electron density

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BIOLOGY
ORAL PRESENTATIONS

ID:31-BOP

The Effect of Seed Extract of *Vicia ervilia* (L.) Wild (burçak) on Sod Activity and MDA Level of Brain Tissue in Experimental Diabetic Rats

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In this study, we investigated the effect of *Vicia ervilia* seed extract on SOD activity and MDA level of brain tissue in STZ induced diabetic rats. The acute toxicity test of *Vicia ervilia* extract was performed according to 425 in the OECD guideline. 36 Wistar albino male rats weighing 200-350 g were used in our study. Six groups consisting of six animals were formed. Groups were named as; Control, DK [diabetes mellitus (DM) control group], DAK (DM + acarbose 20 mg/kg), DMV-1 (DM + Vicia ervilia seed extract 100 mg/kg), DMV-2 (DM + *Vicia ervilia* seed extract 200 mg/kg) and DMV-3 (DM + *Vicia ervilia* seed extract 400 mg/kg). Experimental diabetes was induced by STZ [50 mg/kg, intra-peritoneal (i.p)]. At the end of the 25-day experiment the rats were sacrificed. SOD activity and MDA levels were determined in the brain tissue samples taken from rats.

According to the results of study; MDA level, which is an indicator of oxidative damage, was found to be significantly increased in the Diabetic control group compared to the normal control group ($p \leq 0.05$). MDA levels in some extract groups were decreased compared to diabetic control group (p M0.05). SOD activity, Which is a significant antioxidant enzyme, was decreased in Diabetes control group compared to the Normal control group ($p \leq 0.05$), but it increased in some extract groups compared to Diabetes control group ($p \leq 0.05$).

As a result; It is thought that *Vicia ervilia* seed extract may have protective effects against oxidative damage in brain tissue of diabetic rats.

Keywords: Diabetes mellitus, brain tissue, STZ, *Vicia ervilia*

ID:41-BOP

Antimicrobial Effect of 3 Essential Oils for Multiple Antibiotic Resistant Bacteria

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Objective: The antibiotics used in the treatment and prophylaxis of microorganism-induced diseases are clinically important. However, frequent and often unconscious use has caused a global health problem; antibiotic resistance. In this study, antimicrobial effects of *Rosmarinus officinalis*, *Juniperus communus* and *Origanum majorana* essential oils were investigated in antibiotic resistant bacteria isolated from wound cultures of patients with diabetic foot wound.

Materials and methods: A sample was taken for wound culture from patients with diabetic foot wound who was being treated in the infectious diseases department of Atatürk University. Microorganisms developing in culture were isolated in Atatürk University Clinical Microbiology Laboratory. Isolated strains were identified using BD Phoenix 100 and antibiotic resistance profiles were determined. Microorganisms with multiple antibiotic resistance were stocked. After the flowering season, Alanya / Turkey collected from *Rosmarinus officinalis* and *Origanum Majorana* plants were dried and stored at Ataturk University biology department. *Juniperus communus* fruits were purchased commercially. Essential oils of plants were obtained using the Clavenger apparatus. *Rosmarinus officinalis*, *Juniperus communus* and *Origanum Majorana* essential oils (2 µl) were applied to bacteria with multidrug-resistant bacteria sown on Müller Hilton agar by being absorbed in sterile discs.

Results: Multidrug resistant microorganisms isolated from diabetic foot wound culture were *Klebsiella pnemoniae*, *Proteus mirabilis*, *Escherichia coli*, *Stenotrophomonas maltophilia*, *Escherichia coli* and methicillin resistant *Staphylococcus aureus*. Each microorganism had a different resistance pattern. The bacteria were found to be resistant to many drugs such as ampicillin, cefotaxime, imipenem, Piperacillin / Tazobactam, Ciprofloxacin, Trimethoprim / Sulphamethoxazole, cefuroxime, cefepim and gentamicin. Essential oils applied by disk fusion method; *Rosmarinus officinalis* and *Juniperus*

communus showed no effect in bacterial culture. However, the *Origanum MAJORANA* prevented the development of all microorganisms and formed a 20-37 mm diameter zone.

Result: The effect of essential oils on bacteria with multiple drug resistance is promising for medical studies. The antimicrobial activity of *Rosmarinus officinalis* and *Origanum majorana* and *Juniperus communus* on various microorganisms has been proven. However, it has been studied for the first time on multi-drug resistant bacteria isolated from diabetic foot wounds and the effect of *Origanum majorana* in this study was quite satisfactory.

Keywords: Antimicrobial, essential oil, diabetic foot

ID:43-BOP

Isolation of Bacteria from Colorectal Cancer Patients

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Colorectal cancer is a type of cancer that begins with the formation of polyps in epithelial cells of the colon and rectum. Polyps formed are considered as precursors for many colorectal cancers. The possible risk factors for the disease have been investigated, but the relationship between colorectal cancer pathogenesis and microorganisms has not been fully elucidated. Therefore, in our study, bacterial isolation was made from cancerous tissues of patients with colorectal cancer. Biopsy samples from colorectal cancer patients were incubated at 37°C for 3-5 days. After purification of the obtained bacteria, classical methods (gram staining, oxidase, catalase and urease test) and molecular methods (16s rRNA PCR and sequencing) were applied. The results of BLAST and BioEdit Programs analysis of sequence, 3 *Klebsiella pneumoniae*, 1 *Acinetobacter baumannii* and 1 *Escherichia coli* were isolated from biopsy samples. In conclusion, many studies have reported that many factors, including infectious factors, are effective in cancer formation. Thus, knowledge of the relationship between cancer and microorganisms should not be ignored in treatment-oriented applications. In this context, bacterial isolations have been made for the detection of bacteria which may cause colorectal cancer. As a result, we suggest that proteins or secondary metabolites of bacteria may play a role in the development of cancer.

Keywords: Colorectal cancer, *Klebsiella pneumoniae*, *Acinetobacter baumannii*

ID:44-BOP

Evaluation of the Cytotoxic Effects of the Proteins of Various Bacteria on Human Fibroblast Cells

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To determine the relationship between bacteria and cancer, in our study, bacterial isolation was made from cancerous tissues of patients with colorectal cancer. As a result of isolation, 1 *Acinetobacter baumannii*, 1 *Escherichia coli*, and 1 *Klebsiella pneumoniae* were isolated from biopsy samples. Then, bacterial culture filtrates and total proteins were isolated and their effects on healthy fibroblast cell line were determined by WST-8 and hemolysis test. The healthy fibroblast cell line was treated with increasing concentrations of total proteins (31,25; 62,5; 125 ve 250 µg/ml) for 48 hours and WST-8 cell proliferation assay was carried out in order to determine the anti-proliferative effects of the agent on these cells. As a result, the inhibitory concentration (IC50) value of *A. baumannii*, *E. coli*, and *K. pneumoniae* proteins on healthy fibroblast cells were calculated from cell proliferation plots and found to be 47 µg/ml, 46 µg/ml, and 46 µg/ml, respectively. In order to observe the effect of bacterial proteins on mammalian erythrocyte cells, protein samples were obtained from *A. baumannii* (31,25; 47; 62,5 µg/ml), *E. coli* (31,25; 46; 62,5µg/ml) and *K. pneumoniae* (31,25; 46; 62,5 µg/ml). Applied dose of the protein in blood cells has not been shown to cause hemolysis. According to the results, we can say that the proteins belonging to bacteria decrease cell viability. It can also be said that as it leads to the death of healthy cells, it is an important result for revealing the relationship between cancer progression and microorganisms.

Keywords: Cytotoxicity, WST-8, hemolysis

ID:115-BOP

Evaluation of the Anti-Mutagenic Properties of Quercetin Against AFB1 in Human Lymphocyte Cells

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It is known that most of the synthetic drugs used in the treatment of different diseases in medicine have undesirable side effects. To overcome this problem, scientists focused on alternative natural remedies that could be obtained from plants and other organisms. Quercetin is one of the natural substances in which different research has been done recently. Quercetin, 3,3',4',5,7-pentahydroxyflavone, a naturally occurring flavonol commonly detected in apples, cranberries, blueberries, and nions, has been reported to possess anti-oxidant, anti-carcinogenic, anti-inflammatory, and cardioprotective properties.[1] However, there are studies showing that quercetin exhibits pro-oxidant activity and causes DNA damage.[2] Aflatoxin B1 is the most potent carcinogen / hepatogenic agent among aflatoxins.[3] When attached to DNA bases, Aflatoxin B1 produces inserts that disrupt the functioning, growth, division and control of cells.[3] In this study, the anti-mutagenic properties of Quercetin against Aflatoxin B1 in human lymphocyte cells were investigated because of their anti-oxidant properties and pro-oxidant activity. In micronucleus and sister chromatid exchange test systems, it was determined that high concentrations of Quercetin (500 and 750 µM) increased DNA damage but especially the concentration of Quercetin 250 µM showed anti-mutagenic effect and decreased DNA damage caused by Aflatoxin B1. In the study, it was determined that quercetin exhibited anti-mutagenic properties at low concentrations, but increased the mutagenicity with high concentrations of synergistic effect.

Keywords: Quercetin, aflatoxin B1, mutagenicity

ID:118-BOP

The Effects of Esfenvalerate on Some Hematological and Biochemical Indices of Van Lake Fish (*Alburnus tarichi* Güldenstadt 1814)

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Aquatic pollution is now the biggest global problem. As a result of agricultural activities and anthropogenic environmental pollution, many chemical pollutants have been identified in surface and groundwater sources. Pyrethroids are naturally occurring components in chrysanthemum flowers. It was then modeled synthetically. Synthetic pyrethroids have increased their use in agricultural applications due to their low mammalian toxicity and strong impacts on agricultural pests. These compounds are highly effective against many target insects and pests due to their halogen, lipophilic and photostable properties. Although relatively harmless to birds and mammals, they have extremely toxic effects on fish and many marine and freshwater forms. Esfenvalerate is a synthetic pyrethroid insecticide used to control insect pests in herbal products. In this study, the effects of van fish (*Alburnus tarichi* Güldenstadt 1814) exposed 24, 48, 72 and 96 hours to the sublethal concentration of esfenvaleraten (0.158 mg / L) on hematological and biochemical parameters were investigated. Significant decrease in erythrocyte (RBC), hemoglobin (Hb) and hematocrit (Hct) values were detected in behavioral and hematological parameters of fish treated with Esfenvalerate ($p \leq 0.05$). Serum enzymes, aspartate aminotransferase (AST, EC 2.6.1.1), alanine aminotransferase (ALT, EC 2.6.1.2), lactate dehydrogenase (LDH, EC 1.1.1.27) activities and increase in serum glucose levels) was seen ($p \leq 0.05$). As a result, changes in the hematological and biochemical values of van fish exposed to esfenvalerate can be used as an indicator of toxicity.

Keywords: *Alburnus tarichi*, biochemical and hematological, esfenvalerate

ID:122-BOP

Food Microorganisms and Their Roles in Food

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As in all animals, microorganisms need food for their growth and survival. Even if we think that microorganisms are trying to break down our food sources by infecting and destroying plants and animals, this is by no means their primary role in nature. In fact, they play a critical role in the various biogeochemical cycles, as well as being a particularly important component of soil and plant ecosystems. These organisms ruin dead plant and animal tissues and make their nutrients, including carbon and nitrogen, available to support plant growth. Except for a few sterile foods, all foods carry one or more types of microorganisms. Some of these microorganisms have desirable roles in food (production of naturally fermented foods), and the others can have undesirable roles as spoilage of food and diseases of foodborne. In this case it is critical to know which organisms are associated with a particular food in its natural state and which of the organisms should not be presented in particular food. If we can know the general distribution of the expected and un-expected microorganisms under given conditions where foods are produced and processed, we may benefit better from the desired microorganisms and prevent the losses of food and foodborne disease caused undesired microorganisms. Among the microorganisms, some bacteria, molds, yeasts and viruses have both desirable and undesirable roles in our foods. Important molds genera found in food are *Penicillium*, *Aspergillus*, *Fusarium*, *Rhizopus* and *Mucor*. Zygosaccharomyces, *Saccharomyces*, *Rhodotorula* and *Candida* are the important yeast genera found in food. The important Gram negative aerobes (*Pseudomonas*, *Brucella*, *Xanthomonas* and *Acetobacter*), Gram-negative facultative anaerobes (*Escherichia*, *Klebsiella*, *Proteus*, *Salmonella*, *Shigella* and *Vibrio*) Gram-positive cocci (Staphylococcus, Streptococcus, Lactococcus, Leuconostoc and Pediococcus), Gram-positive, endospore-forming rods (Bacillus and Clostridium), Gram-positive, non-spore forming regular rods (*Lactobacillus*, *Carnobacterium* and *Listeria*), Gram-positive, non-spore forming Irregular rods (Bifidobacterium, *Corynebacterium* and *Brevibacterium*) are the important genera presented in foods.

Keywords: Food, microbiology

ID:146-BOP

Antioxidant Defense System and Physiological Responses in Duckweed (*Spirodela polyrhiza* L.) Plants Grown at Boron Toxicity

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Boron is a material occured naturally used in many industries such as detergent, ceramic, glass, agriculture, nuclear and medical industries. Boron is one of basic elements needed to the regular growth of plants, but it could be above specific concentrations be toxic to living organisms. In this study, using growth rates, dry biomass and antioxidant enzyme activities the toxic influence of Boron on *Spirodela polyrhiza* L. was examined. *S. polyrhiza* was exposed to Boron concentrations of control, 5, 10, 20, 40, 80 and 160 mg L-1 for a test duration of one week. The results showed that plant growth decreased with increasing Boron concentration. Moreover, our results also deduced that among the antioxidative enzymes, CAT, SOD, and GPX can service as significant biomarkers for Boron rich environment. The current consequences asserted that *S. polyrhiza* is very helpful sample plants for phytoremediation of low-Boron contaminated wastewater and it is also apropriate choice for Boron biomonitoring because of high phototoxic sensibility toward Boron.

Keywords: Boron, aquatic plant, antioxidant enzymes, phytoremediation

Acknowledgement: This work was supported by Ağrı İbrahim Çeçen University.

ID:152-BOP

In-Situ Conservation of the Four Endemic Species in The Morgedik Dam

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As a result of the floristic research carried out in 2013 vegetation period, a total of 1580 plant samples were collected in Morgedik Dam area established on Deliçay (Erciş / Van). After identification of these samples, a total of 850 taxa belonging to 80 families have been identified in the area.

3 of these taxa belong to *Pteridophyta* division and 847 to *Spermatophyta* division. 1 of the members of *Spermatophyta* is taxa of *Gymnospermae* subdivisios and 846 taxa of Angiospermae subdivision. Of the Angiospermae, 653 are in the class of Dicotyledoneae and 193 of the Monocotyledoneae. 13 of these taxa are Endemic and endemism rate is 1.53%. Endemic and rare plants; 1 of the VU, 3 of NT, 9 of LC were evaluated.

A total of four taxa were decided to be carried and conservation in this area. These are *Astragalus halicacabus* Lam., *Silene araratica* Schischk. subsp. *araratica, Plantago anatolica* Tutel & R. Mill. and Bellevalia forniculata (Fomin) Deloney. *Plantago anatolica* and *Bellevalia forniculata* grow in a meadow area. These were taken in rolls with a grass cutting machine in certain ranges. And it has been moved to the same ecological area previously prepared by us. *Silene araratica* subsp. araratica grows mostly in rocky and steppe areas. Since the *Astragalus halicacabus* prefers the steppe area and it is perennial, they have been carried along with their seeds and soil.

The 4 taxa, which were transported and conservation in this way, were regularly observed in new habitats for 5 years.

Keywords: Endemic, plant, *in-situ* conservation, morgedik dam, Van

ID:153-BOP

The Flora of Top (Katavin) Mountain (Patnos-Ağrı)

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The field investigations were carried out in Top (Katavin) Mountain between the years of 2006 and 2007 and 1234 plant specimens were collected. As a result of the taxonomic investigation of these specimens 390 species, 116 subspecies and 76 varieties belonging to 251 genus and 60 families were determined. A total of 582 taxa have been collected from the area. Out of these 2 taxa are new records for B9 grid square.

The distribution of the taxa in phytogeographic regions are as fallows: Irano - Turanian 230 (% 39.51), Euro-Siberian 35 (% 6.01), Euxine 10 (% 1.72), Mediterranean 9 (% 1.55), Hyrcano-Euxine 3 (% 0.51) and many regional or unknown phytogeographic elements 295 (% 50.68). Total 47 (% 8.07) endemic species have been collected from the area. 2 species of the total 582 taxa belong to *Pteridophyta* division and 580 taxa belong to *Spermatophyta* division. One of the *Spermatophyta* taxon belongs to *Gymnospermae* and 579 taxa belong to *Angiospermae*. 481 taxa of Angiospermae are included in *Dicotyledoneae* and 98 taxa are included in *Monocotyledoneae*.

The greatest 10 genera are ordered as fallows: *Astragalus* 18 (% 3.08), *Silene* 15 (% 2.57), *Centaurea* 11 (% 1.88), *Ranunculus* 11 (% 1.88), *Gagea* 10 (% 1.70), *Trifolium* 9 (% 1.54), *Salvia* 9 (% 1.54), *Polygonum* 7 (% 1.20), *Alyssum* 6 (% 1.02) and *Vicia* 6 (% 1.02). When the flora of the area is analysed by Rauinkiaer's life forms, it is noted that hemicrytophytes 300 (%51.64) therophytes 139 (% 23.93), cryptophytes 85 (% 14.62), chamaephytes 29 (% 4.99) and phanerophytes 28 (% 4.82). Some undefined features and different variations from knows characters of 9 taxa were determined. The distributions of the endemic taxa according to the red data is a fallows: 3 taxa in endangered (EN), 4 taxon in vulnerable (VU), 5 taxa in near threatened (NT), 30 taxa in least concern (LC), 1 taxon data deficient (DD).

Keywords: Flora, top (katavin) dağı, Patnos, Ağrı, Turkey

ID:189-BOP

Isolation of Bacteria with Silicium Dissolution Ability from Boron Clay

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Boron is a naturally found ore in some soils, sedimentary rocks and oceans. Boron has been widely used in production of glass and ceramics, insulation fiberglass, textile fiberglass, glass, enamels, glazes, detergents, bleaches, alloys, metals, fire retardants, agricultural fertilizer, adhesives and various chemicals. The fundamental boron reserves are located in Turkey (72% of), Russia, Chile, China and Peru. About 50% of the boron reserves of Turkey is found in Emet and Hisarcık Region. Bor mineral supplied from Emet-Hisarcık Region is defined cholemanite. After enrichment process of colemanite, half of the ore emerges as waste. However, there are very valuable trace elements such as lithium, rubidium, cesium, titanium in colemanite wastes. To obtain these valuable trace elements, the silisium in the ore has to be dissolved. In this study, it is aimed to isolate and identified the bacteria with silisium dissolution ability from boren clay. According to the results of the study, the bacteria were identified as Enterobacter sp. strain, *Klebsiella* sp., *Leclercia* sp., *Leclercia adecarboxylata* by PCR of 16S rDNA gene region. This is the first study to isolate and identified bacteria with silisium dissolution ability from boron reserves. In the further study, it is planned to apply the isolated bacteria on boron clay for recovery of the trace elements by nature friendly method.

Keywords: Boron clay, silicium dissolution, 16S rDNA gene region

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ID:200-BOP

Effect of Some Plant Growth Regulators on Apoplastic Antioxidant System in Wheat (Triticum aestivum L.)

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It was aimed to investigate the effects of salicylic acid (SA), nitric oxide (NO), putrescine (Put), abscisic acid (ABA), ethylene and estradiol (Est) on the activity of apoplastic antioxidant enzymes, the content of reactive oxygen species (ROS) such as H_2O_2, superoxide anion (O_2^-), and the level of lipid peroxidation (LPO) in wheat (Triticum aestivum cv. Doğu-88) seedlings grown at controlled conditions. In addition, SDS-PAGE profiles of apoplastic proteins were evaluated at the same plant leaves. Day 12, the concentrations of SA (0.1 and 1 mM), sodium nitroprussid (0.1 and 1 mM SNP) as a donor of NO, Put (0.1 and 1 mM), ABA (50 and 100 µM), ethaphon (50 and 100 ppm Etp) as a donor of ethylene, and Est (10^{-6} and 10^{-8} M) were applied to the seedling leaves. After 3 days, the applied and non-applied (as control) leaves were used as experimental material. All applications increased apoplastic peroxidase (POX) activity while reduced superoxide dismutase (SOD) activity, compared to respective controls. The same applications decreased H_2O_2 and O_2^- content. In addition, LPO level (as malondialdehyde) was decreased by SA and Est applications. But LPO level was increased by ABA and NO applications while unchanged by Put and Etp. Moreover, all the applications increased the amount of apoplastic proteins from seedling leaves and changed their polypeptide profiles, compared to control. Our results show that especially SA, Put and Est applications can stimulate apoplastic antioxidant system while decrease ROS level, and significantly affect apoplastic protein content in wheat seedlings. It has been suggested that it is important to know the effects of the plant signal compounds on apoplastic antioxidant system before studied the response of environmental stresses on a plant.

Keywords: Apoplast, antioxidant system, plant growth regulators, wheat

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ID:202-BOP

Nitric Oxide Pretreatment to Maize (*Zea mays* L.) Seeds Stimulates Antioxidant System in Seedlings Exposed to Cadmium Stress

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In this work, the alleviative effect of nitric oxide (NO) pretreatment was investigated in response to cadmium (Cd) stress of maize (*Zea mays* cv. Karadeniz yıldızı) seedlings. For this, maize seeds before germination was presoaked in the solutions (0.0, 0.01, 0.1, 0.5 mM) of sodium nitroprusside (SNP), a donor of NO, for 8 hours, and then the seeds were planted. The obtained seedlings were exposed to different levels (0.0, 25, 50, 200 mM) of CdCl2 on the 14th day of the planting. After 3 days, the leaves and roots of the seedlings were harvested, and their antioxidant enzyme activities such as superoxide dismutase (SOD), catalase (CAT) and guaiacol peroxidase (POX) were determined [1]. In addition, the contents of malondialdehyde (MDA), an indicator of lipid peroxidation [2, 3], and endogenous H2O2 were evaluated. Findings showed that SNP pretreatment or Cd application alone increased CAT and POX activities in leaves while decreased in roots. But the same applications alone generally increased SOD activity in both leaf and root. SNP+Cd applications also generally stimulated CAT and POX activities in leaves while decreased in roots. Also SNP+Cd applications generally stimulated SOD activity in leaves but could not show a significant variation on the activity in roots. MDA and H2O2 contents, however, generally decreased in the seedlings applied SNP+Cd. Moreover, 0.01 mM SNP pretreatment was the most effective application on the stimulation of antioxidative response in the maize seedlings under Cd stress. But this effect was adversely affected by Cd concentration increase. Results show that NO pretreatment to maize seeds can stimulate antioxidative system at their growing seedlings during Cd stress.

Keywords: Heavy metal stress, nitric oxide, antioxidant system

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Toxicological Evaluation and Risk Assessment of Chitooligosaccharides on Human Blood

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Chitin is synthesized by an enormous number of living organisms; it is the most abundant polymer after cellulose. The most important derivative of chitin is chitosan, obtained by partial deacetylation of chitin under alkaline conditions or by enzymatic hydrolysis. Chitin and chitosan are known to have important functional activities but poor solubility makes them difficult to use in food and biomedical applications [1]. Chitooligosaccharides (COS) are the degraded products of chitosan or chitin prepared by enzymatic or chemical hydrolysis of chitosan. The greater solubility and low viscosity of COS have attracted the interest of many researchers to utilize COS and their derivatives for various biomedical applications [2]. The aim of this study was to investigate cytotoxic effects and the antioxidant activity of COS lactate (0 - 500 µg/ml) on human peripheral blood mononuclear cells (hPBMCs). Cytotoxic effects were determined by neutral red (NR) assay. Total oxidant status (TOS) and total antioxidant capacity (TAC) were performed to determine the oxidant/antioxidant levels. 0-200 µg/ml doses of COS lactate treatment increased TAC levels and decreased TOS amounts. Nevertheless 250 and 500 µg/ml doses of this biopolymer treatment increased the TOS levels in blood cells. In addition to this, no change in the cell viability was found in the low doses of COS lactate treatment (0-200 µg/ml) whereas decreased cell viability was obtained in the high dose of COS lactate treatment (500 µg/ml). The findings of the present study showed that high dose of COS lactate induces the oxidative stress and cytotoxicity on human blood. The results of the present study indicated that COS lactate treatment induces cytotoxicity and oxidative damage on human blood cells in a dose dependent manner. Consequently, the overconsumption of COS lactate can be detrimental to human health.

Keywords: Çeriğ, toxicity, human blood cell

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ID:209-BOP

In-vitro Evaluation of the Cyto-Genotoxicity and Oxidant/Antioxidant Potential of a Hot-Water Extract from Mycelium of the *Pleurotus sajor-caju* on Human Blood Mononuclear Cells

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The health benefits of edible mushrooms are well known, so their extracts and tablets are sold by markets. *Pleurotus sajor-caju* (PSC) is recognized as an edible mushroom. This research was designed to examine cytotoxicity, oxidative destruction and genotoxicity of increasing concentrations (0 - 500 µg/mL) hot-water extract from mycelium of the PSC on human blood mononuclear cells (hBMCs). For this purpose, cytotoxicity was identified by lactate dehydrogenase (LDH) release and 2.3-bis [2-Methoxy-4-nitro-5-sulfophenyl]- 2H-tetrazolium-5-carboxyanilide (XTT) assay. Total antioxidant capacity (TAC) and total oxidant status (TOS) was defined to assess the oxidative damage. The DNA destruction was scrutinized by cytokinesis-block micronuclei (CBMN) and chromosome aberrations (CAs) assays as an expression of genotoxicity. As a result of these, PSC didn't cause meaningful changes to cytotoxicity at applied concentrations except for the high concentrations (250 and 500 µg/mL). The increasing applications (10-75 µg/mL) significantly enhanced TAC and reduced TOS. Whereas, 250 and 500 µg/mL doses insignificantly enhanced TOS and reduced TAC. On the other hand, PSC didn't cause increases at CAs and CBMN rates. We should add that PSC could lead to CAs at 500 µg/mL dose. According to our findings, PSC can be utilized safely, but it has also in a time and dose-dependent consequences on persuading oxidative damage and cyto-genotoxicity on hBMCs.

Keywords: *Pleurotus sajor-caju*, human blood cells, cytotoxicity

ID:248-BOP

Identification and Characterization of Potential PGPR Strains from Agricultural Areas in Erzurum-Turkey

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Plant Growth Promoting Rhizobacteria (PGPR) has important role in the soil fertility and crop growth. Applications of PGPR strains are dramatically increased in agricultural lands in last decades because of their beneficial effects and low-cost. In the present study, rhizospheric soil samples were collected from 15 different locations in Erzurum-Turkey. 32 sample bacteria isolations were realized in these locations. The samples were aseptically transferred to the laboratory. Dilution series (10^{-1}-10^{-7}) were spread on Luria-Bertani (LB) agar plates and single colonies were selected for further purification studies. Totally 200 pure strains were isolated. Then, each of strains was treated to private mediums for detection of their N2-fixing capability (Nitrogen Free Medium), phosphate-solubilization (Pikovskaya's (PKV) agar medium and IAA (Indole acedic acid) production (Salkowski's reagent) which have critical roles for detection of active PGPR strains. Conventional technique was used for identification of the active potential PGPR isolates. Molecular identification of the isolates was done by using PCR with universal primers for 16S rRNA gene region. According to the results, 34 potential PGPR isolates were determined and their molecular characterization was done.

Keywords: PGPR, nitrogen fixation, phosphate-solubilization, IAA production,16S rRNA

ID:253-BOP

Determination of Potential Nitrogen-Fixing Bacteria with Conventional and PCR-Based Methods

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Abstract

During the past decades, inorganic fertilizers were used undesired levels for promote and enhance to crop production in agricultural areas all over the world. In contrast, the soil pollution and detrimental effects on the soil fertility was caused by excessive application chemical fertilizers. To overcome to such critical problems, Plant growth promoting rhizobacteria (PGPR) have been utilized as an alternative solution to plant growth, soil health and productuvity in the agricultural regions past decades. There are many mechanisms (biological nitrogen fixation, phosphate-solubilization, production of 1-Aminocyloproporane-1-carboxylate deaminase (ACC) and phytohormones) responsible for plant growth. Biological nitrogen fixation is one of the most crucial role among these mechamisms. In this regard, numerous conventional studies were realized for accurate selection of potential nitrogen-fixing PGPR strains. The main goal of the present study was to evaluate the potential nitrogen-fixing PGPR strains with conventional and spesific gene primer set for related gene which is responsible for nitrogen fixation in the bacteria. Soil samples for PGPR isolation studies were obtained from agricultural areas in Erzurum-Turkey. The samples were transferred to laboratory aseptically. Dilution series (10^{-1}-10^{-7}) were spread on Luria-Bertani (LB) agar plates and single colonies were selected and storaged for further purification studies. Then, each of strains was inoculated onto Nitrogen Free Medium (NFM) for determination of N_2-fixing capability. From molecular perspective, according to the literature, the *nifH* gene region is the most well-known marker gene to identify bacterial N_2 fixation mechanisms. In this regard; a new primer set were designed and called as a NifH4F/NifH4R. 5 potential nitrogen-fixing bacteria were determined with conventional method. 2 of 5 bacteria were amplificated with newly designated primer set. Consequently; the results showed that more specific and well designed primer sets can be alternative to determined selection of local N_2-fixing PGPR isolates.

Keywords: PGPR, *nifH* gene, NifH4F/NifH4R primer set, Nitrogen-fixing bacteria

ID:260-BOP

Determination of the Antioxidant Properties of Cefan Melon (*Cucumis melo* L. C.V./ *Cucurbitaceae*) Grown in Siirt Province

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The characteristics of melon (Cefan) with high nutritional value which was grown in Tulumtaş region of Kurtalan district of Siirt province, were investigated. Three different parts of the melon were examined by two different methods (lyophilized, extraction). For this purpose, total phenolic and total flavonoid contents were analyzed for content analysis. Biochemically DPPH, FRAP, Iron chelating activities were determined. When the results of all analyzes were evaluated together, it was determined that Cefan melon variety known with its sour taste had high antioxidant content especially in unconsumed shell and core parts. It was determined that Cefan melon, which is preferred in regions between melon varieties, has high content of phenolics and flavonoids especially in the shell part, and it has been determined that it has appropriate DPPH and FRAP activities. Generally, the order of values of bioactivities were listed as shell> flesh> core, but there is a different situation according to solvents and extraction methods. For this reason, it is considered that parts of the shell and core should be evaluated in animal feed and industrial applications. Therefore, it is considered that shell parts used as waste should be considered as additional products. Future bioassay studies and analysis of active matter are expected to reveal the potential of Cefan melon.

Keywords: Antioxidant, cefan melon, bioactivity

ID:286-BOP

The Effects of Some Nanoparticules on Growth and Development in Maize (*Zea mays*) Plant

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Nanoparticles (NPs) are promising materials with wide potential applications. The rapid increase in use of nanomaterials is increasing the presence of metal and metal-oxide nanoparticles in the aquatic and terrestrial environment. The most commonly used metal-based nanoparticles are copper oxide (CuO) and zinc oxide (ZnO) nanoparticles. However, the increased use of these nanoparticles requires an improved understanding of their potential effects on the environment and organisms. Therefore, the present study was carried out to investigate the potential effects of CuO and ZnO nanoparticles on plant antioxidant system. With this aim, 9 days old maize seedlings were exposed to different doses of CuO (250, 500, 100 mg/L) and ZnO (100, 200, 400 mg/L) nanoparticles in hydroponics. Effects of nanoparticles on plant growth, chlorophyll content, malondialdehyde (MDA) and hydrogen peroxide (H_2O_2) levels and peroxidase activity (POX) were analyzed. Our results showed that CuO and ZnO NPs treatments inhibited plant growth and chlorophyll contents, but enhanced MDA and H_2O_2 levels in maize seedlings when compared with the control. In addition, CuO and ZnO NPs application significantly decreased POX activity of seedlings compared to the control groups. Obtained results revealed that use of high amount of CuO and ZnO nanoparticles adversely affects antioxidant system of maize plants.

Keywords: Antioxidant system, hydrogen peroxide, nanoparticles

ID:302-BOP

Isolation and Molecular Characterization of Bacterial Strains with Magnesite Enrichment Potential from Gümüşhane Soil

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Magnesite ($MgCO_3$) is the most important source used in the production of pure magnesium and various magnesium components and has become an important economic element for countries due to its versatile industrial use. however, pollutants with calcium derivatives, depending on the geological characteristics of the region, significantly limits the use of mines. Enrichment studies using physical and chemical methods for the removal of calcium pollutants cause high cost, low efficiency and negative effects on the environment. Therefore, scientific communities have developed new approaches based on microorganisms to solve the problem. For this purpose, soil samples were taken from different regions of Gümüşhane province and brought to the research laboratory aseptically to carry out bacterial isolation studies. In the laboratory, calcium carbonate and magnesium carbonate dissolution potentials were tested for each isolate and isolates which were able to dissolve calcium carbonate but not magnesium carbonate were identified. Then, morphological, physiological and biochemical identification studies of active bacterial isolates were performed according to the general microbiology procedures. According to the results of the sequence data, active isolates MT 17 and MT 24 were identified as *Stenotrophomonas maltophilia* and *Bacillius* sp., respectively. In conclusion, the results of this study clearly offer two valuable bacterial strain for the development of new microbiological based approaches to eco-friendly removal of calcium pollutants from the magnesite ores.

Keywords: Magnesite, bacteria, isolation

ID:308-BOP

Different applications of Punica granatum L. Peel

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Pomegranate (*Punica granatum* L.) is a fruit tree, which belongs to *Punicaceae* family. The pomegranate has been naturally grown in the region from India to Iran. On the other hand, these fruit bearing- plants have been cultivated all over the world, notably over the Mediterranean region. Turkey is the fourth rank in terms of *P. granatum* production in the world. Pomegranate has been used not only an edible fruit but also in traditional medicine for the treatment of dysentery, diarrhea, helminthiasis, and respiratory pathologies. Besides, the fruits of pmegranate has been used to produce fruit juice. The yield of fruit juice is less than half of the total weight of the fruit. At the end of the fruit juice production process, a significant amount of pomegrate peel (fifty percent of pomegranate) is released as waste and cause environmental pollution. Therefore, the researchers have given a great attention to utilize waste of juice production to solve environmental pollution problem. The pomegranate peel contains different phytochemicals such as phenolic acids, anthocyanins and tannins (ellagitannins, punicalagin, punicalin and gallotannins). The pomegranate peel has potential to use as drugs or food supplements due to its rich content and diverse biological activities suh as antibacterial, antifungal, antoxidant and anticancer, etc. There have been many researchs in the Literature which reports the pomegranate peel has nutritional value and the bioactive compounds as much as the edible parts and can be used in pharmacology. It is aimed to summarize the utilization ways of pomegranate peel in this rewiev.

Keywords: *Punica granatum* L., biolaogical activity, phytochemical

ID:335-BOP

Effects of Copper, Zinc and Salicylic acid in Lead Stress on Retrotransposon Polymorphism in Wheat (*Triticum aestivum* L.)

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Lead (Pb) that has toxic effects on environmental pollution and soil fertility is both one of the major heavy metals and it severely affects wheat production. Biotic and abiotic stresses cause changes in plant physiology and genomic instability in plants. One of the factors affecting genomic stability is polymorphism caused by retrotransposons. In this study, the effect of different combinations of copper (Cu-1mM), zinc (Zn-0.015mM) and salicylic acid (SA-1mM) against to retrotransposon polymorphism caused by Pb (5mM) stress was investigated using the Inter Retrotransposon Amplified Polymorphism (IRAP) marker technique (selected IRAP primers= Nikita N-57, Nikita-E2647, Sukkula, Stowaway and WLTR2105) in the Çetinel 2000 wheat variety. According to the results, genomic template stability (GTS) rate was 16.38% and polymorphism rate was 83.72% in Pb stress. In the applications against Pb stress, GTS rate was calculated as 61.4% in Pb + Zn, 50% in Pb + Cu, 50% in Pb + Zn + Cu, 79% in Pb + Zn + SA, 77% in Pb + Cu + SA and 68.8% in Pb + Zn + Cu + SA treatments. In parallel, polymorphism rates were calculated as 38.5%, 50%, 49.4%, 21%, 22.3% and 31.8% respectively. These results were clearly showed that Cu, Zn and SA applications against Pb stress caused to increase in GTS rate and a decrease in polymorphism in wheat.

Keywords: IRAP, plant, stress, transposon

ID:338-BOP

Role of putrescine on genomic instability caused by salinity stress in *Triticum aestivum* L.

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Salt stress, negatively effecting plant growth and development, is one of the major abiotic stresses. As salinity is associated with ionic toxicity and osmotic stress to plants and it increases production of reactive oxygen species (ROS), which cause seriously damages a wide range of macromolecules such as DNA, proteins, and lipids. Although the effects of salt stress are well known on DNA damage, there is no report investigating the protective role of polyamines on DNA damage in *Triticum aestivum* L. growing under salt stress. Thus, the present study aimed to investigate DNA damage levels in *Triticum aestivum* L. subjected to salt stress [0 (distilled water), 50, 100 and 150 mM NaCl] using Random Amplified Polymorphic DNAs (RAPDs) and whether putrescine [0 (distilled water), 0.01, 0.1 and 1 mM] had any protective effects against these changes. The results showed that salt treatment (in all tested concentrations) caused to increase in RAPDs profile changes (DNA damage) and a decrease in genomic template stability (GTS) (37.8%, 35.3% and 29.3). However, these harmful effects of salt stress decreased after treatment with the putrescine doses (64.3%, 67.2% and 74.1%). The results of this experiment have clearly shown that putrescine could be used effectively to protect wheat seedlings from the destructive effects of salt stress.

Keywords: Genomic template stability, polyamines, RAPD

ID:339-BOP

B-estrodiol as a Protective Hormone in DNA Methylation Changes of Dicamba-Treated *Phaseolus vulgaris*

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The use of herbicides in agriculture may represent a potential toxic risks to non-target some crops. 3,6-dichloro-2-methoxybenzoic acid (dicamba) is a herbicide used widely in agriculture today. Long term and excessive use of dicamba is represent a potential danger to the genetic material and also alters genes expression by epigenetic modifications of exposed organisms. On the other hand, it is well known that exogenous application of some materials such as mammalian sex hormones (MSHs) may help to increase tolerance in plants in external environment. β-estrodiol (is a basic hormone in mammals) is belived that can regulate growth processes and resistance to stress in plant. The research conducted in this study was aimed at analyzing the role of β-estrodiol on DNA methylation changes that was caused by dicamba with Coupled Restriction Enzyme Digestion-Random Amplification (CRED-RAs) assays in *Phaseolus vulgaris* seedlings. The results showed that dicamba caused to DNA methylation changes by decreasing the rate (8.7%, 7.5% and 6.9%) depending on the dose increase (0.2, 0.4 and 0.6 ppm). However, these effects of dicamba seen at higher levels were decreased after treatment different three concentrations (10^{-8}, 10^{-9} and 10^{-10} M) of β-estrodiol (3.9%, 4.7% and 7.3%). The results of this experiment have clearly shown that increasing of DNA methylation changes under dicamba stress may be a part of the defense system against the stress and β-estrodiol could be used effectively to protect bean seedlings from the destructive effects of dicamba.

Keywords: CRED-RA, herbicide, mammalian sex hormones

ID:343-BOP

The effects of chromium on DNA methylation profiles by CRED-RA technique in *Helianthus annuus* L.

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Heavy metal pollution, one of the environmental problems, poses a major threat to agricultural productivity and causes negative physiological and genotoxic effects in plants. In addition, it is well known that heavy metals such as chromium (Cr) have an effect on DNA structure, DNA stability and especially regulation of gene expression by DNA methylation changes. DNA methylation, which is protection mechanism of plants, has been proposed as one of the predominant epigenetic mechanisms that regulate multiple biological processes in plants, including growth, development, and environmental stress responses, which are considered a genomic defense system to maintain genome integrity. In this study, the effect of Cr on DNA methylation profiles, which is a protection mechanism of plants, were investigated by Coupled Restriction Enzyme Digestion-Random Amplification (CRED-RA) technique in *Helianthus annuus* L. In addition, it was aimed to investigate the effect of ascorbic acid (AsA; 200 mg/L) and copper (Cu; 0,25 mM) treatments against Cr (1 mM) toxicity. The results showed that Cr caused to DNA methylation changes by increasing the rate (45.3%). This change of DNA methylation caused by Cr was decreased along with Cu treatment (18.2%) and AsA treatment (32.2%). According to the results, the effects of Cu and AsA against Cr stress in DNA methylation alterations were determined.

Keywords: CRED-RA, heavy metal stress, sunflower

ID:359-BOP

An Alternative Approach for Detection of Phosphate Solubilization Bacteria from Agricultural Areas in Erzurum

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Abstract

Plant growth promoting rhizobacteria (PGPR) have advantageous effects on soil health and crop production by different mechanisms (Nitrogen fixation, phosphate-solubilization, IAA production etc.). Phosphate solubilization has a vital role among these mechanisms. Phosphorus (P) is the second essential nutrient for the growth and development of plants after the nitrogen (N). P deficiency is one of the major problem for restricted to crop productuvity and plant health. The ability of some microorganisms have convert insoluble phosphorus (P) to an accessible form. Therefore, Phosphate solubilizing bacteria (PSB) is needed for overcome to P deficiency of plants. Until today, it has been realized succesfully in many studies to detection of phosphate solubilizing bacteria with conventional methods. In the present study, we aimed to detect phosphate solubilizing gene (pqq) in bacteria with gene spesific primer set as an alternative method. According to the literarature; pqqBCD designed primer set were utilized for detection of *pqq* gene in 5 bacteria which is isolated from agricultural areas in Erzurum. The results show that 2 of bacteria were succesfully determined not only conventional methods but also designed gene spesific primer set in the literature. As a conclusion; gene spesific studies can be alternative method for detection of PGPR properties.

Keywords: *pqq gene,* Phosphate-solubilization, PGPR, pqqBCD primer set

ID:361-BOP

Evaluation of Antimicrobial and Antioxidant Activities of *Phlomoides glabra* (Boiss. ex Benth.) Kamelin & Makhm.

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Phlomoides glabra (Boiss. ex Benth.) Kamelin & Makhm, collected from Ağrı province, was extracted in a Soxhlet apparatus with n-hexane, chloroform, acetone and methanol. Four fractions were obtained, and used for antimicrobial and antioxidant tests. Elements of the human flora *Escherichia coli* (ATCC35218) and *Escherichia coli* (ATCC25922), human pathogenic bacteria *Klebsiella pneumoniae* (ATCC709603), *Enterococcus facealis* (ATCC29312), Staphyloccoccus aureus (ATCC25923), *Pseudomonas aeruginosa* (ATCC27853), and plant and human pathogenic bacteria *Burkholderia cepacia* and *Enterobacter cloacea*, were used for antimicrobial activity tests. None of the fractions obtained inhibited bacterial growth in disk diffusion tests. Antioxidant activity was determined by DPPH scavenging test, which is a common and easily affordable test that provides insight for the antioxidant activity. Chloroform and acetone fractions, and methanolic subfractions exhibited strong antioxidant activity (82 to 95%) while n-hexane fraction was inefficient. We also computed EC50 values to determine the optimal radical scavenging agent. EC50 values for chloroform, acetone, and methanolic subfractions X and Y were 307, 280, 283 and 309 µg/ml, respectively.

Although many members of the Lamicaeae family possess antimicrobial activity, Phlomoides glabra lacked this activity, which was surprising. It was concluded that Phlomoides glabra possesses high antioxidant activity and additional studies are required to elucidate this potential.

Keywords: *Phlomoides glabra*, antioxidant activity, DPPH scavenging test

BIOLOGY
POSTER PRESENTATIONS

ID:252-BPP

Reduction of Phytotoxic Effect of Cadmium Heavy Metal by Biomass of Edible Fungus, *Armillaria tabescens*

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Industrial activities cause heavy metal pollution in both groundwaters and soils. Soils contaminated with heavy metals such as Cd, Hg, Pb and Zn are not suitable to produce plants. Plants grown in this area accumulate heavy metals in leaves and stems and cause many dangerous diseases such as cancer. Especially, the toxic effect of Cd is very high because it disorders the enzymatic systems of cells. By using the heavy metal resistant organisms, reduction of heavy metal toxicity is both proper and important.

In this research work in order to reduce toxicity caused by Cd, biomass of *Armillaria tabescens,* an edible fungus, was designed to in corn plant in hydrophonic environment. For this purpose, stress parameters were analysed separately for root and stem. At the end of applications the amounts of MDA, H_2O_2, and O_2. were analysed and the activities of antioxidant enzymes such as SOD, CAT and POX were measured. As a result, amounts of MDA, H_2O_2, and O_2. increased by Cd application in both root and stem compared to control group while the amounts of these parameters decreased in Cd^+ *A. tabescens* application. On the other hand, Cd^+ *A. tabescens* application caused increase amounts of SOD and decrease the activities of other antioxidant enzymes(CAT, POX). These results showed that biomass of *Armillaria tabescens* application can reduce the adwerse effects of heavy metal toxicity.

Keywords: Heavy metal, edible fungi, zea mays

ID:255-BPP

Bacteria Isolated From Apoplast of Cold-Tolerant Wild Plants Stimulate Cold Stress Response of Bean (*Phaseolus vulgaris* L.)

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Bacteria were isolated from apoplastic region of cold-resistant wild plant leaves and applied to bean (*Phaseolus vulgaris* L. cv. Elkoca-05) leaves exposed to cold stress. Wild plants (*Draba nemorosa*, *Colchicum speciosum*, *Scilla siberica*) were collected in Erzurum-Palandöken Mountain in February-March. Then, apoplastic (extracellular) liquid of their leaves sterilized with 10% sodium hypochlorite and sterile pure water, respectively, was extracted by vacuuming in 20 mM CaICl2 and 20 mM ascorbic acid solutions. The obtained apoplastic liquid (200 mL) was added in the Petri dish containing Nutrient agar medium. The petri dishes were incubated in an incubator (4 °C) for 10 days, and then the growing bacteria were purified and their species identifications were realized by 16S rRNA sequencing analyze. The isolates of Pseudomonas fragi, *Pseudomonas fluorescens* and *Pseudomonas proteolytica* were identified from apoplast of the wild plants. These bacteria (108 CFU/mL) were inoculated the leaves of 10-days bean seedlings growing at 22/20 oC and the seedlings were transferred to cold conditions (8/5 oC) for 3 days. Freezing damage of leaves[1] and ice nucleation activity of apoplastic proteins[2] were determined to test cold response of the bean seedlings. In addition, ACC deaminase activity of the bacterial isolates[3] were evaluated. The bacterial isolates applied to the bean leaves decreased their frost damage and increased ice nucleation activity of their apoplastic proteins. All the bacterial isolates exhibited ACC deaminase activity. On the results, it is suggested that the bacterial isolates extracted from apoplast of the wild plants can be evaluated in the plant growth promoting bacteria (PGPB) group stimulating cold stress response of cold-sensitive plants.

Keywords: *Phaseolus vulgaris*, PGPB, ACC

ID:292-BPP

Genotoxicity Evaluation of the *Vitex agnus-castus* L. Essential Oil with the Yeast DEL Assay

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The chasteberry (*Vitex agnus-castus*, VAC), which is endemic to Mediterranean Europe, is a member of the genus *Vitex* of *Verbenaceae* family. Its essential oil contains 1,8-cineole, α-pinene, α-terpinyl acetate, (Z)-β-farnesene and this rich content of bioactive compounds makes this plant valuable for use in therapeutical applications. VAC has mostly been used in the treatment of women complaints such as premenstrual syndrome (PMS) and also due to the chemopreventive, immunomodulatory, tumoricidal, antimicrobial, antiepileptic and anti-inflammatory activites. Prior to using a plant material for any medicinal purposes, it should be investigated that whether it has any negative effects on human health. Genotoxicity is one of the aspects that should be examined in this context and this term indicates the changes of DNA molecules in cells because of the various chemical, physical and biological factors. In order to evaluate the mutagenic and carcinogenic properties of the chemical substances or herbal extracts, the short-term genotoxicity test systems can be used. The yeast DEL assay is relatively more economical and advantageous of all, because it produces fast and reliable results. In this regard, the present study was conducted to investigate the mutagenic and carcinogenic properties of VAC essential oil in order to perform its safety assessment with the yeast DEL assay. For this purpose, the essential oil of VAC was extracted by Clevenger distillation method and its genotoxic properties were tested at 0.2, 0.4, 0.6, 0.8 and 1.0 µl/plate concentrations by using RS112 strain of *Saccharomyces cerevisiae*. According to the results, none of the tested concentrations showed any mutagenic and carcinogenic effects on eukaryotic yeast cells. In conclusion, the results have showed that the essential oil of VAC is genotoxically safe but the other toxicity and safety tests should be carried out to prove that it has not any adverse effects on human health.

Keywords: *Vitex agnus-castus* L. essential oil, mutagenicity, yeast del assay

ID:337-BPP

Antioxidant Enzyme Activities of Lead, Salicylic Acid, Copper and Zinc Treatments in *Triticum aestivum* L.

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Plants maintain their life cycles under the various environmental conditions such as oxidative stress induced by heavy metals. Accumulation of metal ions in plants causes the formation of free radicals and stimulates the antioxidative defense systems. In this study, the activities of superoxide dismutase (SOD), peroxidase (POD) and catalase (CAT) are investigated in the leaves and roots of wheat (grown in a hydrophobic system and Çetinel 2000, a wheat kind sensitive to heavy metal, was used) under the lead (Pb-5mM) induced stress. Against the stress of Pb, changes in the activities of these enzymes were observed by applying salicylic acid (SA-signal hormone-1mM) with copper (Cu-1mM) and zinc (Zn-0,015mM), which is necessary for small amount of plants. In this wheat variety, malondialdehyde (MDA) content increased in Pb application while SA, Cu and Zn applications decreased in MDA content. When antioxidant enzyme activities were examined, SOD, POD and CAT enzyme activities were increased in Pb application. The most important point here is that SA, Cu and Zn applications increase these enzyme activities even more. In this study, it was clearly observed that the effectiveness of antioxidant mechanism in plants was increased with these applications. Understanding the relationship between stress and antioxidant enzyme activities in plants is important for plants to cope with stress.

Keywords: Stress, wheat, catalase

ID:344-BPP

Ascorbic acid and Copper Treatments on Enzyme Activity in Chromium- Exposed Sunflower (*Helianthus annuus* L.)

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Some heavy metals such as copper (Cu), are required for plant metabolism at low concentrations and are involved in a number of physiological processes and different metabolic pathways while other heavy metals such as chromium (Cr) adversely affect plant metabolism, by causing physiological, biochemical and molecular changes. It is known that the accumulation of Cr at the cellular level lead to oxidative damage by producing of reactive oxygen species (ROS) which react with biomolecule structures such as DNA, RNA, protein and adversely affects the vital functions of the cell. However, antioxidants such as ascorbic acid (AsA) are intended to balance keep the production of ROS formed. In this study, we were aimed to investigate the effect of Cu and AsA application on enzyme activity in order to decrease the toxicity caused by Cr in *Helianthus annuus* L. The results showed that malondialdehyde (MDA), showing lipid peroxidation, with Cr stress increased (954.09%) for this reason superoxide dismutase (SOD) activity has increased (371.42%). Foliar-applied AsA and Cu, reduced MDA (27.21% and 21.31%) and SOD (55.75% and 5.45%) activities under stress conditions. Peroxidase (POD) activity increased with Cr stress (117.49%), and also the AsA and Cu treatments were reduced this activity (5.97% and 5.55%). In addition, no significant change in catalase activity was observed. These results showed that Cu and AsA treatments could reduce the toxicity of Cr stress by increasing the activity of SOD and POD.

Keywords: Reactive oxygen species, antioxidant, heavy metal stress

MATHEMATICS/STATISTICS ORAL PRESENTATIONS

ID:36-MOP

A New Numerical Approach and Uniform Error Evaluation of Singularly Perturbed Problem with Boundary Layer Behavior

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The objective of this study is to use the finite difference method on Shishkin mesh for a linear singularly perturbed problem with an integral boundary condition. First, the asymptotic properties of the exact solution are provided. Then the problem is discretized on Shishkin mesh and the difference scheme is obtained. In conclusion, the error estimation indicates that the propose method results with a first order uniform convergence, independent from the perturbation term ε in the discrete maximum norm.

Keywords: Finite difference method, shishkin mesh, linear singularly perturbed problem

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ID:69-MOP

An Effective Numerical Method for Singularly Perturbed Nonlocal Boundary Value Problem on Bakhvalov Mesh

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The present study focuses on obtaining an absolutely accurate computational solution of a linear singularly perturbed problem with integral boundary condition on Bakhvalov mesh. A finite difference scheme was constructed and the approximation of the presented problem was obtained. Based on the ε perturbation parameter, it was established that the first-order uniform convergence was within the discrete maximum norm. A numerical experiment was performed in order to demonstrate the effectiveness and accuracy of the presented method. The results were confirmed through the relevant table and figures.

Keywords: singularly perturbed problem, finite difference scheme, Bakhvalov mesh,

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ID:70-MOP

Some Morphological Operations in Digital Multivalued Functions

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Digital continuous multivalued functions are constructed by Escribano et al. [6]. They define the notion of subdivision of a topological space. This notion is used to define continuity for multivalued functions. Boxer and Staecker [2] introduce connectivity preserving multivalued functions between digital images and demonstrate that these offer some advantages over continuous multivalued functions. One of these advantages is that the composition of connectivity preserving multivalued functions between digital images is connectivity preserving. Moreover, they give the definition of weak and strong continuity for multivalued function between digital images. The main goal of this study is to present some morphological operations for digital multivalued functions. We show that some operations such as dilation and erosion have strong continuity. Opening and closing operations have weak continuity.

Keywords: Digital multivalued function, morphological operations, strong and weak continuity

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ID:103-MOP

Radius of Strong Starlikeness of Normalized k-Bessel Functions

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In the present investigation, our main aim is to deal with the radius of strong starlikeness of the generalized-Bessel functions for three different kinds of normalization by making use of their Hadamard factorizations in such a way that the resulting functions are analytic in the open unit disk of the complex plane. The characterization of entire functions from Laguerre-Pòlya class plays an important role in this study. Moreover, It was shown that obtained radii are satisfied some functional equations. The main key tool of the our proofs is the Mittag-Leffler expansions and the infinite product representation of k-Bessel function, and minimum principle for harmonic functions. Also, we take advantage of some basic inequalities in the complex analysis.

Keywords: k-Bessel function, radius of strong starlikeness, Mittag-Leffler expansions,

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ID:134-MOP

A Study over Colouring in Graphs

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In graph theory, graph colouring is also one of the important parameters. Coloring of graphs is a quite handy method for solving problems encountered many fields especially in computer science and daily life. Various types of graph coloring are available in the literature. One of these types is the rainbow neighbourhood convention. In this study, we are conducting a detailed study of the rainbow neighbourhoods of a graph. We will find the rainbow neighbourhoods of some special graph types and we will calculate the rainbow neighborhood numbers of these graphs. We will characterize the rainbow neighborhood numbers of these graphs. The basics of the problem of graph coloring were first introduced by Francis Guthrie in 1852. It was encountered in the coloring of maps for the first time in practice to this problem. In the case of coloring the maps the problem becomes the process of assigning different colors to neighboring regions and the aim is to give a different color to all regions from their neighbors by using a minimum number of different colors. Over time, graph coloring algorithms have also seen to been able to solve problems in other some areas. Today, graph coloring is widely used in computer science and in everyday life to solve many problems.

Keywords: Graphs

ID:135-MOP

A Study about Topological Ordered Spaces

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The theory of closed sets and its related objects has performed a principal role within topological spaces. In 1965, Nachbin described the concept of topological ordered spaces and characterized this concept through closed sets. In this study, the concept of generalized closed sets defined by N. Levine have been considered as the basis. The answer to the question of when in topological ordered spaces the general closed set and classes of some special closed set built on it coincided has been investigated. Furthermore, some separation axioms which are weaker than T1 space and stronger than T0 space have been investigated. We present a concise survey of the improvements in the topic. Studies on the concept of general order are undoubtedly a valuable tool in understanding the foundations and common aspects of various branches of modern mathematics. The mathematical value of the concept of order is clearly evident in the applications. Closed sets are one of the basic objects in a topological space. For example, it is possible to define the topology on a set using either the axioms given for closed sets the Kuratowski closing axioms. In classical topology, separation axioms are a very important parameter for the classification of topological spaces. To date, many different separation axioms were investigated.

Keywords: Topology

ID:138-MOP

Homotopy Types of Independence Complexes of Graph Classes

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Let G be a simple undirected graph on the vertex set V. A subset S of V is called independent if any two vertices of S are not adjacent. The independence complex of G is a simplicial complex whose faces are the independent sets of G. In this talk, we study the homotopy types of independence complexes of crown graphs. We show that a Lozin transformed graph is homotopy equivalent to its suspension by the notion star cluster. Also we calculate homotopy type of some bipartite graph classes by using the result of Jonsson [7].

Keywords: Independence complex, homotopy type, star cluster

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ID:139-MOP

Eigenvalue Estimates Using Penrose-Like Operator on the Spin^c-Manifolds

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In this study, on the compact Rieamannian Spin^c-manifold we obtain an estimate for the square of the eigenvalue of the Dirac operator by using Penrose-Like operator. Morever, by considering the limiting case, we give an explicit form of the curvature tensor associated with the spinorial Levi-Civita connection.

Keywords: Spinc manifold, dirac operator, eigenvalues

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Independent Transversal Domination Number for Some Graphs

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The domination in graphs is one of the concepts in graph theory which has attracted many researchers to work on it because of its many and varied applications in such fields as linear algebra and optimization, design and analysis of communication networks, and social sciences and military surveillance. There have been several domination parameters. A set S of vertices in a graph G is called a dominating set if every vertex in V-S is adjacent to a vertex in S. An independent set in a graph is a set of pairwise nonadjacent vertices. A dominating set S of a graph G is said to be an independent transversal dominating set if S intersects every maximum independent set of G. The minimum cardinality of an independent transversal dominating set of G is called the independent transversal domination number. In this study the independent transversal domination number is investigated for Comet graph Ct,r, Lollipop graph Lm,n, Caterpillar Graph Tn,m, Fan graph Fm,n, k-pyramid Graph kP(n) and Ent Graph.

Keywords: Domination number, Independent set, Independent transversal dominating set

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ID:193-MOP

An Interpolation Theorem for Inequalities with A_p Weight

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Let T be a linear operator and $T^\ast$ denote its adjoint operator. Given an interval I in $\mathbb{R}$ and $f\in L^{\infty}(\mathbb{R})$ suppose that there exist positive constants C_1 and C_2 such that

$$\left(\int_I|Tf(x)|^q\, dx\right)^{1/q}\leq C_1\left(\int_I|f(x)|^q\, dx\right)^{1/q}$$

$$\left(\int_I|T^\ast f(x)|^q\, dx\right)^{1/q}\leq C_2\left(\int_I|f(x)|^q\, dx\right)^{1/q}$$

for every q which is near enough to 1.\\

Then we show that T maps $L^p(w)$ to $L^p(w)$ for every $w\in A_p$ with $1<p<\infty$.

Keywords: Interpolation, A_p weight

ID:195-MOP

Numerical Solution of Rosenau-KDV Equation with Strang-Siplitting Technique

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In this work, we apply strang splitting technique with help of quintic B-spline collocation method using two different linearization techniques to obtain numerical solution of generalized Rosenau-KDV equation with boundary and initial conditions. For this purpose, generalized Rosenau-KDV equation is splitted into two sub-problems such that one linear and the other is nonlinear. Each sub-problem are implemented the present method and to show the accuracy and efficiency of the method, the error norms and are calculated and compared with other ones available in the literature.

Keywords: Rosenau-KdV equation, strang splitting technique, quintic b-spline collocation method

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Operator –Time Siplitting Techniques For Numerical Solution of the generalized Rosenau Equation using Finite Element Method

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In this study, the generalized Rosenau equation is splitted into two sub-equations such that one linear and the other is nonlinear. These sub-equations is applied Petrov-Galerkin method using cubik B-spline functions with Strang splitting techniques. to show the accuracy and performence of the method, the error norms and are calculated and compared with other one available in the literature and invariant values of the generalized Rosenau equation are measured.

Keywords: Generalized rosenau equation, splitting techniques, cubik b-spline petrov-galerkin method

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ID:210-MOP

Numerical Scheme for Singularly Perturbed Boundary Value Problem on Bakhvalov mesh

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The present study focuses on obtaining an absolutely accurate computational solution of a nonlinear singularly perturbed problem on Bakhvalov mesh. A finite difference scheme was constructed and the approximation of the presented problem was obtained. Based on the ε perturbation parameter, it was established that the first-order uniform convergence was within the discrete maximum norm. A numerical experiment was performed in order to demonstrate the effectiveness and accuracy of the presented method. The results were confirmed through the relevant table and figures.

Keywords: singularly perturbed problem, finite difference scheme, Bakhvalov mesh

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ID:219-MOP

The set (AttR((0:AIn)))n∈N of Attached Primes of an Artinian R-module is Ultimately Constant

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Let R be a commutative ring with unity and I be an ideal of R, and let A be an Artinian R-module. Then the sequence of sets (AttR((0:AIn)))nÎN, the sets of primes associated to the submodules (0:AIn) of A for primary decomposition, is ultimately constant, that is AttR((0:AIn)) is, for all sufficiently large n, independent of n.

Here, we show how this Artinian result can be deduced from a result of Brodmann by use of the Matlis duality which applies to a complete semi-local Noetherian ring: This duality enables us to pass back and forth between the category of Noetherian modules and the category of Artinian modules. This technique is used in conjunction with the work of Sharp.

We recall the theorem of Brodmann. Let R be a Noetherian ring, and let N be a finitely generated R-module, and let I be an ideal of R. Then the sequence of sets (AssR(N/InN))nÎN, the set of primes associated to the submodules InN of N for primary decomposition, is ultimately constant.

Keywords: Artinian modules, Module Theory, Commutative Rings,

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ID:225-MOP

Convection-Diffusion Equation with Caputo-Fabrizio Derivative

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We know that diffusion is one of several transport phenomena that occur in nature. Reaction-diffusion systems influence local chemical reactions in which objects are transformed into each other. This system also affects diffusion, whereby the objects spread out over a surface. Central schemes may serve as universal finite-difference methods for solving non-linear convection–diffusion equations in the sense that they are not tied to the specific eigen structure of the problem, and hence can be implemented in a straight forward manner as black-box solvers for general conservation laws and related equations governing the spontaneous evolution of large gradient phenomena. The first-order Lax–Friedrichs scheme (P. D. Lax, 1954) is the forerunner for such central schemes. Thecentral Nessyahu–Tadmor (NT) scheme (H. Nessyahu and E. Tadmor, 1990) offers higher resolution while retaining the simplicity of the Riemann-solver-free approach. In this study, we achieve the time-fractional diffusion and time-fractional convection-diffusion equations. These equations are achieved from the standard equations by replacing the time derivative with a fractional derivative of fractional order. Fractional operators of type Caputo-Fabrizio were used to model diffusion and convection-diffusion equation. The Laplace transforms were applied to obtain analytical solutions for the fractional order diffusion and convection-diffusion equations. The solutions obtained can be useful to understand the modeling of anomalous diffusion and super-diffusive systems, transport processes and wave propagation phenomenon.

Keywords: Fractional derivative, advection-reaction diffusion system

ID:274-MOP

New Inequalities Obtained with Fractional Integrals of Caputo-Fabrizio Type

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The history of fractional analysis is based on the emergence of differentiation theory. However, due to the complexity of its physical structure, it could not be interpreted as classical analysis postponed the studies on this subject. Fractional analysis, better exposes the reality of nature. Therefore, more common use of this issue in science and engineering will play an important role in better interpretation and expression of nature. Recently, there has been a rapid increase in the number of applications in the field of fractional analysis. Because many approaches involving fractional derivatives and integrals have been developed to solve problems. Various definitions are given in the literature for fractional integral. Some of these are Riemann-Liouville, Caputo-Fabrizio, Katugampola fractional integrals. However, no matter how the integral of a fractional order is defined, when the integral is selected to be equal to an integer, the resulting expression is the same as the integer order integral. In this paper, firstly, we obtained a new kernel, then some new integral inequalities which are valid for fractional integrals of Caputo-Fabrizio type. To do this, we used some well known inequalities such as Hölder's inequality or power mean inequality and triangle inequality. This study offers researchers a way to obtain new results with fractional integrals of Caputo-Fabrizio type.

Keywords: Caputo-fabrizio, fractional integral, convexity

ID:275-MOP

Some New Inequalities for Convex Functions via Riemann-Liouville Fractional Integrals

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Hermite-Hadamard inequality, one of the most well-known inequalities in the literature, also gives us an equivalent property for convexity. This inequality is also known as trapezium inequality. Due to its rich applications, especially in the field of numerical analysis, this result has attracted many researchers from all over the world. In recent decades, we have seen a rapid development in inequality theory. There are several new extensions and generalizations of classical convexity obtained in recent years. There is a close relationship between theory of inequality and theory of convexity. Definition of convexity has its origin in Jensen's results and has opened up the most extended, useful and multidisciplinary domain of mathematics, namely, convex analysis. Also fractional analysis has evolved considerably over the last 30 years and has become popular in many technical and scientific fields. Many integral operators which ables us to integrate from fractional orders has been generated. Each of them has different properties or solves different problems such as semigroup property, singularity problems etc. In this paper, firstly, we obtained a new kernel, then some new integral inequalities which are valid for integrals of fractional orders by using Riemann-Liouville fractional integral. To do this, we used some well-known inequalities such as Hölder's inequality or power mean inequality. Our results generalize some inequalities exist in the literature.

Keywords: Riemann-Liouville, fractional calculus, convexity

ID:300-MOP

Analytical and Approximate Solutions of the Fractional Order Stiff Systems

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Fractional Order Stiff Systems have been studied in many areas such as chemical engineering, non linear mechanics, biochemistry, and life sciences. Hence, the need for a reliable and efficient technique for the solution of stiff systems of differential equations is of high importance. In the year 2014, Khalil et al. developed a novel definition of fractional derivative, which is called the conformable fractional derivative. It is based essentially upon the familiar limit definition of the derivative. Subsequently, in the year 2015, Abdeljawad developed the conformable fractional-derivative versions of the chain rules, exponential functions, Gronwall's inequality, integration by parts, and

Taylor series expansions. Recently, Unal and Gokdogan developed a new analytical technique, which is known as the conformable fractional differential transform method (CFDTM). This method can be implemented in a large number of engineering problems. In this work, we make use of the conformable fractional differential transform method (CFDTM) in order to compute an approximate solution of the solving a class of fractional-order stiff systems. The fractional derivatives are described in the Caputo sense. The method provides the solution in the form of a rapidly convergent series Three explanatory and illustrative examples are given to represent the efficacy of the obtained results. The results attest to the efficiency of the proposed method.

Keywords: Conformable fractional differential transform method, fractional stiff system, fractional power series

ID:358-MOP

Simpson Type Inequalities for Preinvex Functions

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Several researchers have been studied on convexity and a lot of papers have been written on this topic which give new generalizations, extensions and applications. A huge amount of these studies on refinements of celebrated Hermite-Hadamard inequality for convex functions. Invex functions introduced by Hanson as a generalization of convex functions. It is well-known that there are many applications of invexity in nonlinear optimization, variational inequalities and in the other branches of pure applied sciences. And so, in this paper we obtain some new inequalities of Simpson type for functions whose second derivatives in absolute value are preinvex functions.

Keywords: Simpson inequality, preinvex functions, invexity

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ID:370-MOP

Generalizations for Simpson Type Integral Inequalities for Twice Differentiable φ- Quasi-Convex Functions

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Almost every mathematicians know the importance of convex sets and convex functions in many fields of mathematics, for exapmle in nonlinear programming and optimization theory. By using the concept of convexity, several integral inequalities have been introduced such as Jensen, Ostrowski, Wirtinger, Hermite-Hadamard and Simpson's inequalities etc. The concept of convexity first appeared by Hermite in October 1881, when it was published in the journal Mathesis in 1883. Although convexity was found in Hadamard's study in 1893, systematic study of convex functions began in 1905-1906 with Jensen.

In this study, some new Simpson type integral inequalities have been given related to twice differentiable φ-quasi-convex functions. In the first section, some informations have been given on convex analysis and inequality theory. Also, some definitions, basic concepts and fundamental results have been recalled. In our study, the main results section includes Simpson type integral inequalities that have been proved via twice differentiable φ-quasi-convex functions. Our findings involve new generalizations of Simpson type integral inequalities for twice differentiable φ-quasi-convex functions by using basic concepts and elemantery analysis techniques. Finally, by choosing some special cases and examples, applications have been given. In the last section, a short discussion has been achieved on our results.

Keywords: Simpson type inequalities, Hölder's inequalities, power mean inequality, convex functions, quasi convex functions, φ −convexity, φ −quasi convex functions.

BIOTECHNOLOGY
ORAL PRESENTATIONS

ID:88-BOP

Isolation and Identification of Lipase Producing Bacteria in Erzurum Province

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Lipases are particularly important group of hydrolytic enzymes, widespread in nature. The physiological role of lipases is to catalyze the hydrolysis of triglycerides into diglycerides, monoglycerides, fatty acids and glycerol. Lipase enzymes have a wide range of application areas in the food, detergent, textile, pharmaceutical, cosmetic, leather and paper industries. Although these enzymes are widely present in animals, plants, fungi and bacteria, microbial lipases have attracted more attention due to the ease of isolation, high yield, stability, selectivity and broad substrate specificity. The goals of the present study were isolation and identification of lipase producing novel bacteria from water samples of Ilica Hot Springs, snow-covered soil in the Palandoken Mountain and oil-contaminated soil from the Industrial Zone of Erzurum. Screening and isolation of lipase producing bacterial strains were carried out. Tributyrin agar as selective media was used for prescreening lipase producing bacteria. Among the 52 bacterial isolates, 10 potential lipase producers were identified based on their 16S rDNA sequence analyses and their morphological and biochemical characteristics. These identified lipase producing strains were further subjected to quantitative lipase activity assay using p-nitrophenol palmitate as the substrate. The highest lipase activity was obtained with *Aeromonas caviae* strain QSRB4 which was isolated from oil-contaminated soil from the industrial zone of Erzurum.

Keywords: Lipase, *Aeromonas caviae*, oil-contaminated soil

ID:149-BOP

Bacteria as an Immense Source for Seconder Metabolites

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Secondary metabolites are not essential to the life-sustaining processes, however they are required for the interaction between organisms with their environment and provide many advantages to the organisms. Exemplary, the plants defense themselves against herbivors and microbial pathogens via seconder metabolites. To date, more than 200.000 secondary metabolites with an enormous diversity of unique carbon skeletons and functional group modifications have been discovered from plants and microorganisms. Many researchers have been studying about biological activities of seconder metabolites such as antibacterial, antifungal, antiviral, antifouling, antioxidant and anticancer, etc. Natural bioactive compounds have played a significant role to manufacture new drugs during the recent years. Production of these unique chemicals shows alterations depending on the environments conditions under which the organisms are exposed. Besides, the ability to produce such a numerousness of chemicals is based upon the continual evolution of new genes by adaptation, gene duplication and subsequent improvement. Therefore, the bacteria are great sources for secondary metabolites due to their extreme conditions and their structure open to evolution. In this regard, this review has been performed to point out the importance of bacterial world for new bioactive molecules. Since, it is clear that new miracle bioactive compounds with the potential to be drug will be discovered from bacteria from different environments.

Keywords: Natural bioactive compounds, seconder metabolite, bacteria

ID:168-BOP

Optimization of Lipase Enzyme Produced by Moderately Halophilic *Salinivibrio* sp. C1 Isolate Characterized and Isolated from Canik Solar Saltern (Van), Turkey

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Microbial enzymes are preferred in various industries, due to their high catalytic activity, undesirable by-products and high product yields. The enzymes of halophilic microorganisms have the ability to catalyze the hydrolytic reactions in highly saline-containing media. In this study; halophilic bacteria isolated from saline samples obtained from the pools of Canik Solar Saltern were investigated for lipase enzyme production. A total of four isolates were found to be positive for only one isolate lipase enzyme. For the isolation of halophilic bacteria, the complex medium recommended by Sehgal and Gibbons was used. In quantitative determination of lipase enzyme; CM containing 3% Tween 80 and Rhodamin B dye as reagent. The maximum activity of the lipase enzyme was determined in the Minimal Salt medium of M9 using a spectrophotometer at a wavelength of 410 nm, using p-nitrophenyl propionate (p-NPP) as substrate. As the sole carbon source of the lipase enzyme, in the presence of mannose sugar it was determined to be 4.36 (IU/ml) and it exhibited activity in the presence of the amino acid Cystein as the sole carbon source of 0.95 (IU/ml). In addition, the amount of activity of this enzyme was found to be 2.59 (IU/ml) at pH 6.0, 1.94 (IU/ml) at 30ºC and 2.15 (IU/ ml) at the 72 hour incubation period. Lipase enzyme positive isolate; According to morphological, physiological, biochemical and 16S rRNA sequencing analysis, halophilic *Salinivibrio* sp. C1 strain.

Keywords: Halophilic, *Salinivibrio* sp., lipase optimization

ID:288-BOP

Bioremoval of Methylene Blue from Aqueous Solutions by *Syringa vulgaris* L. Hull Biomass

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In the modern era, removal of the synthetic dye residues from the aqueous effluents of the various industrial processes is commonly considered as one of the most important challenges to overcome [1]. In this regard, biosorption studies usually use renewable resources from the living organisms as natural sorbents, offers promising approaches for the development of economically reasonable, eco-friendly and sustainable technologies [2]. The present study was conducted to investigate the biosorption capacity of Syringa vulgaris L. hull and methylene blue was chosen as the model dye. Biosorption assays were performed with varying initial dye concentration, contact time, pH, biosorbent dosage and temperature. Besides, the equilibrium, thermodynamics and kinetics of the process were determined for the evaluation of the biosorption process. According to the results, removal of the dye was reached up to 97.5% for the optimized reaction conditions (adsorbent dose: 2.5 g; initial dye conc. 5 mgL-1; agitation time: 30 min; stirring speed: 150 rpm; pH: 6 and temperature: 333 K). Kinetic study suggested the pseudo-second order kinetic model as being able to better describe kinetic data than pseudo-first order and Elovich kinetic models. The biosorption isotherm data were analyzed using Freundlich, Langmuir, Dubinin-Radushkevich and Temkin isotherms for the proposed adsorption process. The endothermic and spontaneous nature of the proposed process was revealed by the thermodynamic studies. Finally, it is concluded that *S. vulgaris* L. hull biomass can be employed as an economically reasonable, eco-friendly and sustainable biosorbent in the treatment of industrial effluents containing methylene blue-like dyes.

Keywords: Biosorption, *Syringa vulgaris*, methylene blue

ID:324-BOP

Determination of Antigenotoxic Effect of Friedelin in Human Lymphocyte Cells

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The excess of side effects of chemical agents, the infections of antibiotic-resistant disease-causing microorganisms and the presence of antimicrobial activity have led to the search for many plant secondary metabolites. Initially, it was suggested that lichens were a plant, but later it turned out that there were no organisms on their own. They are symbiotic associations that combine fungi and algae to form a morphological and physiological whole. Friedelin is a triterpenoid that is a special group of lichens and other secondary groups of plants that they specifically produce. It is aimed to find promising drug candidate molecules in many different diseases by investigating the antigenotoxic activity of friedelin [1]. In this study, it was aimed to determine the antigenotoxic properties of the friedelin compound against genotoxic damage induced by AFB1 in human lymphocyte cells. Results: In our study, it was found that friedelin causes a decrease in micronucleus (MN) frequencies at increasing doses of 5, 10, 20, 40, and 80 µg/mL, therefore, it can be evaluated that friedelin exhibits high antigenotoxicity.

Keywords: Friedelin, micronucleus, human lymphocyte

Acknowledgement: This work was supported Bayburt University, Scientific Research Projects Unit (Project No: 2017/01-69001-28).

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ID:325-BOP

Determination of Antimicrobial Properties of Pectins from Various Fruits

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Our country has a great wealth in terms of fruit and vegetable production. The fruits and vegetables harvested in our country are consumed directly and processed in different products. Recent scientific research shows an increase in studies on natural plant polysaccharides. Most studies show that natural plant polysaccharides and their derivatives are increasingly used in the food and health sector. Today, studies on the biological activities of plant natural polysaccharides have increased interest in pectin, a complex structural polysaccharide found in the structure of many vegetables and fruits. Pectin is a heteropolysaccharide food additive which is found in different qualities and amounts in the cell walls of plant tissues and its raw material is highly available in our country. Pectin is used in many different fields besides the food, pharmaceutical and cosmetic industries. In this study, pectin was obtained from grapefruit, jujube and kumquat fruits and the biological activities of the obtained pectins were examined. Antimicrobial activity of 10 mg / ml doses of pectin samples on 5 gram (-) and 5 gram (+) bacteria was determined by well agar diffusion method. According to the results, it was observed that pectins obtained from grapefruit, jujube and kumquat fruits had no antimicrobial effect. In the other part of this project, it is planned to make modifications of the pectin samples obtained and to determine the biological activities of these products.

Keywords: Grapefruit, kumquat, jujube

Acknowledgement: This work was supported by Bayburt University Scientific Research Project Coordinator (Project No: 2018 / 02-69001-07)

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ID:326-BOP

Determination of Antiproliferative Properties of Pectin Molecules Obtained From Some Fruits in Mcf 7 Cancer Cells

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Pectin; is a colloidal carbohydrate compound from the group of pectic substances. Pectin is a natural food ingredient whose use is permitted in all countries and is not restricted in daily consumption. Pectin is an important polysaccharide for the food, pharmaceutical and cosmetic industries. Polysaccharides have been used for a long time because of their medical importance, and in recent years some studies have found that these compounds possess anticarcinogenic properties. It has been determined that high dietary fiber intake is effective in low mortality rate due to cancer, which is one of the most important health problems of today. Therefore, many cancer studies are currently being performed on pectic substances. The aim of this study was to determine the antiproliferative properties of pectins from grapefruit, kumquat and jujube fruits on MCF 7 (human breast cancer) cells. Pectin samples were cultured in MCF 7 cells at concentrations of 1.2 mg / ml, 0.6 mg / ml, 0.3 mg / ml and 0.15 mg / ml in vitro. After 72 hours of application, it was determined that pectin samples of these 3 fruits did not have antiproliferative properties. In the future studies of the project, the pectin samples obtained will be modified and the anticancer properties of these samples will be determined.

Keywords: Pectin, MCF7, antiproliferative

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BIOTECHNOLOGY
POSTER PRESENTATIONS

ID:154-BPP

Microbial Enzymes in Detergents: A Review

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Enzymes are biocatalysts that speed up the rate of a chemical reaction. They are vital for all stages of biochemical reactions and catalyze the reactions inside and outside the cell. Enzymes convert specific substrate(s) into specific product(s) and they offer numerous advantages over traditional chemical processes with respect to sustainability and process efficiency.

Certain enzymes are of great interest and are employed as biological catalysts in various processes on an industrial scale. Microorganisms are the favored source of these enzymes due to their high yields in a short period of time on cheap media, economic feasibility, ease of product purification and modification. Microbial enzymes have gained great interest for their active and stable natures and for their widespread uses in detergent, food, agriculture, paper, cosmetics, chemical, and pharmaceutical industries.

This review will specifically focus on the microbial enzymes used in detergents. Detergent enzymes have been used for a century in laundry. Enzymes are no longer a minor additive and have become an essential ingredient in modern detergents. The major classes of detergent enzymes include proteases, lipases, amylases, and cellulases. Proteases are the first used and the most common detergent enzymes, therefore, presently have many commercial forms on market. Enzymes in detergents actually hydrolyze their substrate in soils attached to fabrics or glassware. Alkaline proteases cleave peptide bonds in protein-based stains and hydrolyze proteins into soluble polypeptides or free amino acids; amylases clean by breaking down the α-glycosidic bonds in starch-based soil and catalyze the hydrolysis of starch into sugars, and lipases cleave ester bonds and catalyze the hydrolysis of fats (triglycerides) into free fatty acids and glycerol. Cellulases clean by hydrolysis of β-glycosidic bonds and remove the protruding fibers, pills and fuzzes from cottons and provide bio-finishing, fabric care and maintenance of whiteness or color clarity of fabrics. Mannanases and pectinases are also added to the detergent formulation in combination with other enzymes in order to hydrolyze mannane and pectin-based stains, respectively.

Keywords: Detergents, protease, lipase

ID:323-BPP

Symphoricarpos albus Extract Mediated Green Synthesis of ZnO Nanoparticles and Their Genotoxic Assessment

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The present study was conducted to investigate a new green synthesis route for the production of ZnO nanoparticles and assess the genotoxic potential of the products. For this aim, *S. albus* fruits were collected from the campus area of Atatürk University. The aqueous extract was prepared on a magnetic stirrer with constant stirring for 2h. Then, it was filtered and kept at +4 °C in the dark until green synthesis experiments. During the biosynthesis reactions, the aqueous extract was added into the precursor solution (200 mM zinc nitrate·6H_2O), and then incubated with stirring for 6 h. After the incubation, NaOH solution (2 M) was added and kept on the stirrer under the same conditions for overnight. The precipitate was collected by centrifugation and washed with ddH2O. The products were characterized by using SEM observations and EDX analysis. The genotoxic potential of the nanoparticles was determined by using the *Ames/Salmonella* and *E. coli* WP2 assay systems. According to the results, spherical shaped ZnO nanoparticles were successfully synthesized from the precursor. The average size of the nanoparticles was measured as 30 nm. Furthermore, any tested dose of the synthesized nanoparticles did not show genotoxic activity on the tester strains *E. coli* WP2uvrA, *S. typhimurium* TA1535 and TA1537. In conclusion, the results revealed that S. albus extract can be used for green synthesis of ZnO nanoparticles, the products do not induce base substitution and frame-shift type mutations and they can be consider as safe up to 640 µg/ml concentration.

Keywords: ZnO nanoparticle, green synthesis, s. albus,

NANOTECHNOLOGY
ORAL PRESENTATIONS

ID:163-NOP

Electroanalytical Determination of H_2O_2 Using Glassy Carbon Electrode Modified with Au Nanoparticles Deposited on Functionalized TiO_2 Nanoparticles

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Herein, H_2O_2 was electrochemically determined in contact lens-cleaning solution using glassy carbon electrode (GCE) modified with Au nanoparticles (AuNPs) supported on (3-aminopropyl)triethoxysilane (APTES) functionalized TiO_2 nanoparticles. The Au@TiO_2-APTES nanocomposite was characterized using Fourier transform infrared spectroscopy (FTIR), X-ray diffraction (XRD), and Scanning electron microscopy (SEM). Cyclic voltammetry (CV) and amperometry were used for electrochemical characterization of TiO_2-APTES and Au@TiO_2-APTES composites. The Au@TiO_2-APTES/GCE sensor exhibited two linear range for concentration of H_2O_2. The first one was 0.002-3.57 mM with the sensitivity of 9.206 µA Mm-1 cm-2 and the other was 3.57-34.5 mM with the sensitivity of 6.683 µA Mm-1 cm-2. The limit of detection (LOD) was calculated to be 0.6 µM based on signal-to-noise ratio of 3 (S/N= 3). The repeatability and reproducibility of the sensor were satisfactory with relative standard deviation (RSD) of 5.40 and 5.59, respectively. The selectivity, response time and storage stability of the sensor were also satisfactory. In real sample analysis, the sensor was performed for determination of H_2O_2 in two brands of contact lens-cleaning solutions. The results demonstrated that nano TiO_2 was functionalized using APTES, Au nanoparticles was deposited on the support, and Au@TiO_2-APTES/GCE sensor was successfully performed for electrochemical detection of H_2O_2 in contact lens-cleaning solutions.

Keywords: Sensor, Au nanoparticles, nano TiO_2

ID:165-NOP

Purification, Characterization and Immobilization of Amylase Enzyme from *Bacillus pumilus* and Investigation of Its Use in Fermentative Products

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Bacillus pumilus bacteria were isolated from tomato samples and characterized by 16sRNA sequence analysis. It was determined that *B. pumilus* formed very clear zones on the petri surface, and had high amylase activity. The amylase enzyme was partially purified using ethyl alcohol with the salting out method in 7 fold and 65% yield. When SDS-page gel electrophoresis was performed, it was determined that the purified amylase enzyme was composed of 1 subunit with imin kDa molecular weight. The optimum pH and optimum temperature for α-amylase enzyme were determined as 7.0 and 30 oC, respectively. The enzyme was determined to have high stability in the pH range of 5.0-9.0. The immobilization of the pure amylase enzyme in the nanoscale hybrid structure was performed. The optimal pH of the immobilized nanowire hybrid amylase (IMB-HA) was 7.0 and the optimum temperature was determined as 50. The immobilized enzyme was found to be more stable at both pH and higher temperatures than the free amylase (FA) enzyme. The use of FA and IMB-HA in fermented products was investigated with the fermentation system, which was used as a source of carbon and glucose in the region. At the end of the fermentation, IMB-HA was readily removed from the medium and the IMB-HA enzyme was found to be more effective in fermentation.

Keywords: Amylase, *Bacillus pumilus*, purification

ID:166-NOP

Investigation of Green Synthesis and Genotoxic Effects of Silver Nanoparticles

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In recent years, with the development of nanotechnology, the synthesis of nanoparticles and its use in almost every field has increased. It has led to rapid progress of nanotechnology in the scientific, technological and commercial fields due to the fact that it has gained unique characteristics with the change in the size of NPs synthesized in different sizes. Ag-NPs are used in textile, cosmetics, deodorants, bandages, bandages, sports equipment, food products and packaging and cleaning products due to their strong antibacterial activities. In addition, Ag-NPs have been investigated in the treatment of various diseases such as malaria, lupus, tuberculosis, typhoid, tetanus and cancer [1]. Although Ag-NPs have many benefits, their side effects are not fully known and have the risk of reaching the cell nucleus and damaging the genetic material [2]. Therefore, in this study; Ag-NPs were synthesized by green synthesis using plant extract. The obtained Ag NPs were characterized by using the Fourier transform infrared spectroscopy (FTIR), Scanning electron microscope (SEM), and X-ray powder diffraction (XRD) methods and for the different concentrations of Ag-NPs in the range of 5-160 mg / mL, the genotoxic effects of Ag-NPs were investigated using Sister chromatite exchange (SCE) test and Micronucleus (MN) assays [3]. It is thought that the findings will provide clinically useful information in the treatment of many diseases related to the use of Ag-NPs at optimum concentrations and at certain concentrations, at concentrations that are not genotoxic.

Keywords: Silver nanoparticle, *Bacillus pumilus*, genotoxic effect

ENGINEERING
ORAL PRESENTATIONS

ID:28-EOP

Adaptive Sliding Mode Controller Design of Optical Interferometer

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This work presents a novel nonlinear control system designed for interferometry based on adaptive sliding modes. The approach based on this method can fully compensate for the non-linear behaviour of the interferometer when compared to the linear control system without the need for a reset circuit. It also has advantages such as high accuracy, low cost and ease of application even in noisy environments. The global asymptotic stability of the system was demonstrated by a deep stability analysis. Even in high-noise environments, random signals indicate that the non-linear controller for sinusoidal signals or zero input signals can hold the interferometer at the point of quadrature. In order to characterize the piezoelectric rigid actuator, displacements smaller than half wavelength were observed to be suitable for the system. It allows the use of interferometers with high durability by taking part in the system in heavy working environments like the factory. Interferometers should be used with high accuracy in order to make accurate measurements. Interferometers determine the value to be measured with high precision. Interferometers used in many branches of science, especially in areas such as physics and astronomy are very important. Einstein's theory of relativity also made it possible to make observations. It is often used in imaging technologies, communication, optical coherence tomography and less harmless X-ray devices.

Keywords: Optic, interferometry, adaptive sliding mode

ID:65-EOP

Characterization of Mechanical Properties of Titanium Nanotels Based on Strain Rates: Molecular Dynamics Simulation

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The importance of nanostructures is that their properties are much better than their large-scale (macro scale) properties. Understanding of the effect of size and shape, which is the reason for this differentiation in properties, is extremely important for engineering applications. Therefore, experimental and computational researches are done intensively on the in-depth understanding of the characteristics of nanostructures.

Depending on the expectations, the nanostructures of different materials (such as Al, Ag, Fe, W, Ti) are studied. Titanium with its relatively low density, high corrosion resistance, good abrasion resistance, good thermal conductivity, preferable strength / weight ratio, aesthetic appearance and hard-low rough surface properties finds the wide usage area both in the macro scale industry and in the nano scale applications as MEMS / NEMS elements and its importance is constantly increasing.

Therefore, this study focused on the behavior of titanium nanowires (Ti-NW) and the effect of the strain rate on the mechanical properties of titanium nanowires was investigated by the method of molecular dynamic simulation (MDS) at constant T = 300K. In the calculations, the potential energy function (PEF), which is considered to be a dual atom model (EAM) in the literature, is used. Simulations were made for the strength value, the modulus of elasticity, the stress-deformation behavior and the internal structure changes of the fixed geometry titanium nanowire at the strain rates (DH) of 1x10 ^ 7, 1x10 ^ 8 and 1x10 ^ 9 1 / sec. The results showed that the rate of deformation was not effective on the modulus of elasticity as expected but the strength values increased with increasing strain speed. Furthermore, it was determined that the stress-deformation curve is very different from the bulk materials. Ti-NT showed the first yield (BA) and the second flow (IA).

During the deformation, the transformation of the HSP structure to the other structures was determined at the point of First Flow (BA). The results show that the HSP structure has been transformed into YMK and an amorphous structure in the course of the deformation and is made by dislocations.

Keywords: Titanium nanowire, mechanical properties, molecular dynamics simulation

ID:67-EOP

Adaptive Sliding Mode Controller Design of Optical Interferometer

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This work presents a novel nonlinear control system designed for interferometry based on adaptive sliding modes. The approach based on this method can fully compensate for the non-linear behaviour of the interferometer when compared to the linear control system without the need for a reset circuit. It also has advantages such as high accuracy, low cost and ease of application even in noisy environments. The global asymptotic stability of the system was demonstrated by a deep stability analysis. Even in high-noise environments, random signals indicate that the non-linear controller for sinusoidal signals or zero input signals can hold the interferometer at the point of quadrature. In order to characterize the piezoelectric rigid actuator, displacements smaller than half wavelength were observed to be suitable for the system. It allows the use of interferometers with high durability by taking part in the system in heavy working environments like the factories. Interferometers should be used with high accuracy in order to make accurate measurements. They determine the value to be measured with high precision and are used in many branches of science, especially in areas such as physics and astronomy are very important. Einstein's theory of relativity also made it possible to make observations in this field. It is often used in imaging technologies, communication, optical coherence tomography and less harmless X-ray devices.

Keywords: Optic, interferometry, adaptive sliding mode

ID:73-EOP

Paper Review on Friction Stir Welding of Dissimilar Aluminium Alloys

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This review paper examines the Friction stir welding (FSW) as a solid state by joining process which is renewed recently by numerous industries due to its efficient ability to minimize defects as well as being energy conserving and ecological innocuous when it is compared with the conventional methods.

The FSW can be employed to join high strength aluminum alloys like 7XXX and 2XXX that are difficult to weld by the traditional fusion welding method. In this review paper the fundamental principles of FSW, parameters, and the effect of the FSW parameters on microstructure and mechanical properties will be addressed subsequently Admittedly, this process has lots of advantages in contrast with fusion techniques, , However many problems still remain irresolvable due to the impaired mechanical properties of weldment's heat affected zone (HAZ).

Hence, why the impact of post weld heat treatment (PWHT) on amelioration of joint properties is referred to in this paper. Finally, compatible parameters and factors for attaining a best condition of the weld is discussed hereThis review paper examines the Friction stir welding (FSW) as a solid state by joining process which is renewed recently by numerous industries due to its efficient ability to minimize defects as well as being energy conserving and ecological innocuous when it is compared with the conventional methods .

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Hence, why the impact of post weld heat treatment (PWHT) on amelioration of joint properties is referred to in this paper. Finally, compatible parameters and factors for attaining a best condition of the weld is discussed here

Keywords: Friction stir welding, parameters, dissimilar aluminum alloys, microstructure, mechanical properties

ID:76-EOP

A Decision Support System for the Portfolio Optimization of Cryptoinvestments

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Cryptoassets have become a worldwide trend, however, most of the cryptoasset traders are do not have sufficient knowledge about them. After Bitcoin's price reached $20.000, so many people have entered the crypto market in an effort to make a high return. On the other hand, crypto market is extremely volatile, therefore most of the cryptoasset traders have faced big losses. In addition to that, crypto market is easy to manipulate since most of the traders are ignorant about the market. Also, the people who have a large amount of a cryptoasset or have an influence on the crypto market like famous investors or state officials could manipulate or affect the market. The objective of this work is to analyze whether if it's possible to predict the price fluctuations of cryptoassets using statistical techniques. We use monte carlo approach and generate N different daily change and investment scenarios using the historical price data of 20 different cryptoassets that are chosen according to their market capitalizations and investor's preferences such as risk preference using MS Excel and its Visual Basic for Applications. Afterward, these scenarios are combined and NxN different scenarios are obtained and average profits are calculated. Finally, the scenario which has the highest profit rate is chosen and presented to the investor as an optimum scenario. Results show that it is not efficient to predict price fluctuations of cryptoassets using only statistical techniques because there is not enough market data and market is extremely volatile and open to speculate. However, a decision based on the market scenarios might help to minimize risk and increase revenue.

Keywords: Crypto investments, portfolio optimization, monte carlo simulation

ID:87-EOP

Building Damage and Necessary Works

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If the buildings are designed and constructed in accordance with the regulations and standards, they can survive even severe earthquakes without being destroyed. However, it is seen that not only old buildings but also new buildings are seriously damaged during the earthquakes, they even collapse and cause loss of life and property. For earthquake resistance, the bearing systems must be not only resistant but also sufficient ductility. Thus, they can still maintain their integrity when they become deformed beyond the yield limits. In order for the structural system to exhibit a better behavior in future earthquakes, damage and damage causes and degree of damage should be determined and the appropriate strength, ductility and rigidity of the structural elements should be improved. In addition, due to the damage caused by the earthquake from the roof to the foundations of the flow and transfer of loads in the way of partial or complete interruptions may increase the damage.

After the earthquake, first inspection and emergency protection measures are taken and necessary measures should be taken in order to reduce the loss of property in case of damage and increase, specifying such issues as temporary support, suspension and similar measures in order to eliminate the danger against death and injury. UN-Balkan Method and Japanese Method are used for Damage Detection Studies. In an earthquake, many buildings are damaged to varying degrees. It is important to determine the extent and extent of damage and to decide what to do and what is likely.

In this study, the causes, degrees and the elimination of these damages have been investigated. A design is made to prevent the progression of damage to a beam by means of aperture shortening method.

Keywords: Reinforced concrete, FRP, strengthening, retrofitting

ID:91-EOP

Investigation of the Effect of Coated Automotive Brake Disc on Braking Performance

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In this study, ceramic coating method applied to improve the performance of original brake discs has been investigated. The aim of the this study is to improve friction and thermo-mechanical behavior and to increase its applicability. For this purpose the disc is coated with Al20340Ti02 ceramic powder using a plasma spray coating method (thermal spraying). Performance tests SAE J2430-BEEP have been carried out the appropriate test device, adhere to "Dynamometer efficiency characterization test for passenger car and light truck brakes brake evaluation procedure" standards. Braking performance tests have been performed according to the SAE J2430 standard with 16 parameters, a total of 312 braking cycles and in the structural integrity braking test device for approximately 14 hours. As a result the Al203340Ti02 coated disc's amount of heat and friction coefficient has reduced compared to original disc and it has shown better braking performance at low moments. Besides that the surface roughness, weight wear, thickness loss, lateral secretions, micro hardness values of the discs and pads used in the experiment showed that the amount of heat and friction coefficient of the Al20340Ti02 coated disc compared to original disc is further reduced and it has shown better braking performance at low torques.

Keywords: Brake disc, brake performance, coating

ID:92-EOP

Design and Comparison of Longitudinal Motion Control of an Aircraft

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Passenger type aircrafts are being produced by safety and reliability concerns at top of the list when compared with other aircrafts such as military type aircrafts. In order to reduce the work on pilots, several tasks have become automatically. Some of these assisted systems are flight control computers (FCC) and automatic flight control systems (AFCS). AFCS need an aircraft model to control the automatic tasks such as navigation through a desired route or trajectory. Such model may be linear and nonlinear also longitudinal and lateral.

In this paper, proportional, integral and derivative (PID) controllers are proposed so as to assist pilots and to control the state of a passenger aircraft, namely longitudinal velocity and also show the coupling effects to the other states such as angle of attack, pitch rate and pitch angle. For simulation, longitudinal linear time invariant model of the aircraft is selected. Efficacy of the proposed controllers are showed with respect to uncontrolled states of the aircraft and stability of the aircraft is showed by designed controllers. Further, controllers are compared with each other and their advantageous are discussed.

Keywords: Aircraft, control, longitudinal motion

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ID:96-EOP

Modeling of Electronic Differential Application for Electric Vehicles

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After the development of battery and electronic switching elements, electric vehicle technology, which has not been used since 1920s, has come up again. Both ease of maintenance and they do not need many parts such as transmission makes this choice quite reasonable .As battery technology has not reached the desired level yet , both electric motor and internal combustion engine have been used in vehicles. Thus, the lack of an internal combustion engine is fixed by an electric motor. The weight factor in fully electric vehicle is quite important, therefore, on the vehicle studies for the replacement of parts, software and electronic circuits are made. In this study, it is planned to completely remove the mechanical differential system on the vehicle. Therefore, the all operations of the mechanical differential system on the vehicle are planned to use two electric motors by an electronic circuit. When the differential system on the vehicle is removed, the total vehicle weight is significantly reduced. Thus it was eliminated from the losses caused by vehicle drive, was removed the high power electric motor and was used two electric motors at a lower power than before. The results obtained in the simulation showed that the generated system had a better result than the mechanical differential.

Keywords: Electronic differential, electric vehicle, differential system

ID:145-EOP

Use of Calcium-Rich Waste Materials as a Catalyst in the Production of Biodiesel

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The use of heterogeneous catalysts in biodiesel production is increasing. Generally, biodiesel is produced by transesterification reaction using a homogeneous catalyst such as KOH or NaOH. But in this case, the biodiesel must be well purified in order to remove the impurities of the catalyst. Generally, the water-washing procedure is performed for purification. However this procedure involves many disadvantages such as being complicated and expensive and creating too much waste water. A heterogeneous solid catalyst can be used to overcome these disadvantages. Calcium oxide (CaO) is one of the most promising heterogeneous catalysts in biodiesel production. Because it has excellent catalytic properties, its solubility in biodiesel and methanol is low. In addition, CaO is non-corrosive, low in cost and can be produced from waste materials containing calcium carbonate (CaCO3). In recent years, catalysts produced from calcium-rich waste materials have been tested in biodiesel production. The use of these catalysts in the biodiesel production process provides both a contribution to the environment and a more efficient cost. In this study, the studies conducted with various catalysts produced from Ca-based waste materials for biodiesel production are summarized and the catalytic activities of the catalysts (eggshells, bones, mollusk shells and so on) used in these studies are discussed.

Keywords: Biodiesel, heterogeneous catalyst, calcium-rich waste materials

ID:155-EOP

Improving Estimator Performance of a Quadrotor

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A quadrotor is a special type of unmanned aerial vehicle that has the abilities such as vertical take – off and landing, hovering around a certain point, and payload carriage. In addition to aforementioned abilities, quadrotors gained a significant amount of attention from maker industry to academicians since it does not have any moving actuators apart from just four rotors. However, constructional simplicity of the quadrotor raises a new challenge such as complex control environment. Another main issue is low – cost sensors that are used to measure acceleration and rotation of the quadrotor. Such system is generally called as inertial measurement unit. Inertial measurement unit outputs are very important to define the attitude of the quadrotor for safely flight operations.

In order to achieve reliable and even robust control of a quadrotor, noises that are heavily distributed on low – cost MEMS sensors must be eliminated. So, an estimator scheme is needed for aforementioned problems. However, designing an estimator is not sufficient enough to get desired results since estimator must be tuned for superior performance. In this work, optimization scheme for quadrotor estimation is proposed. Results show that, proposed method is capable of handling errors thus ensure safe and efficient flight and control of the quadrotor.

Keywords: Quadrotor, estimation, optimization

Acknowledgement: This study was supported by Eskisehir Technical University Scientific Research Projects Commission under the grant no: 1705F120.

ID:167-EOP

Investigation The Effect of Water / Cement Ratio on Compressive Strength of Roller Compacted Concrete

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Conventional concrete is a composite construction material obtained by adding water, cement, aggregate and certain amounts of additives. In some cases, traditional concretes cannot meet the desired properties, necessitating the use of special concretes. In this study, some properties of roller compacted concrete (RCC), one of the special concretes, were investigated. It is named after heavy vibratory steel drum and rubber rollers used for compaction and final shape of concrete during construction. RCC roads exhibit similar strength characteristics with the conventional concrete material used in rigid pavement construction and are produced by combining the same components with uniform grading aggregates, binder materials and water - in different proportions.

In this study, the effect of different water cement ratios on the compressive strength of RCC was investigated. Cylinder samples were produced using 1.20, 1.15, 1.10, 1.00, and 0.95 and two different aggregate types at different water cement ratios. When preparing RCC samples, care should be taken to produce samples that are most suitable for the application in the field. Although it is difficult to capture the quality of materials produced in the field with heavy duty machines under laboratory conditions, homogeneous and compacted test samples are prepared closest to this.

B.HA, Vebe test and compressive strength tests (7- 28 days) were performed on RCC samples. When the test results are examined, the density values of the RCC concrete produced increase by decreasing the water / cement ratio. The increase occurs in the form of a certain ratio. When the compressive strength test results were examined, as with the density test results, the compressive strength values of both clean and dirty aggregates used were close to each other with an increase in the compressive strength values of 7 days and 28 days with the decrease of water/cement ratio. These results show that the material extracted from the dam foundation excavation can be used as RCC aggregate and economically feasible.

Keywords: Roller compacted concrete, water / cement ratio, compression strength

ID:175-EOP

Calculation of Scattering Parameters for a MESFET Transistor

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In this study, A device simulation of a simple MESFET [1] transistor is realized. The structure of MESFET transistor is defined according to syntax rules of the device simulator named Atlas[2] [3]. Atlas uses a numerical approach for solving partial differential equations and Gummel newton method is chosen in this structure [4]. Because, if convergence is not obtained on Gummel method for the proposed design, then this switches to newton method. Later on, DC bias conditions are applied to the transistor and associated drain, gate and source current of the transistor are plotted. The behavior of transistor under varying drain voltage and gate voltage is also shown and its characteristics are explained. AC analysis of the transistor at a single DC bias condition is realized on frequencies between 1 GHz to 41 GHz. Moreover, capacitance and conductance data from Atlas is converted into two port S parameter where input port is gate electrode and out port is drain electrode. Gate electrode contact is assumed to be a Schottky contact and its corresponding workfunction value is calculated based on the material properties. Semiconductor material type is chosen GaAs. In conclusion, the calculation of S parameters for a given DC conditions are realized and plotted on cartesian coordinates.

Keywords: MESFET, s parameter, device simulation

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ID: 203-EOP

Thermal Performance and Response of Composite Slabs Profiled with Protected Steel Decking Under Various Fire Scenarios

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This paper presents an investigation of the influence of different fire scenarios on the thermal performance and response of composite floor slabs profiled with protected steel decking and steel beam. A detailed finite element modelling has been developed by representing the concrete slab with 1 mm thickness of trapezodial steel decking sitting on the UC 305×305×97 steel beam both protected by intumescent coating. After validating the modelling approach against Eurocode – EN 1993-1-2 [1] in [2], a parametric study is conducted to explore the effect of thermal properties of concrete as normal weight (NC) and light weight (LC). The Standar Fire (ISO 834) has exposed to the protected steel members (i.e. steel beam and steel decking where the concrete slab does not sit on). The steel profile temperature results show very close agreement between using NC and LC as it was expected since when the fire expose side is through steel parts, changing the thermal properties of concrete would not have an influence on the temperatures of steel sections. However, the temperature distribution in terms of maximum values on the concrete part differ somehow between LC and NC. LC is known to have a better fire performance comparing to NC, resulting to have a higher temperatures on concrete part when used LC and lower temperature distribution for NC. The difference is approximately 50oC ending a maximum temperature values of 631oC and 587oC for the LC and NC respectively at the bottom of the slab. The heat transfer through the thick part of the slab is also dramatically affected by the fire insulation material (intumescent coating).

Keywords: Fire design, intumescent coating, composite slab

ID:227-EOP

Real – Time Distance Measurement Depend on Ambient Temperature

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In this study, real-time distance measurement based on ambient temperature was performed. An ultrasonic distance sensor HC-SR04 and a temperature sensor DHT11 were used for this procedure. In the literature, usually, distance measurements were carried out with a single ultrasonic distance sensor. However, this is not an accurate measurement. Because the speed of sound will vary according to the ambient temperature. As is known, ultrasonic distance sensors use sound wave for measure to distance. Therefore, the ambient temperature should be taken into account in order to accurately measure a distance. For example, when the temperature is 0 degrees in an environment the speed of sound will be 313.3 m/s, but when the temperature is 30 degrees in an environment the speed of sound will be 349.48 m/s. This case indicates that the measurements made without considering the ambient temperature will be inaccurate. Also the error occurs. To eliminate this error, distance measurements should be made considering the ambient temperature. In this study, ambient temperature was measured with a DHT11 temperature sensor. Then based on this information, the measurement of the desired distance was performed with the HC-SR04 distance sensor. At the end of the study, theoretical and experimental results were given comparatively.

Keywords: Distance measurements, ARDUINO, DHT11

ID:229-EOP

Voltage Control Strategy for DC – DC Buck – Boost Converter

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Buck-boost converters, as the name suggests, can be used to both increase and decrease the DC voltage. Thus, the average value of the output voltage can be greater or smaller than the input voltage. In Buck to Boost converters, the input voltage and the output voltage are opposite to each other. These converters are also referred to as inverter converters. In this study, voltage control strategy for Buck - Boost converters, which is an important type of DC - DC converter and which is frequently used in DC motor control, were presented. Firstly, a detailed analysis of the converter was realized. The theoretical equations obtained from this analysis were modeled in the Matlab/SIMULINK. The duty cycle of the semiconductor switch in the converter was adjusted by designed pulse generator. The output voltage of the converter and the reference voltage were compared by controlled pulse generator module. A signal corresponding to the error resulting from this comparison was generated. With this signal, the duty cycle of the semiconductor switch was adjusted to ensure that the output voltage reaches the desired level. With the proposed control method, the output voltage of the converter was closely followed the given reference voltage. The suitability of the proposed method for obtaining different DC voltage levels was confirmed by simulation results.

Keywords: Buck-boost converter, voltage control, Matlab/SIMULINK

ID:233-EOP

Zero Waste Application Stages: Small-Scale Campus Sample

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Zero waste is a waste management philosophy that includes to produce, consume, reuse and recycle all resources with responsibility before discharging to the receiving environment in such a way that they do not threaten environment and human health, and thus aims to use the resources efficiently. While the amount of resources (clean soil, clean water, fresh air, fossil fuels) does not change, the rapidly increasing population and the living standards of this population increase the pressure on natural resources and this requires zero waste approach. Zero waste, which is frequently confused with the concept of recycling, aims to reduce consumption as opposed to recycling. The first phase of waste reduction is minimization of consumption.

Zero waste project was implemented in 2017 by the Ministry of Environment and Urbanization. The project has been started in some institutions and concluded positively. However, as in the implementation of all new approaches, the zero waste approach also has understandable-applicability problems in its corporate development.

In this study, it is aimed to be an example for the institutions in the transition phase of the zero waste project and to understand the concept of zero waste more clearly. It was explained how the seven stages (determining focal points, current situation detection, planning, determination and provision of needs, training-awareness raising, implementation and reporting) for the project installation are applied on a campus with a population of about 7500 and the zero waste project Turkey applied and examples from around the world were presented in this study. Zero Waste Regulation, which is in the draft phase, has been evaluated and recommendations have been made for the revision that may be required in the regulation.

Keywords: Recycling, re-use, waste management, zero-waste project

ID:238-EOP

The Effect of Gate Length on Design Parameters for MESFET

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In this study, A device simulation of a simple MESFET[1] transistor is realized. The structure of MESFET transistor is defined according to syntax rules of the device simulator named Atlas [2]. Atlas uses a numerical approach for solving partial differential equations and Gummel newton method is chosen in this structure [3]. Because, if convergence is not obtained on Gummel method for the proposed design, then this switches to newton method. AC analysis of the transistor at a single DC bias condition is realized on frequencies between 1 GHz to 41 GHz. Moreover, capacitance and conductance data from Atlas is converted into two port S parameter where input port is gate electrode and out port is drain electrode. The originality on this research is finding to the relation between gate length and design parameters. In theory, gate length determines device's gain and frequency characteristics of the device. There is an inverse relation where decreasing gate length results an increase gain and cut-off frequency [4]. For example, a gate length of Mesfet transistor is varied from 0.2 micron to 0.4 micron by step of 0.25 micron. The effect of gate length on design parameters such as current gain, maximum available power gain, maximum stable power gain, maximum transducer power gain, unilateral power gain, minimum noise figure, noise conductance, stability factor and scattering parameters is shown on cartesian coordinates.

Keywords: MESFET, Gate Length, Device Simulation,

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ID:259-EOP

Experimental Investigation of Fire Effect of Steel Construction Connection Components

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Abstract: This article presents results from experimental studies on the residual mechanical properties of 8.8-degree bolts and screws exposed to high temperatures. Residual mechanical properties such as stress, deformation, elastic modulus, performance and final forces, as well as failure modes of bolts, were evaluated after exposure to various target temperatures. Temperature level, chemical composition of raw material steels and the effect of heat treatment properties on residual mechanical properties in the production process of 8.8-degree bolts were investigated. Data from the tests show that when the bolts are heated to temperatures above 400 ° C there is a rapid reduction in residual strength and reaches 50% of the final power after exposure to 800 ° C. It was observed that the amount of carbon contained in the steel significantly affected the residual properties of the 8.8-degree bolts, except for the temperature and tempering temperature in bolt production.

As a result of this study, mechanical properties (hardness, tensile strength, abrasion, etc.), physical and chemical properties (corrosion, intergranular corrosion, conductivity, density, etc.) of the fasteners exposed to high temperatures will be examined separately. In the light of the data obtained by examining these features, alternative solutions will be presented and improvement studies will be carried out.

Keywords: Steel connection, connection, screw

ID:262-EOP

Examination of Wind Power Plant (Res) Establishment

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Today, fossil fuels are mainly used to meet the energy needs. But the depletion of the fossil fuels, cause environmental pollution, raising concerns about global warming and energy security, and price instability bring alternative energy production methods to the agenda. Wind energy systems, which are alternative energy sources, are now widely used in the production of electrical energy. The fact that wind energy is globally accessible and clean, non-finite, and the development of wind turbines in recent years makes wind a powerful alternative to the traditional forms of energy production. In this context, in this study, the stages of wind power plant (WPP) established to generate electricity from wind energy are studied and discussed.

Keywords: Alternative energy sources, wind power, capacity factor

ID:263-EOP

Comparison of Software Used for Determining Wind Energy Potential

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Problems such as environmental pollution, ecological problems and global warming arising from the excessive use of fossil-derived energy resources can be eliminated by the widespread and increasing use of renewable energy sources. Although all types of renewable energy sources are the focus of interest today, wind energy systems are increasingly in demand for electricity generation. Since wind, which is the main power source of wind turbines, does not blow continuously and at the same level, it is important to estimate the electricity generation from wind energy. These estimations are performed by means of computer softwares using different methods. In this sense, there are many computer softwares. In this study softwares which used for the estimation of wind energy such as, WAsP, WindPro, WindFarmer, WindSim investigated and compared.

Keywords: Wind power, alternative energy sources, computer softwares, wasp

ID:282-EOP

Effect of Clinker Additive on Pumice-based Geopolymer Properties

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The investigation for environmentally friendly building materials has emerged as an alternative to traditional concrete, because of the high amount of energy consumed in the production of Portland cement and the emission of carbon dioxide at a large rate. One of the promising materials in this respect is geopolymer based concrete. Geopolymers (GP) are produced by activating precursor materials with alkali solutions such as sodium hydroxide and/or sodium silicate. Generally, dust form of fly ash, metakaolin and blast furnace slag with high amount of Al2O3 and SiO2 content are used as precursor materials in the production of GPs. Geopolymer concretes have superior properties in terms of environment-friendly structure, high early strength, low hydraulic permeability, volume stability and resistance to chemical effects. On the other hand, the low rate of strength gain at room temperature and therefore limited on-site casting possibilities are the negative aspects of GP concrete. It has been determined in previous studies that the setting time of geopolymer with high calcium content is shorter and the rate of gaining strength at room temperature is high. In this study, grinded clinker was used as a source of calcium and substituted to precursor material in different ratios. In the production of geopolymer samples, natural material (pumice) obtained from Iğdır region was grinded and then activated by sodium hydroxide (NaOH) solution. In order to evaluate the effect of clinker substitution on geopolymer paste properties under different curing conditions, both room temperature and high temperature curing were applied. In the experimental study, the development of unit weight, setting time and workability of geopolymer mixtures were investigated.

Keywords: Geopolymer, clinker, concrete

ID:283-EOP

The Effect of Fire on Steel Donites in Concrete

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Today, iron alloys, which are the most widely used metals in many fields, are exposed to various environmental effects in every situation. In these studies, many methods have been developed to improve the deficiencies of iron alloys according to their reaction in these environments. In addition to being used alone, iron alloys are also used as additives. Steel reinforcements applied in one of these areas, reinforced concrete structures are made to increase both strength and ductility of brittle concrete.

In this study, microstructure and mechanical (tensile strength, hardness etc.) properties of steel reinforcement inside and outside of concrete exposed to fire were investigated in temperatures reached by fire. As the test conditions, liquid concrete with 8mm diameter construction steel was expected to solidify under atmospheric conditions and then solidified concrete was heated slowly in the mold furnace at 600 ° C, 800 ° C and 1000 ° C. It was kept in the oven at the indicated temperatures for 1.5 hours, then allowed to cool to atmosphere. As a result of the processes, steel reinforcements heated outside the concrete and steel reinforcements in the concrete were analyzed under the same conditions. While the strength and hardness values of the steel reinforcement other than concrete decrease in normal heat treatment behavior, the strength and hardness values of the steel reinforcements in the concrete also decreased but this decrease was partially less than the non-concrete steel reinforcement.

Keywords: Iron alloys, reinforced concrete

ID:289-EOP

Making Environmental Sustainability Measurable: Ecological Footprint

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Resources necessary for organisms to live are proportional to the numbers alive and are continuously renewed by recycling mechanisms. This general definition may include many criteria such as environmental, economic and social topics. Environmental sustainability is defined as the renewable natural resources used by humans not exceeding the amount of resources that can be simultaneously produced by nature. Ecological footprint is a marker of sustainable lifestyle and is a quantitative calculation technique showing the biologic production area amount (BIOLOGIC CAPACITY) consumed on a planetary level, the aerial size of land and water required for waste disposal, how much of the biological productive area is used by countries, towns, families or individuals and the number of planets required in the future. The components of ecological footprint comprise footprints such as carbon retention, agricultural land, forestry, pasture, constructed area, and fishing areas. Globally the greatest environmental problem faced by all countries is the rapid consumption of natural resources by humans. This problem brought awareness of ecological footprint and is expressed in global hectares (gha). The more rapid consumption of natural resources compared to production rates in Turkey shows the country's ecological deficit. According to the WWF report published in 2012, the total ecological footprint of production in Turkey exceeded national biocapacity for the first time in 1972, and had reached nearly 1.6 times the biocapacity by 2007 (2.1 gha). The consumption ecological footprint exceeded national biocapacity in 1974 and was two times this threshold in 2007 [4]. In conclusion, in line with the general trend globally, as ecological footprint grows in Turkey, the living planet index falls. In other words, our country is becoming further removed from being an attractive geography for biological diversity.

Keywords: Ecological footprint, biocapacity, environmental sustainability

ID:295-EOP

Effect of Inlet Water Temperature and Flow Rate on Panel Radiator Performance

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With the increasing energy demand, efficient use of energy has become an important issue. More efficient use of existing resources and systems is considered as a new alternative energy source. The majority of energy consumption is due to heating needs. Efficient use of heating systems means less energy consumption and therefore less emissions to the environment. Thermal comfort means providing the parameters in which people can survive in a healthy and productive way. Some of the points to be considered while providing thermal comfort are provided with economic gains and energy efficient use. Efficient use of energy is a very important issue. In this study, an experimental study was carried out to improve the performance of panel radiators, which is one of the most important parts of heating systems. For this purpose, the effect of 3 different flow rates (4 L/min, 8 L/min, 12 L/min) and 3 different radiator inlet temperatures (35°C, 45°C, 55°C) on radiator performance was experimentally tested. Pressure drop values to be obtained from the system under different test conditions, pump power consumption and calculated radiator performance were evaluated together. In this way, the effects of inlet water temperature and flow rate on radiator performance were evaluated experimentally and suggestions were made for more efficient operation of panel radiators.

Keywords: Panel radiator, perfomance, efficiency

ID:296-EOP

Smart Cities and Field Pollution Modeling

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With developing technology and industrialization, currently cities are faced with a range of environmental problems like environmental pollution (water, soil, noise and air pollution, etc.), lack of green space, drinking water problems, resource scarcity, traffic, large natural disasters, rapidly increasing population, radiation and carbon release. In the name of solving these problems, rapidly increasing in parallel with the increase in population, the concept of Smart Cities has been developed as future cities using technology at superior levels. Currently in addition to air, water, and soil pollution, noise, waste and carbon release (carbon footprint, ecological footprint, etc.) are among the most important problems in cities and the current concept of smart environment, a subfield of smart cities, has come to the agenda in the name of solving these problems. Field pollution modelling is among smart environmental applications and is used to measure the temporal and spatial amounts of pollutants, determine the source of pollutants, simulate future scenarios and ensure emergency precautions are taken for environmental health. Modelling of spatial pollution is based initially on temporal measurement of the pollutants in a certain area. Environmental pollutants are analyzed immediately in the area with a variety of methods or brought to the laboratory environment and determined amounts are uploaded to geographical information system (GIS) databases along with many other data. With the aid of GIS, spatial pollution maps are created to determine pollution levels and spatial pollution modelling is performed. As a result of this research, how the targeted environmental pollutants are measured in the study area over time, how the measured data are uploaded to the GIS environment and how modelling is performed by using this data is explained. Within this scope, current examples related to spatial pollution modelling are investigated.

Keywords: Smart Cities, smart environment, field pollution

ID:297-EOP

Evaluation of Freeze-Thaw Damage Mechanisms for Concrete Pavements

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De-icing salts are applied in order to dissolve the ice layer formed on the surface of engineering structures such as concrete roads, airport pavements and sidewalks built in cold climate zones or to prevent freezing of water on the surface. In the case of de-icing salt, freeze-thaw cycles cause flaking of concrete to be removed from the surface in thin layers. This condition, called “scaling damage”, is initially superficial and can completely destroy concrete over time. This damage condition exhibits characteristics different from normal freeze-thaw damage. The concentration of salt water affects the amount of damage and the highest scaling damage occurs in the pessimum concentration range of 3-5%. Unlike internal damage, a thin layer of solution must be present on the concrete surface to cause scaling damage. In addition, the surface properties of the concrete and the pore structure affect the amount of damage. Different damage models are presented on how the mechanism causing scaling damage occurs. The new proposed damage models are able to shed light on the many uncertainties in the old approaches, but the necessity to fully understand the mechanism remains up-to-date. In this study, the factors causing scaling damage were identified and "brine rejection mechanism" were evaluated. It has been demonstrated that the “brine rejection” mechanism can explain the damage occurrence in many aspects but it should be supported by experimental studies and numerical models.

Keywords: Concrete pavements, freeze-thaw damage, brine rejection

ID:307-EOP

Changes in the Legislation of Electricity Market: Solar Powered Roofs

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The level of development on the world is measured by energy. Both the amount of energy owned and the high level of consumption are indicators of development. However, the efficient use of resources and environmentalist approaches in energy production have gained ground as a result of the pressure are exposed on natural resources. Particularly in energy production, interest in renewable energy sources has increased and public incentives have been created for effective use of renewable energy resources. In this context, in our country, which is highly dependent on foreign energy, some regulations have been made in order to increase the share of renewable energy sources in the power supply. Perhaps the most important of these regulations are the laws, regulations and communiques made by the Energy Market Regulatory Authority between 2013 and 2018.

In this study, the application processes of the facilities in accordance with the provisions of the law determined in accordance with the "Procedures and Principles Regarding the Evaluation of Unlicensed Production Applications and Required Energy for Production Plants Based on Solar Energy Based on the Consumption Facility at the Electricity Market" published in the Official Gazette dated January 18, 2018 and numbered 30305 were evaluated. It is foreseen that the law will decrease the foreign energy dependence. The law restricts the real persons with the consumption amount from the distribution companies and the upper limit of the installed power, but the production facilities such as emergency groups, insulated without establishing a connection with the transmission or distribution system, use the whole energy without giving to the transmission or distribution system, has the same measurement point for production and consumption, based on renewable energy sources, the cogeneration facilities in the category that provide the efficiency value to be determined by the Ministry, the production facilities established for the disposal of the solid waste facilities and treatment plant sludges of the municipalities, have been out of the limitation. Considering that the highest costs in the public sector are due to energy consumption, it is seen that the facilities to be established will pay themselves off and they will even provide public profits.

Keywords: Energy legislation, renewable energy sources, solar power plant, unlicensed energy production

ID:311-EOP

HCS Control Algorithm for the Sensorless MPPT of a Small Power Wind Turbine

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To meet the need of electrical energy, wind power from renewable energy sources is quite popular in recent years. Different maximum power point tracking (MPPT) methods are used to maximize the efficiency obtained from wind energy conversion systems (WECS).

The control methods that require experimental knowledge of the wind turbine also constitute an additional cost. These methods can be replaced by the hill-climb search (HCS) control method, which does not require any system knowledge. This control method uses an algorithm that continuously searches for the maximum power point of the wind turbine The algorithm measures rotor speed and electrical output power at specified step intervals and compares them with the values measured in the previous step. This ensures that the system operates at the optimum namely tip speed ratio (TSR) point where the maximum output power is obtained.

In this study, the control response of the controller can be adjusted by increasing or decreasing the control intervals of the algorithm.

Keywords: MPPT, HCS, WECS,

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ID:312-EOP

Different Chimney Designs And at the Collector Surface Areas Numerical Modeling of Solar Chimney System

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The solar chimney consists of a large collector greenhouse and a central chimney. The hot air is produced by the sun (direct and diffuse beam) under a large glass collector. The heated air is moves and drawn upwards towards the chimney in the center of the collector. This traction is drives the wind turbine installed in the chimney. In this study, numerical analysis in different designs has been developed for performance analysis of solar chimneys. The temperature and velocity values that affect the efficiency of solar chimney were analyzed for different chimney designs and collector surface areas. 45o inclined, 75o cone type and 75o V chimney types have been compared with 90o chimney type for chimney designs. In addition, the effects of collector surface area and chimney height on the system are investigated for perpendicular chimney. The simulation of the solar chimney has been performed with the energy 2D program which based on computational physics. According to the obtained simulations it was found that the chimney slope increased the air velocity value at the chimney inlet. In addition, the increase in the surface area of the collector showed a significant increase in the temperature and velocity of air flowing from the inlet of the collector to the center. As a result, when the different chimney designs are compared, it is seen that the most important factor affecting the performance of the solar chimney is the chimney length and collector surface area.

Keywords: Solar energy, solar chimney, numerical modeling

ID:313-EOP

Energy Efficiency and Thermal Comfort Analysis of Traditional Diyarbakır Inn

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The traditional structures of Diyarbakır is reflect centuries of Mesopotamian culture in terms of planning. Beside the walls of Diyarbakır, many buildings and traditional houses were built with the most suitable materials and components depending on the climatic characteristics. It is easy to recycle to the environment because it is made of natural materials and the design in which it conforms to the climatic and geographical structure of the environment in which it is located. In addition, it accommodates ecological and sustainable design criteria with its structure providing comfortable indoor environments that can heat and cool without requiring additional measures. Nowadays, energy efficiency and thermal comfort analyzes of these designs have been made with the engineering simulation program Autodesk Ecotect Analysis. In this study, thermal analysis and solar intensity of Sülüklü Han which was built in 1680 in different days, months and seasons were investigated. National (BEY) and international (ASHRAE) standards were evaluated and simulated as a result of the simulations. Because fossil fuels have come to the end. With this study, energy efficiency of traditional buildings will be examined and energy efficiency will be provided for new buildings. Thus, maximum utilization of solar energy will be achieved and energy saving will be achieved.

Keywords: Traditional inn, thermal comfort, thermal analysis

ID:318-EOP

Retrofit of a Reinforced Concrete Column with Carbon-fiber Polymers

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In the present research, strengthening of existing reinforced concrete structures with externally bonded fiber reinforced polymer materials is investigated. In this regard, the summarized information about properties, advantages and disadvantages of fiber reinforced polymeric materials taken from available literature sources, is presented. There are numerous resources about numerical modelling of fiber reinforced polymer strengthened reinforced concrete beams or small size reinforced concrete columns, but numerical modeling and analysis for full-scale columns was not found in recent literature sources. For this reason, to investigate the behavior of a full-scale reinforced concrete column wrapped with fiber reinforced polymer plates, under vertical and lateral loads, a numerical model is created in this study. In this regard, the model is created based on the finite element method, using ANSYS 14.0 software and nonlineer static analysis (pushover) is applied on the model. A steel cap and a fixed support has been defined for the retrofitted model. Then carbon fiber reinforced polymer (CFRP) sheet model and finally half height (1650 mm) column's geometric model have been created. SHELL181 element type is used for this purpose. Also in element settings the "Membrane" option is enabled. Thus, CFRP model acts as a flexible sheath material. In this study, polymeric composite sheets comprising unidirectional carbon fibers are used for reinforcement purpose. The CFRP sheet has been wrapped around the column in 6 layers In three layers of the wrap, the direction of the fibers is in parallel with the column axis (0°). These fibers are used to increase the bending moment capacity of the column. In the other three layers of wrap, fibers are perpendicular to the column axis (90°) to produce a confinement effect and to increase the shear capacity of the column

According to the results, this strengthening technique can significantly increase the strength and improve the ductility of existing reinforced concrete columns.

Keywords: Reinforced concrete, frp, strengthening

ID:350-EOP

Medical Waste Management in Iğdır

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Rapid population growth, technological developments and changes in the living conditions of people increase the production and consumption amounts and cause different types of wastes. Medical waste from health service is one of the most important of these wastes. Medical wastes include wastes generated during treatment in hospitals, medical laboratories, clinics, physicians and veterinary work areas, as well as wastes from health care services such as insulin dialysis at home. These wastes constitute a major risk to society and environmental health. Necessary measures should be taken and applications should be done to eliminate these risks. Therefore, waste management in health care facilities and municipalities is of great importance both for health workers and public health and for the protection of the environment. The main purpose of medical waste management is to collect the medical wastes separately in their source, to temporarily store them, to transport them to the medical waste treatment plant and to eliminate them. At the same time, it is to prevent the delivery of medical wastes to the receiving environment in a way that will harm the environment and human health until the point where it is disposed of from the point of production.

In this study; the current practices of medical waste management in Iğdır province are examined. In this context, the health care facilities in the province and the amount of medical waste, their properties and collection and the preferred method of medical waste disposal are explained.

Keywords: Iğdır, medical waste, waste management

ID:354-EOP

Wastewater Resources and Treatment: Example of Iğdır

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Wastewater production and its management and disposal are significant components of the water cycle. Wastewater which is emerging as a result of increasing water consumption in parallel of the rapid population increase, is either collected in sewage systems and treated in wastewater treatment plants or discharged directly to receiving environments without being treated. The wastewater discharged to the receiving environment without being treated is mixed with surface water and groundwater and brings with it many environmental problems. Water pollution is one of the environmental problems. In this study; sewerage systems and wastewater treatment activities of Iğdır Province located in the east of Turkey's were investigated. There are a total of 7 municipalities which are 1 center, 3 towns and 3 districts in Iğdır. The population of Iğdır Municipality is 89.000 and the wastewater of the province is transported with sewage system. The wastewater of Iğdır is a domestic type due to the low amount of industrial wastewater. While the ratio of the municipal population served by drinking and supply water network in Iğdır is 92%, the ratio of the municipal population served by the sewage network is 77%. The network serving sewerage is old and its economic life has completed due to unexpected population increase. The wastewater collected by the sewerage network in province goes to the facultative stabilization pools for treatment by the main collector line, but it is discharged to the Aras River without being treated since pools have lost their function. This situation leads to various environmental problems and threats to human and environmental health if necessary precautions are not taken. It is necessary to renew the network lines that have completed the life of the project, to complete the substructure system where sewerage system is not available, and to complete the construction of the wastewater treatment plants and to operate them.

Keywords: Wastewater resources, Iğdır, wastewater treatment

ID:363-EOP

Shear Force of Phenolic Resin-Based Brake Pad Composites: Effect of Glass Fiber Reinforcement

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The recent rapid developments in the automotive technology along with the environmentalist approaches have led to the investigation of new compositions in the brake pads. It is aimed to produce brake pads with different fiber additions which will be more environmentally friendly, lighter and less costly by using less metal powders. In this study, brake pads with extra fiber and without extra fiber reinforcement were produced and the results were compared with commercial brake pads. Glass fiber reinforced brake pads which is high mechanical strength, low heat conductivity and without extra fiber reinforced brake pads produced by powder metallurgy method. Shear forces of manufactured brake pads were measured and the results were compared with the commercial brake pads values to determine their suitability.

Keywords: Brake pad, glass fiber, shear force

ID:364-EOP

Production of Hydrophobic Activated Clay Added Composite Insulation Material and Investigation Of Changes in Heat Transfer Coefficients

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A completely eco-friendly thermal insulation material is produced, that Fully can be soluble in nature and without greenhouse gas emissions. With the increase of the human population, the decreasing energy sources have made the energy more valuable. In fact, this issue is causing wars between countries. Energy is an important issue for the economy of all countries. The rapid decrease in the energy resources used has made energy saving compulsory. One of the easiest ways to prevent this is insulation. However, the existing insulating materials are generally produced from petrochemicals. Greenhouse gas emissions of such materials are very high in terms of environment. In this study, considering all these negativities, a new thermal insulation material production was made by using natural materials. Wool, kenaf and wheat straw were used as fiber and hydrophilic clay was used as filling material in the samples of thermal insulation produced. During production, particle size, fiber type, fiber additive ratio and clay additive ratio of clay were determined as parameters and the heat transfer coefficients of the materials produced for these parameters were measured. A completely eco-friendly thermal insulation material was produced, that fully can be soluble in nature and without greenhouse gas emissions.

Keywords: Heat Insulation, Natural Fiber, Heat Transfer Coefficient, Hydrophobic Clay

AGRICULTURE
ORAL PRESENTATIONS

ID:86-AOP

Protein Gene Expression Profiling of Yersinia Ruckeri Isolates Grown at Different Temperatures

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In this study, Y. ruckeri strain was developed in TSA medium and at 1.0 OD density in 600nm. Then, 100 ul of the same concentration of bacteria suspension was added to the TSA and SW medium and incubated for 24 hours at different temperatures (15, 20, 25, 37). The molecular identification was carried out in Real-Time PCR with the primer assay specific for the 16S rRNA gene. Western blot analysis was performed to determine the differences in expression at the protein level at different temperatures. In the results of API 20E, incubation at different temperatures revealed differences in CIT, VP and GEL tests. Total protein levels obtained by Bradford method were determined as 0.1384 at 15 oC, 0.1777 at 20 oC, 0.1820 at 25 oC, and 0.1857 at 37 oC. It was found that there was no change in the gene expression profile of the same bacterium developed in TSA and SW media. Significant changes in the level of gene expression are observed under different temperature conditions of the strain. One of the most striking ones is the gene product seen in the 20 and 25oC groups at the level of 110 kDa. While this gene product is not expressed at low and high temperatures, the optimum level of expression is significantly increased. Increased gene products due to temperature increase are seen at approximately 90 kDa, 65 kDa and 30 kDa. When the temperature-dependent expression levels decreased, it was found to be around 40 kDa and 45 kDa.

Keywords: Fish diseases, protein expression, yersinia ruckeri

ID:89-AOP

A Research on Structural Characteristics and Problems of Sheep Breeding According to Farmer Size in Erzincan

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In this study, it was aimed to determine the structural characteristics and problems of Erzincan sheep farms and to propose solutions to these problems. The study was carried out 106 face-to-face surveys with sheep farmers in Erzincan. The farms were divided into three groups according to number of sheep: small farm (≤100 head), medium sized farm (101-500 head) and large farm (≥501 head). The effect of farm size on various factors was observed. Only 8.6% of the enterprises are engaged in a different livestock activity except sheep breeding. It was determined that 93% of the farmers made free mating, 4% made hand mating and 3% made class-style mating. The statistical significance was determined ($p<0.05$) for mating method on farm size. 29% of the breeders do not want to be twins in births. It was determined that 81% of small farm and all large farm were sold as milk cheese. The 81% of small farm and all large farm are members of the Erzincan Sheep and Goat Breeders Association. In order to increase the efficiency of the sheep, 82.8% of the farmers wanted to make a scientific improvement and the rest did not want to do it. As a result, incorrect practices that harm both the country and the farm economy have been determined, such as breeders using their own rams on the mating, not feeding additional sheep on the mating and not wanting to be twins at birth.

Keywords: Sheep breeding, structural characteristics, survey

ID:97-AOP

Problems and Solution Suggestions to Reproductive Migration of Pearl mullet in Lake Van

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This study was conducted with 52 questionnaires between April 2018 and May 2019 in order to determine the problems encountered in Pearl mullet (Alburnus tarichi) migration. Lake Van is the largest lake in our country with an area of 1650 m and a surface area of 3712 km2. It has water quality as well as extreme water quality with pH 9.5, salinity 0% 19. The only fish species in the lake is the Pearl mullet, which is endemic to the Van Lake Basin. In the region, 14 000 people make a living from Pearl mullet. In our country, the amount of fish obtained by catching in the inland waters varies between 30 and 35 thousand tons, depending on the years. Each year, the Pearl mullet with 10 000 tonnes of this figure alone represents 1/3 of this figure. Although the Pearl mullet continues its life in Van Lake, the extreme water quality values of the lake do not allow it to reproduce in the lake. Each year, Pearl mullet migrate to rivers poured into Lake Van during its reproduction period, April-July. In this period, Pearl mullet which is reproduced in the rivers is returning to the lake and continuing its life in the lake. The fact that the stocks are in a sustainable structure in terms of fisheries management is caused by the participation of new individuals in the stock, in other words by the activation of reproduction. For this reason, the management of the Van Lake Pearl mullet stock in a sustainable structure depends primarily on the success of reproductive migration in April-July. There are 111 large and small streams in Van Lake. Migration to each of these streams occurs every year. However, most of the migration is carried out in Bendimahi River, Deliçay River, Zilan River, Karasu River, Engilsu and Karmış River which are the biggest rivers poured into Lake Van. In the study, habitat destruction, smuggling in rivers, pollution in rivers, sand quarries and fish that cannot pass are determined as the main problems. Solutions to these problems are presented in the present study.

Keywords: Pearl mullet migration, lake van, fish habitat

ID:110-AOP

Analysing Natural Unemployment Rate or Unemployment Hysteresis in Turkish Economy: An Application on Agricultural and Non-Agricultural Unemployment Rate Series

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The dynamics of the unemployment rate is being explained by the natural rate of unemployment or the hysteresis hypothesis in unemployment. According to the natural rate of unemployment hypothesis, the unemployment rate series follow the stationary process in the long term, whereas for the hysteresis hypothesis in unemployment, the unemployment rate series follow a non-stationary process in the long term. Within this framework, in this study, it is investigated whether the agriculture and non-agricultural unemployment rate series can be explained by the natural unemployment rate hypothesis or the hysteresis hypothesis in unemployment with the Fouirer unit root test under the time series analysis in the Turkish economy for the period 2005:1-2018:12. As a result of the study, it is determined that the agricultural unemployment rate series follow a stationary process for the examination period and can be explained by the natural rate of unemployment hypothesis. However, the result of the study indicate that Non-agricultural unemployment rate series follow non-stationary process for the examination period and can be explained by the hysteresis hypothesis.

Keywords: Natural unemployment, unemployment hysteresis, agricultural and non-agricultural unemployment rate, fourier unit root test

ID:112-AOP

Assessment of Animal Welfare in Different Dairy Cattle Housing Systems by ANI 35 L/2000 Method

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In this study, animal welfare levels in dairy cattle farms with different shelter characteristics were aimed to be compared with Animal Needs Index (ANI) 35L method. 40 dairy cattle farms, shelter structure (i.) Affiliated-family businesses n = 15, ii). Affiliated-Improved businesses n = 17 and iii. Free-standing enterprises n = 8) are divided into 3 sub-groups, taking into account the criteria of barn mechanization, technology and labor use. he total points taken in the mobility, social communication, ground quality, barn climatic conditions and care categories are respectively in affiliated-family enterprises, 0.86, 0.07, 0.21, -2.26, 2.43, in affiliated enterprises 1.23, 0.41, 0.78, 1.53, 3.56, and freelance enterprises; 8.06, 7.37, 3.58, 5.26, 3.56. In terms of mobility, social communication, soil quality, in-stable climatic conditions and maintenance categories, the enterprises in the free system received higher scores than the enterprises in the connected-family and connected-improved system. In terms of the total ANI score, the affiliated-family and affiliated-improved enterprises had a lower average than the free-standing enterprises. As a result of the ANI evaluation,, the rate of business found suitable in terms of animal welfare was low in the enterprises with freestanding, family-owned and family-based enterprises. In the study, it was concluded that the structural features of the stall area and service road affected the animal welfare negatively in the connected-family and affiliated family businesses, and that the animals in the free-standing system contributed positively to the animal welfare in all categories except for the cleanliness and lubricity of the sleeping area.

Keywords: Eastern anatolia, dairy cattle, shelter, welfare

Acknowledgement: This work was supported by Ağrı İbrahim Çeçen University Scientific Research Projects Coordination Unit.

ID:113-AOP

Arima Model for Forecasting Wheat Production in Turkey

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The increase in world population increases the importance of grain products, especially wheat production. Wheat, which has an important place in human nutrition, is considered as a strategic product in the world. For this reason, countries make policy and planning in balancing wheat production in line with demand and having enough wheat in their stocks. Production projections can be taken into consideration in the formation of these policies and in production plans. It can be stated that it is possible to evaluate the correct production potential of wheat on the basis of past trends. Thus, this study aimed to estimate the wheat production in Turkey until 2030. For this purpose, estimates are made by ARIMA model by using the 1938- 2018 wheat production data published by the Turkish Grain Board. The ARIMA model is a time series model based on the description of univariate data and can make accurate predictions from time series. The approach of the Box-Jenkins methodology to create ARIMA (Autoregressive Integrated Moving Average) models includes the following steps: (1) Model Identification, (2) Parameter Estimation and Selection, (3) Model Verification and (4) Model use. As a result of the analysis, it is seen that they are not stationary but are still stationary in their first differences (fd). As a result of the study, wheat production is estimated to be 23.114.981 tons in ARIMA model 2018-30.

Keywords: Wheat production, ARIMA model, Turkey

ID:114-AOP

Organic Agriculture in Turkey

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Advances in technology lead to the use of new production methods in all sectors. Agricultural sector, which is an important sector in the increase of world population and nutrition of this population, is also affected by this change. The use of chemical pecticide, fertilizers, additives with new production methods raises concerns about human health and environmental hazards. In order to overcome these concerns, organic agriculture is becoming an important alternative production method. Organic agriculture is defined as a production method in which every stage from consumption to consumption without harm to human health and environment is controlled and certified. Turkey as well as in the world where the spread of organic farming and production has increased with support for this production method. In this study, the number of farmers in organic farming activities in Turkey by year, is intended to evaluate data relating to production areas and quantity. For this purpose, Turkey Statistical Institute data relating to organic production in Turkey are presented as of and years.

Keywords: Organic agriculture, crops production, animal production, Turkey

ID: 123 - AOP

Acute Toxicity of Fluvalinate and Esfenvalerate to Mature of *Alburnus tarichi* (Güldenstädt, 1814)

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Abstract

Fluvalinate and esfenvalerate pyrethroid insecticides and are used to control insect pests on agricultural products. These pesticides may cause toxicity by entering the aquatic environment in different ways after their use. *Alburnus tarichi* is an endemic *Cyprinidae* family fish living in the Van Lake basin. This study was conducted to determine the acute toxicity of fluvalinate and esfenvalerate on mature *Alburnus tarichi*. In bioassays, the mean length for fluvalinate 20.6±1.2 cm and an average weight of 93.9±14.0 g, average length for esfenvalerate 19.7±1.2 cm and an average weight of 85.5±16.6 g, which was used *Alburnus tarichi*. Fish, semi-static for fluvalinate, were exposed using a static test method for esfenvalerate. Bioassays were carried out under natural photoperiod. Fluvalinate was used at 0.15, 0.30, 0.45, 0.60 µg/L, esfenvalerate 0.33, 0.67, 1.00, 1.34 µg/L concentrations. The tests were continued for 96 hours at 14±1 °C using dechlorinated tap water. At the end of toxicity tests, 96 hours LC_{50} for mature *Alburnus tarichi* was determined to be 0.338 (0.230–0.477) µg/L for fluvalinate, 0.475 (0.293–0.640) µg/L for esfenvalerate. Fluvalinate and esfenvalerate are highly toxic in *Alburnus tarichi*. In freshwater environments where *Alburnus tarichi* lives, fluvalinate 0.00338 µg/L, esfenvalerate should not exceed 0.00475 µg/L.

Keywords: *Alburnus tarichi*, Fluvalinate, Esfenvalerate, Acute toxicity

ID:125-AOP

Determination of Some Morphological Characters of Orchardgrass (*Dactylis glomerata* L.) Ecotypes Collected from the Rangelands of Eastern Anatolia

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Orchardgrass (*Dactylis glomerata* L.) is one of the most important forage grasses which used as a cool-season persistent and perennial forage grass in Turkey, and many other countries that have temperate and cold climates. This research was carried out during 2018 and 2019 growing season in Eastern Anatolia region in Turkey, which is a gene center and home of many rangelands and forage crop species. The research aimed to determine some morphologic characteristics of natural Orchardgrass (*Dactylis glomerata* L.) which were collected from 20 different locations of Eastern Anatolia in 2018 and 2019. The results showed the significant differences to the numbers of the tiller/plant, plant height, blade width for flag leaf, blade length for the flag leaf, spikelet length, internode length, panicle length, 1000 seed-weight, these traits were ranged between 1 to 35. 45 to 150 cm, 1.5 to 7 mm, 2.40 to 23 cm, 3.7 to 10.10 mm, 6.2 to 33 cm, 2.8 to 20.5 cm , 0.30-1.20 g, respectively. Depending on the results obtained from this research it will be possible to use some genotypes in breeding programs (selection and hybridization).

Keywords: *Dactylis glomerata*, morphological character, eastern anatolia

Acknowledgement: This work was supported by Van Yüzüncü Yil Üniversitesi.

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ID:126-AOP

Determination Acute Toxic Effects of the *Coprinopsis atramentaria* (Agaricomycetes) Mushroom Species Extracts with Alcohol on Red California Earthworm (*Eisenia fetida*) as a Model Organism

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The aim of this study is to provide a different approach to the mechanism of toxicity which is formed by testing the toxic effect caused by the consumption of *Coprinopsis atramentaria* which is an edible mushroom species with alcohol on a non-target model organism Red California earthworm (*Eisenia fetida*). Red California earthworms (400-600 mg individual weight), commercially purchased and cultivated from the earthworms' manure production unit in the Igdır University, Department of Organic Agriculture Management. Earthworms regularly fed with fresh cow manure in common. The study on the earthworms have been started after waiting 2 weeks adaptation period to the experimental conditions in the laboratory. In vivo toxic metabolism of mushroom extract in soil worms was determined by the chemical injection method. The experiment was conducted for six groups as follows: control (T0: 100 µl injected ultra-pure), 50% mushroom extract (T1: 18 mg/100 µl extract), 100% mushroom extract (T2: 36 mg/100 µl extract), 10% ethanol + 100% mushroom extract (T3), 30% ethanol + 100% mushroom extract (T4) and 50% ethanol + 100% mushroom extract (T5). Determined doses were applied to each earthworm as rate of 100 µl with an injection. The temperature during the trial was set at 20°C and humidity was at 75%. Moist filter papers have been changed daily. The experiment is designed to have three replications and 6 earthworms in each group. As a result of the study, it has been shown that 50% ethanol + 100% mushroom extract (T5) completely effective (100% death of earthworms after 48th hour) when compared to the other treatments. In addition, malformations such as body lesions, edema on the head and mouth regions and thinning of various parts of the body were observed after the

earthworms exposed to 30% ethanol + 100% mushroom extract (T4) and 50% ethanol + 100% mushroom extract (T5).

Keywords: *Coprinopsis atramentaria*, *Eisenia fetida*, toxicology

ID:160-AOP

Determination LD50 of Sodium Azide (NaN3) for Induction Mutations in Safflower Seed (*Carthamus tinctorius* L.)

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Safflower (*Carthamus tinctorius* L.) is an important oil seed crop with growing importance around the World. Hence, it is the important to increase the genetic and physiological diversity of safflowers. Mutation breeding is an efficacious method to increase genetic variability in crop plants. Among chemical mutagens, Sodium azide (SA) has become important tool to induce mutation in crop plants. SA enters into the nucleus, interacts to DNA, and cause point mutation in the plants genome. Therefore, an optimum dose is highly desired to produce the high frequency of mutations with minimum killing of treated individuals. Therefore, this study was carried out to determine the LD50 (50% reduction in germination compared to control group) of Sodium azide on Safflower. Effect of three different concentrations (1, 2, 3 mM) and periods (1, 2, 3 hours) under two pH (3 and 7) conditions on seed germination of safflower. Germination rate and germination percentage were recorded. Results showed the important effect of Sodium azide concentrations, pH and treatment periods on seed germination. The LD50 of SA for safflower seeds was found as 2 mM SA in 1 hr at pH 3. This study would be first step to initiate mutation breeding programs in safflower.

Keywords: Mutagenesis, germination, LD50

ID:205-AOP

Some Environmental Factors Affecting the Growth Characteristics of Anatolian Buffalo Calves at Birth-1 Age Period

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This research was conducted to determine on live weight in Anatolian buffalo calves at birth-1 age period the maternal age (3-4 years, 5-6 years and 7+ age group), birth year (2012, 2013 and 2014), birth season (spring and summer), enterprise size (1-3 heads, 4-6 heads and 7+ heads) and gender (male and female).The material of the research was formed by the data belong to of 110 heads of buffalo calves that were grown in Pasinler district of Erzurum born between 2012-2014. Weights at sundry age term were determined in 0-12 month age period. The effect levels and the averages of the effective factors on the weights in each period examined were calculated. According to this; weights at birth, 3, 6, 9 and 12 months weights were found 29.30 ± 0.614, 66.77 ± 1.380, 87.50 ± 1.712, 113.38 ± 1.934 and 138.93 ± 2.428 kg respectively. In the research, the effect of the year on the weights at all ages term were found very significant ($p<0.01$), while the effect of gender not significant. The effect maternal age birth and 12 months weight ($p<0.05$), the birth season 6 months weight ($p<0.05$) and 9 months weight ($p<0.01$) and enterprise size 6 months weight ($p<0.05$) was important. The averages of daily live weight gains for 0-3, 3-6, 6-9, 9-12, 0-6, 0-9 and 0-12 month age periods are 0.402, 0.242, 0.273, 0.314, 0.322, 0.306 and 0.308 kg for males; 0.424, 0.225, 0.298, 0.265, 0.322, 0.314 and 0.303 kg for females respectively. In conclusion, the average live weights and daily live weight increase determined for various age periods in Anatolian buffalo calves were lower than the values reported in limited studies for breed.

Keywords: Anatolian water buffalo, live weight, maternal age, enterprise size, birth season

ID:216-AOP

The Current Problems of Iğdır Agriculture

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In this research, the problems encountered in the agricultural production in Iğdır plain and their solution suggestions were emphasized. For this purpose, general problems were identified with the meetings held with the village headmen and the Eastern Anatolia Agricultural Research Institute, Special Provincial Administration Agricultural Services Directorate, Breeder Cattle Breeders Union, Forestry and Water Affairs Directorate and Iğdır University Faculty of Agriculture came together to solve problems solution proposals and measures to be taken to solve these problems are discussed. As a result of the interviews, the general problems of the province, salinity problem in Iğdır plain soils, problems in irrigation, problems in animal husbandry and horticulture, parcel sizes, mechanization level and problems in agricultural extension activities were evaluated separately and the actions that could be done to solve these problems were discussed. As a result of the discussions, it was concluded that the salinity problem in the Iğdır plain started especially in the West Iğdır Plain and that the drainage channels should be renewed urgently. It has been determined that soil quality deterioration occurs as a result of production by traditional soil tillage method throughout the province. It was concluded that there is not enough wetland especially in the province where sheep and animal husbandry are intense and veterinary services are inadequate. Although the climate is favorable in Iğdır province, it has come to the fore that there is no cultivation of ornamental plants and the necessity to activate this sector. Due to the limited number of agricultural extension activities throughout the province, producers are not aware of technological developments. For this reason, farmers' days should be held at periodic intervals and farmers should be informed.

Keywords: Mechanization, stockbreeding, horticulture

ID:217-AOP

Changes in Physical and Mechanical Properties of Different Chickpeas (*Cicer arietinum* L.) Varieties Related to Seed Moisture Contents

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Chickpea is an indispensable source of food chain due to its high protein and carbohydrate content. In addition, it is a legume plant that can be added to crop rotation in alternating agricultural technique and increases soil quality by leaving nitrogen in the soil. Because of these advantages, both in the world and in our country are produced intensively. Because of these properties, it is very important to know the physical and mechanical properties of chickpea plant in terms of agricultural mechanization processes. In this study, it was aimed to investigate to physical and mechanical properties of six different chickpeas varieties (Hisar, Azkan, Işık, Akça, Yaşa ve Çakır) at the three different seed moisture contents (5%,10% and 15%). For this purpose, it was investigated width, length, thickness, arithmetic and geometric mean diameter values, fracture resistance, sphericity and surface area of the seeds. According to the results of the research, it was determined that the Yaşa variety were larger than the other varieties in terms of dimensional properties and surface area. In addition, the highest fracture resistance was obtained in the Yaşa variety. When the sphericity values were examined, it was concluded that among chickpea varieties, Işık had a more spherical structure than other varieties. In the research the increase in moisture content of the seeds led to an increase in dimensional values. In addition, both sphericity and surface area values of the seeds increased due to the increase in seed moisture content. However, this tendency was not observed when the fracture resistance values were examined. The increase in seed moisture content in all cultivars decreased seed fracture resistance values.

Keywords: Fracture resistance, sphericity, surface area

ID:232-AOP

Determination of the Ameliorative Effect of Vitamin E on Salinity Stress

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Objective; Salinity is an abiotic stress that disrupts the physiological processes and morphological organization of plants that limit plant growth and development. Salinity is one of the environmental challenges in the world affecting on several physiological processes and the most limiting factor of plant productivity and quality. Enzymatic and non-enzymatic antioxidants play an vital role in alleviating the harmful effects of salt stress. Tocopherols is known may play a physiological role in salt tolerance, but their mechanisms are still unknown. In this study, we were aimed to determine the effects of vitamin E application on DNA damage and retrotransposon polymorphism in wheat treated with high salinity.

Methods and Methods; Therefore the REMAP (Retrotransposon Microsatellite Amplified Polymorphism) technique has been used which is effective in measuring retrotransposon polymorphism and DNA damage.

Findings; In our study, we used the wheat (*Triticum aestivum* L. cv. Kırik) which was found to be sensitive to salt stress tolerance. To plants (0, 50 mg L(-1), 100 mg L(-1)) at doses vitamin E and (0, 100 mM, 200 mM) at doses salt stress were applied.

Conclusions: In our results, vitamin E has been shown to decrease this harmful effect against retrotransposon polymorhism and DNA damage caused by 200 mM salt dose.

Keywords: Retrotransposon microsatellite amplified polymorphism, vitamin E, *Triticum aestivum* L. cv. kirik

ID:236-AOP

Effects of Different Mammal's Sex Hormones On Development of Seedling Growth of Wheat (*Triticum Aestivum* L.)

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Wheat (*Triticum aestivum* L.) is among the major staple crops, with about 720 million tons being produced globally. Mammalian sex hormones have effects on various physiological systems in plants. However, there has not been adequate studies about the impact of different sex hormones on the wheat seedling parameters. The aim of this study is to investigate the effects of mammalian sex hormones and their concentration on seedling growth parameters. This research was carried out by randomized complete design in three replications. Seeds of cultivar "Kirik" were used as the plant material. Sterilized wheat seeds were tested with four mammalian sex hormones with (17 β estradiol, progesterone, testosterone and estrogen) 4 different concentrations [(0 control (pure water), 5×10^{-4} 5×10^{-5}, 5×10^{-6} mM)]. Data for the root number (RN), root length (RL), root fresh weight (RFW), coleoptil length (CL), shoot length (SL) and shoot fresh weight (SFW) were obtained. As a result, effect of different mammalian sex hormones on the traits examined were significant in all parameters ($P < 0.01$). Effect of different concentration on the traits were significant in CL, SL, RFW and SFW ($P < 0.01$) and RL ($P < 0.05$). Effect of their interactions on the traits were significant in RL, CL, RFW and SFW ($P < 0.01$) and SL ($P < 0.05$). The highest RN, RL, RFW, CL, SL, SFW and SEL were obtained testosterone control (4.90), estrogen 5×10^{-5} (15.59 cm), testosterone 5×10^{-6} (0.3333 g), testosterone 5×10^{-5} (3.26 cm), estrogen 5×10^{-5} (17.0 cm), estrogen 5×10^{-5} (0.5588 g) and estrogen 5×10^{-5} (32.58 cm).

Keywords: Wheat, seedling growth, mammalian sex hormones

ID:243-AOP

Effects of Different Mammals Sex Hormones on Seed Germination of wheat (*Triticum aestivum* L.)

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Wheat is one of the most grown crops worldwide and provides more than a quarter of the total world cereal output. It is not yet known which role the MCH plays in plants. However, there has not been adequate studies about the impact of different sex hormones on the wheat plant. The aim of this study is to investigate the effects of mammalian sex hormones and their concentration on seed germination. This research was carried out by randomized complete design in three replications. Genotypes of wheat kirik seeds was used as the plant material. Sterilized wheat seeds were tested with four mammalian sex hormones with (17 β estradiol, progesterone, testosterone and estrogen) 5 different concentrations [(0 control (pure water), 5×10^{-5}, 5×10^{-4}, 5×10^{-3}, 5×10^{-2} mM)]. Data for the, Final germination percentage (FGP), germination rate (GR), coefficient velocity germination (CVG), mean of germination time (MGT), germination rate index (GRI) and seedling vigor index (SVI) were obtained. Analysis of variance indicated that mammalian sex hormones were significant ($P < 0.01$) effect in GR, CVG and MGT parameters, whereas concentration was significantly effect in GR traits also their interaction was significant effect in GGP and GR parameters ($P < 0.01$).

As a result, the highest FGP, GR, CVG, MGT and GRI and SVI were obtained in testosterone + 10^{-4} mM (86.00%), CVG in 17 β estradiol + 10^{-5} mM (23.60), MGT in estrogen + 0.0 mM (5.62 day), GRI in estrogen + 10^{-5} mM (15.46) and SVI in progesterone + 10^{-4} (2341.85) treatment.

Keywords: Wheat, germination, mammalian sex hormone

ID:247-AOP

Germination Test of Fuzzy and Delinted Cotton Seeds

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Cotton is a major crop in the world [1]. Cotton fiber is a source of natural textile, and cottonseed is a source of oil for human consumption, cotton meal and minerals for livestock feed [1;2]. Therefore, maintaining high quality fiber and cottonseed nutritional value is critical. The aim of this study is to eliminate the difficulties in germination in fuzzy and delinted cotton seeds. In this study, 12 preliminary applications were made 1) Fuzzy seed soaked with water for 24 hours, 2) Fuzzy seed soaked in hot water for 15 minutes-24 hours in water, 3) delinted seed soaked 24 hours in water, 4) delinted seed soaked 15 minutes in hot water-24 hours in water.5) Pile sanding and soaking in hot water for 15 minutes then 24 hours in water. 6) fuzzy seed pile sandpaper-24 hours in water. 7) delinted seed sandpapered and hot water for 15 minutes then 24 hours in water. 8) delinted seed sandpapered 24 hours in water. 9) Fuzzy seed needle-soak in water for 24 hours. 10) Fuzzy seed needle and hot water for 15 minutes –soaking in water for 24 hours. 11) delinted seed needle-soak for 24 hours, 12) Lint-free needle and hot water for 15 minutes-soaking in water for 24 hours. The experiment was conducted as completed randomized design. According to analysis of varience, the highest germination rate was observed in the 8th application and the lowest germination was observed in the 2nd application. Application number 8 has the highest germination rate in fuzzy seeds while application number 1 has the highest germination rate in fuzzy seeds.

Keywords: Cotton, germination, seed,

ID:272-AOP

A Stress-Memory Approach: Does Drought Experience Influence the Essential Oil Compounds of Rosemary Leaves Under Sequential Stress Conditions?

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Drought stress is of abiotic stress factors shifting the primary and secondary metabolism of the plants. The mechanisms corresponding to stress-plant interaction and subsequently impacts on plants have been well-documented. However, there are insufficient documents regarding with drought experience influence on essential oil compounds. Briefly, rosemary plants were firstly divided into two groups: irrigated and stress groups for seven days. For the second, both groups were irrigated as recovery stage for seven days. After fourteen days of experiments, both groups were divided into two more groups as irrigated and non-irrigated for more seven days. For analysis, variance analysis, clustering analysis, correlation analysis and principal component analysis were performed. According to the values obtained herein, for the control group, α-pinene and D-Limonene exhibited decline until 21st day of the experiment. The control group which were exposed to drought stress after 14th day contained the lowest α-pinene and D-Limonene percentage. Camphene percentage increased in the group stressed after 14th but no significant changes were observed for the rest groups of the control group. For the drought stress group, α-pinene decreased with the stress and recovery did not significantly influence the percentage of α-pinene. Camphene increased with the stress but declined with the recovery. However, during second stress treatment and non-stress treatment for the drought stressed groups, camphene percentage significantly increased. D-Limonene exhibited similar manner with camphene. Along with the present results, both experimental groups were well-discriminated regarding with their essential biosynthesis behaviour. Furthermore, the drought experience did not significantly influence the behaviour.

Keywords: Stress-memory, drought, essential oil

ID:276-AOP

Increasing the Nutritional Qualities of Tomato Pomace By Yeast Fermentation

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The study focused on possible improvements in the quality of tomato pomace by *Kluyveromyces marxianus* fermentation. Three experiments were conducted using with or without *Kluyveromyces marxianus* (*K. marxianus*). Tomato pomace was incubated at the best fermentation conditions which were selected from the literature of 96 hours at pH (4.50-5.00), temperature (24-28 °C), moisture content (75% w w-1), aeroation (0,25 L min-1) and stirring rates (10 rpm). Samples taken at each incubation time were chemically analysed. The data were subjected to the analysis of variance (2 feed x 5 incubation times x 3 samples) using the General Linear Model. The results indicated that fermentation with *K. marxianus* significantly ($P<0.05$) increased crude ash content (from 4.34% to 9.44%) and total reducing sugar (from 24.77% to 38.98%), with no change in crude protein. Fermentation with *K. marxianus* decreased ($P<0.05$) crude lipit content (from 11.79% to 7.09%), crude fiber (from 37.20% to 31.42%), ADF (from 56.41% to 8.28%) and NDF (from 62.34% to 42.76%) at 96 hours. Yeast fermentation significantly ($P<0.05$) increased organic acids, especially lactic acid level. Fermentation with *K. marxianus* significantly changed ($P<0.05$) tannin and pectin levels. As a result, fermentation give rise to nutritionally enriched tomato pomace with added active compounds, and could be used as functional feed in animal nutrition.

Keywords: Tomato pomace, yeast fermentation, functional feed

ID:277-AOP

Yeast Fermentation Improved the Nutritional Qualities of Apple Pomace

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In this study, apple pomace was fermented with *Kluyveromyces marxianus* under optimum conditions to increase the nutrient content, to enrich its organic acid level and to decrease its antinutritional compounds. The apple pomace was fermented for 96 hours with no microorganism and *Kluyveromyces marxianus* and three independent sterile sample were taken every 24 hours for the microbial and chemical analysis fermentation. The data were subjected to the analysis of variance (2 feed x 5 incubation times x 3 samples) using the General Linear Model. The results indicated that fermentation of apple pomace with *Kluyveromyces marxianus* significanly ($P<0.05$) increased the crude ash and starch content 30% and 170% respectively. On the other hand the reduced crude protein, total reducing sugar content, crude fibre, ADF, NDF and lignin content 12%, 95%, 22%, 81%, 22% and 100% at the end of fermentation respectively ($P<0.05$). In fermentation, lactic acid (on average 300%) and butyric acid (on average 363%) content increased significantly ($P <0.05$). At the end of fermentation, tannin content decreased by 75% and pectin content increased by 53% ($P <0.05$). As a result, it can be said that in the fermentation of apple pomace with *Kluyveromyces marxianus*, it is enriched in starch, mineral matter and organic acid and it is converted into functional eating or additive especially in terms of organic acid.

Keywords: Apple pomace, fermentation, organic acid

ID:322-AOP

Micropropogation Studies on Lavandula Species

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Lavandula species belongs to *Lamiaceae* (*Labiatae*) family, originated from Mediterranean area and includes many valuable essential oils. Its biologicial active substances has pharmaceutical, aromatic, medicinal and culinary properties. Commercially important and commonly grown three *Lavandula* species are: Lavender (*Lavender angustifolia* Mill. = L. *officinalis* L.= *L. vera* DC), Lavandin (*Lavandula intermedia* Emeric ex Loisel.) = *L. hybrida* L. and Spike Lavender (*Lavandula spica* = *L. latifolia* Medik.).Traditionally, Lavandula species is propagated vegetatively by stem cutting, however because of its rooting difficulties, micropropogation techniques became popular in the last three decades. As a result of micropropagation studies, it was possible to obtain a large number of genetically identical plantlets and disease free plantlets with low cost in a short time. Both direct and indirect tissue culture techniques have been used in Lavandula micropropogation. Shoot tip, stem node and bud techniques widely used in the direct micropropagation. Callus culture for strong plantlets were used for indirect plant regeneration.

In this review, the effects of sugar, minerals, salts, vitamins, plant growth regulators on shooting and rooting of lavandula species will be discussed in detail. It will be possible to have common opinion for production of qualified plantlets as a result of the study.

Keywords: *Lavandula* species, micropropogation, plant growth regulators

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ID:341-AOP

Animal Wastes As Renewable Energy Resources in Ağrı

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In recent years, there has been an increase in the amount of waste generated by the increasing world population, increasing agricultural activities to meet the food and clothing needs of this population and industrial production. Uncontrolled storage of wastes, infiltration into groundwater, creating an environment in which diseases and pathogens and other pests develop, and the release of greenhouse gases cause harm to the environment and human health. Instead, these wastes, which cause important problems, can be converted to compost or biogas by microorganisms and can be considered as a raw material that can generate more economic added value than garbage. The utilization of wastes in this way will contribute to the closure of the current energy deficit in our country, to reduce the dependence on external fertilizer requirements applied to the lands, to increase the decreasing productivity potential of the soil as a result of intensive agricultural activities and to reduce environmental pollution. The importance of compost and biogas plants in our country and especially in our region has not been recognized sufficiently and has not yet become widespread.

70% of Turkey's current account deficit is energy. In our country, 50% of electricity is produced in natural gas conversion plants. Price increases in natural gas are also reflected in electricity prices. The agricultural, manufacturing and service sector enterprises in the region are also affected by this price increase and lose their competitiveness.

As of 2017, there are 352,864 bovine animals and 1,494,584 ovine animals in the province of Ağrı, which is a livestock region, in terms of its geographical location. It is seen that she has an important share in ovine and cattle breeding in Eastern Anatolia Region. It is thought that it will contribute both to the economy of the province of Ağrı and to the economy of the country with the recycling facilities to be established when the existing animal presence is considered.

Keywords: Animal, renewable energy, Ağrı

ID:342-AOP

The Use of Alternative Herbal Extract for Antibiotics Used in Poultry Nutrition

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In these days when the world population exceeds 7.7 billions, new methods and methods have been searched for the increase in crop and animal production in order to meet the increasing food demand due to the rapid population growth and the increase in the migration from village to the city due to the industrial development and increase in population ratio. poultry breeding is an important option in eliminating this gap. In addition to the increase in the number of animals, there has been also an increase in the amount of product obtained from the existing animals. Antibiotics have been used as feed additives to increase the rate of feed injury in poultry as well as all farm animals.

The decision of the European Union in 2002, starting from 2006, that suggested not to add feed additives (antibiotics) to animal feeds has led scientists to research natural-origin drugs (Deschepper et al. 2003). The search for alternative natural growth stimulators capable of killing the bacteria, improving the digestive systems of the animals and catching the genetic potential of the animals have started in order to prevent the need for more antibiotics for the treatment of diseases as well as the decrease in the performance and decrease in the profitability of the production that may be caused by the removal of antibiotics from the rations (Deschepper et al 2003).

In recent years, many products such as organic acids, probiotics, prebiotics, plant extracts and essential oils have been used as alternative feed additives (Ball 2000).

It has been shown that by using vegetable extract instead of antibiotics as feed additive, both the human health is adversely affected and the resistance of the animal to the antibiotics to be used in the fight against diseases that may occur in the animals is prevented. Thus, healthier and more reliable animal foods can be offered to human consumption.

Keywords: Hens, feeding, antibiotic

ID:346-AOP

Effects of Paraquat Toxicity on Some Biochemical and Hematological Parameters of Rainbow Trout (*Oncorhynchus mykiss*)

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This study was conducted to investigate the effects of paraquat on the biochemical and hematological parameters of rainbow trout (*Oncorhynchus mykiss*). The average weight of fish was 80 g and 10 fish were used for each group. Fish subjected to two different sub-lethal concentrations (8 and 15 mg/L) of paraquat for 4 days (LC50: 32 mg/L). At the end of the trial, glucose, total protein, aspartate aminotransferase (AST), alanine aminotransferase (ALT), white blood cells (WBC), red blood cells (RBC), hemoglobin (Hb), and hematocrit (Hct) levels were determined. The glucose, AST, ALT, WBC, RBC, and Hct levels of experimental groups compared to the control group were significantly increased. But, total protein, and Hb levels were significantly decreased. Consequently, the results of the present study have shown that the different doses of paraquat may cause changes in biochemical and hematological parameters of rainbow trout, *Oncorhynchus mykiss*.

Keywords: Rainbow trout, paraquat, biochemistry and hematology

ID:347-AOP

Effects of Pomegranate Peel (*Punica granatum* L.) Extract on Growth, Whole-Body Composition, Antioxidant Enzymes and Blood Parameters of Rainbow Trout (*Oncorhynchus mykiss*)

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The present study was designed to investigate the effect of pomegranate peel extract on growth performance, whole-body composition, antioxidant enzymes and blood parameters of the rainbow trout. The fish, with a mean weight of 30 ± 0.1 g, were fed with trout feed added to pomegranate peel extract at different concentrations (0.1%, 0.3% and 0.5%) for 50 days. At the end of the experiment, significant differences on growth performance, blood parameters (AST, ALT, triglyceride and total cholesterol) and antioxidant enzymes (SOD and CAT) of the treated groups compared to control group were observed. However, there was no significant effect on whole-body composition (moisture, crude lipid, crude protein and ash). In conclusion, the obtained values in this study have showed that all pomegranate peel extracts have beneficial effects. Moreover, 0.5% extract was more effective than that of 0.1 and 0.3% extracts.

Keywords: Antioxidant enzyme, Blood, Growth, Pomegranate peel, Rainbow trout

ID:351-AOP

Evaluation of Entomopathogenic Fungi against *Apis gossypi* Glover (*Homoptera*: *Aphididae*)

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In this study was carried out between 2014-2017 in Erzincan provinces. Our aim was to isolate entomopathogenic fungus from the soil from the province of Erzincan and to test the pathogenesis of the *Apis gossypi* Glover. (Homoptera: *Aphididae*). At the end of the study, we obtained a total of 78 isolates including 63 *Beauveria bassiana* isolates and 15 *Metharzium anisopliae* as entomopathogenic fungi. Our study was followed by incubation for 12 days and the first cases were seen on the 3.th day. At the end of the 3th day, BbEMRKZ1a isolate had the highest mortality rate with 8.75 %. 5.th day, BbEMRKZ1a, BbEÜ2a, BbEİ1, isolate had the highest mortality rate with 37.28 %, 7.th day, BbEMRKZ1a, BbEÜ2a, BbEİ1, isolates had the highest mortality rate with 44.88 %. 9.th day, BbEMRKZ1a BbEÜ2a BbEİ1 isolate had the highest mortality rate with 57.51 %. 12.th day, BbEMRKZ1a, BbEÜ2a and BbEİ1 isolates had the highest mortality rate with 63.35 %. Also, as a result of the ısolates of M. anisopliae; at the end of the 3th day, MaEKLY1a, isolates had the highest mortality rate with 7.67 %. 5.th day, MaET3 isolate had the highest mortality rate with 29.08 %. 7.th day, MaEM3 isolates had the highest mortality rate with 45.71 %. 9.th day, MaET3 isolate had the highest mortality rate with 54.17 %. 12.th day, MaEM3 isolates had the highest mortality rate with 65.84 %.

Keywords: Biocontrol, *Beauveria bassiana*, *Metarhizium anisopliae*, *Apis gossypi*

ID:352-COP

Evaluation of Entomopathogenic Fungi against *Myzus persicae* (Homoptera: *Aphididae*)

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In this study was carried out between 2014 and 2017 in Erzincan provinces. Our aim was to isolate entomopathogenic fungus from the soil from Erzincan and to test the pathogenesis of the *Apis fabae* Scopoli, 1763. (Homoptera: Aphididae). At the end of the study, we obtained a total of 78 isolates including 63 *Beauveria bassiana* isolates and 15 *Metharzium anisopliae* as entomopathogenic fungi. Our study was followed by incubation for 12 days and the first cases were seen on the 3.th day. At the end of the 3th day, BbEMRKZ1a isolate had the highest mortality rate with 8.75 %. 5.th day, BbEMRKZ5b, BbEÜ3, isolates had the highest mortality rate with 22.39 %, while BbEM5 and BbEO2 isolate was found to be the lowest isolate with a mortality rate of 9.04 %. 7.th day, BbER4, isolate had the highest mortality rate with 37.41 %, while, BbEM5, and BbEO2isolates were found to be the lowest isolate with a mortality rate of 19.84%. 9.th day, BbEMRKZ1a, and BbER4isolate had the highest mortality rate with 50.00 %, while BbEKLY2b and, BbER1 isolates was found to be the lowest isolate with a mortality rate of 31.64 %. 12.th day, BbEİ5 isolates had the highest mortality rate with 62.54 %, while BbEKLY4 and BbEO2 isolates were found to be the lowest isolate with a mortality rate of 49.17 %. There was 1.12% the high mortality at the end of all incubation in control group. Also *M. anisopliae*; at the end of the 3th day, MaEMR1a isolates had the highest mortality rate with 5.78 5.th day, MaET3 isolate had the highest mortality rate with 23.32 %, while MaEMR2b, MaEÜ1a, MaEKLY1a, MaEÇ3, and MaEO3 respectively isolate was found to be the lowest isolate with a mortality rate of 9.91 %. 7.th day, MaET3 solates had the highest mortality rate with 39.99 %, while MaEMR2b and MaEÇ3 MaER3 isolates were found to be the lowest isolate with a mortality rate of 19.06 %. 9.th day, MaEK1a and MaEk1b isolate had the highest mortality rate with 50.83 %, while MaER3 isolate was found to be the lowest isolate with a mortality rate of 32.48 %. 12.th day, MaEk1b and MaET3 isolates had the highest mortality rate with 60.00 %, while MaEMR1a isolates were found to be the lowest isolate with a mortality rate of 50.82 %. There was 1.12% the high mortality at the end of incubation period in control group.

Keywords: Biocontrol, *Beauveria bassiana*, *Metarhizium anisopliae*, *Myzus persicae*

ID:353-AOP

Global Climate Change and Impact on Cultivated Agricultural Products (Ağri Geographic Region)

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Global warming and climate change is now taking place along an unavoidable reality today. As a result of population growth, industrialization and the economic developments related to it, we are now faced with the fact that the global environmental problem . It is no longer possible to completely prevent global warming even if timely measures are taken to limit global greenhouse gas emissions. As a result of the studies carried out by many international organizations (UN, UNDP, OECD etc.) and all scientific researches on this subject, the average temperature in the atmosphere between 1900-2000 was found to be 0.5 ° C. In order to reduce the anthropogenic factors affecting this increase, international consortia have been established and various agreements have been signed. In this study, which was conducted according to quantitative research method. For many years, the average temperature is 6.6 ° C and the average rainfall is 524mm. In addition to the negative effects on agricultural products, natural disasters, migrations, and spreading of various diseases, the positive effects of global warming are also addressed locally. The aim of this study is to evaluate global climate change in terms of various parameters and to reveal possible positive or negative effects on the scale of the city of Ağrı. The area of agricultural land in the province constitutes 31.7% of the total surface area. Although 47.7 percent of agricultural lands are irrigable, only 5 percent of these lands are currently irrigated. Agri province, which accounts for 44.45% of the total agricultural land in TRA2 Region, is 361,000 hectares. When we look at the plant production data in the province, it is seen that forage crops, sugar beets and cereals are planted to a great extent. For many years, the average temperature is 6.6 ° C and the average rainfall is 524mm. In addition to the negative effects on agricultural products, natural disasters, migrations, and spreading of various diseases, the positive effects of global warming are also addressed locally.

Keywords: Climate change, agricultural product

ID:355-AOP

Chemical Characterization of Bioactive Molecules from *Abies concolor*

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Medicinal plants are sources of a wide variety of natural antioxidants and used for multipurposes throughout the world. Different parts of medicinal plants such as seeds, roots, leaves, fruits, flowers, needles or even the whole plant could be used for medicinal purposes. *Abies concolor* species is commonly known as white fir and naturally grown at 900-3400 m altitudes. The chemical contents of *Abies concolor* grown parks and gardens of Van neighborhood of Turkey were searched. Essential oils of the needles of white fir were isolated using the hydrodistillation method and their chemical constituents were determined by capillary gas chromatography-mass spectrometry (GC-MS).

GC-MS analysis results revealed the presence of bornyl acetate (45.97 %), methyl eugenol (32.47 %), trans-caryophyllene (9.86 %), beta-costal (6.53 %), sabinyl acetate (2.34 %), paradiprene (1.77 %), ethyldimethylcarbinol (0.69 %) and azirane (0.37 %) essential oils as principal components.

The obtained results may direct researchers to updated research areas for the development of new novel phytotherapeutic products from *Abies concolor* plant. Further research should be carried out to determine antimicrobial, antioxidant and medicinal properties of this plant.

Keywords: Medicinal plants, white fir, essential oils, *Abies concolor*

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AGRICULTURE
POSTER PRESENTATIONS

ID:42-APP

Determination of Chemical Composition, Relative Feed Value, Net Energy Lactation and Metabolic Energy Contents of Annual Ryegrass (*Lolium multiflorum* Lam.)

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Present study was carried out to determine the chemical composition, relative feed value (RFV), net energy lactation (NEL) and metabolic energy (ME) contents of the annual ryegrass (*Lolium multiflorum* L.). Annual ryegrass grown in a private family farm in Hürrempalangası village of Erzincan Province was used as a research material. The Annual ryegrass was harvested twice during the experimental period. In each harvest, the RFV of the annual ryegrass was calculated by using the chemical composition, the dry matter digestibility (DMD) and dry matter consumption (DMC) parameters. At the same time, NEL and ME contents were calculated using the nutrient composition of the annual ryegrass.

In the first and second harvest, the average crude protein ratios, RFV, NEL and ME contents of the annual ryegrass were 12,74% and 18,72; 111, 56 and 98,79; 1593,9 and 1589,4 Kcal; 2352,2 and 2345,5 Kcal, respectively. Although there was no difference between the first and second harvest in terms of NEL and ME contents, the difference in the relative feed values was found significant ($p<0.01$) in favor of the first harvest. In conclusion, results from the present study showed that it had a high potential as forage source and may be used in ruminant rations when Erzincan Province climate, the chemical composition and RFV parameters of annual ryegrass were considered.

Keywords: Annual ryegrass (*Lolium multiflorum* lam.), relative feed value, net energy lactation

EDUCATION (PHYSICS, CHEMISTRY, BIOLOGY, MATHEMATICS AND COMPUTERS)

ORAL PRESENTATIONS

ID:82-EOP

The Relationship Between Education and Development

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Development can be expressed beside the increase of national income and production in the countries, also as the positive change in social, economic, technological and cultural structure, the development of world-class public value judgments and providing all necessary innovations. The increase in national income, and providing all other changes can only be achieved through education or in societies where educated people can be raised. Countries that can realize this transformation are called "advanced" or "developed" countries. Matters except increasing the national income can not be provided yet completely in developing countries, such as Turkey or in less developed countries. Therefore, the concept of development is mostly used for such countries. The topic can be explained with the following example; For example in none of the developed countries there are projects or campaigns such as "Haydi Kızlar Okula" (Let's go to school, girls) or "Kardelenler projesi" (The Snowdrops). However, in almost all countries such as Turkey such projects and works for girls to receive an effective education or to go to school are frequently seen. These practices in developing and less developed countries demonstrate the necessity of transformation and change through education and the obligation that education must be brought to a certain level. In countries where education is problematic, an advanced socio-economic structure cannot be established. As can be seen from the short information above, the phenomenon of development is not a phenomenon that can be interpreted unilaterally. This phenomenon requires multiple components. It is based on a process that concerns socio-cultural and basic economic resources. When political programs are considered, the relationship between development and education policies will become clearer. Therefore, education and its policies are very important for the development of the country and competitiveness in the international arena, growth, development and transparency. Because education is very important among the criteria of a country's development. Political stability can be evaluated depending on the stability of education policies.

Keywords: Education, development, economics

ID:109-EOP

The Effects of Education on Economic Growth: Time Series Analysis on Turkey (1980-2018)

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The concept of economic growth has a significant place in the evolution of the economic thought and in every economic school that followed each other and it is one of the topics that is subject to research and debated in almost every period of economic life. From the past to today, the foremost basic macroeconomic target that almost every country, regardless of its economic development, attribute importance is to enhance the economic growth and the sustainability of the growth trend. One of the most important dynamics of the countries that affect the performance of sustainable and permanent economic growth in the long run is human capital, and one of the factors that affect human capital is education as often emphasized in the theoretical and empirical growth studies. In the mentioned studies, it is seen that the qualitative and quantitative developments in the field of education positively affect the economic growth rate directly and indirectly. In this study, the relationship between education and economic growth is examined specifically for Turkey. Within this framework, the study estimates an econometric model that uses education index which represents the education level both by the quality and quantity dimension in the period covering the years 1980-2018 in Turkey, physical and human control variables and time-series analysis methodology. Model results obtained in the estimation approve that, education has a positive and a statistically significant effect on the economic growth of Turkey's economy during the period examined.

Keywords: Education, sustainable growth, time series analysis

ID:131-EOP

Prospectiveteachers' Views on Coding Training in Stem Applications

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The aim of this course is to reveal the opinions of prospective science teachers about coding education with in the scope of STEM applications. Qualitative research method was used in the study. The data of the study were collected using semi-structured student interview questions. The collected data were analyzed by content analysis method. In this context, the study was prepared with semi-structured interview questions with a study group consisting of 37 people who received coding education with in the scope of STEM applications of Muş Alparslan University Science Education 3rd Class teacher prospectives in the 2018-2019 academic year. Teacher candidates participated on a voluntary basis. The aim of this study is to integrate science and coding within the scope of STEM education with in the last few years, and it is thought that it is possible to make learning more permanent and more meaningful by concretizing some abstract science concepts which are difficult to understand.

In the education system, it is planned to vaccinate these skills with early age coding training in order to educate new individuals who are equipped with 21st century skills instead of rhetoric, non-criticism, unquestioning and generations. Prospective teachers are precisely at the heart of this work. Coding is not only confined to computer science, but also very important in terms of interdisciplinary interaction (STEM). The views of the content of the coding education on the practical basis of an academic year have been stated. They expressed the need for teacher prospectives to have 21st century skills and to keep up with the digital age. In STEM applications, the opinions about th econtributions, effects and advantages of coding education on prospective teachers were tried to be stated.

Keywords: STEM Applications, coding training, science

ID:132-EOP

Prospectiveteachers' Views on 3D Printer Use in Stem Applications

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The aim of this study is to reveal the opinions of prospective science teachers about 3D printer usage with in the scope of STEM applications. Qualitative research method was used. Data were collected using semi-structured student interview questions. Data were analyzed by content analysis method. In this context, the study was prepared with semi-structured interview questions with a study group consisting of 37 people using 3D printer with in the scope of STEM applications of Muş Alparslan University Science Education Third Class prospective teachers in 2018-2019 academic year. Teacher candidates participated on a voluntary basis. It is determined that STEM education, which has become prominent as 21st century skills, provides students with higher level mental skills such as problem solving, analysis and synthesis in environments that provide opportunity to embody information.

With the use of 3D printers, students can easily transform the abstract objects they have designed into concrete. Thus, it is a unique experience for students to see and touch their designs in the real world. Students gain the ability to design, identify the problems that they see around and begin to produce solutions using design programs. Then they transformed the solutions they developed using 3D printers to make them more creative and solution oriented. Along with many educational technologies, it has been seen that popular use of 3D printers, which enables students to practice and create their own models, has become popular. At the end of there search, prospective teachers are defined as 3D printers as technology which facilitates learning, embodying information, provides material support in the learning process and belongs to 21st century skills.

Keywords: STEM applications, 3D printer usage, science

ID:150-EOP

Determining The Metaphors of the Primary School 3rd and 4th Grade Students Related to Sport Concept

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Metaphor is the definition of a concept, fact or event by associating it with a different concept, fact or event. Through metaphors, how individuals perceive concepts in their minds can be revealed. The purpose of this study is to determine the primary school 3rd and 4th grade students' metaphors related to sport concept. The study group consists of 180 students getting educated in 2018-2019 academic year. A semi-structured survey is used in the study to collect data. The data is collected through the completion of the sentence "Sport is like ……., because……." by the primary school 3rd and 4th grade students. Content analysis and descriptive analysis are used in the analysis of the data. As a result of the study, it is determined that the metaphors that the 3rd and 4th grade students have created related to sport concept are limited. It has been determined that the 3rd grade students have created 18 different metaphors in 7 categories, and 4th grade students have created 17 different metaphors in 6 categories. While the category with the highest frequency (37.5%) created by the 3rd grade students is the category of "relating sport with happiness-peace", the category with the lowest frequency (3.58%) is the category of "relating sport to different branches." In the 4th grades, the category with the highest frequency (48.8%) is the category of "relating sport to happiness-peace", the category with the lowest frequency (0.8%) is the category of "relating sport to plants." It has been also determined in the study that the students have positive perceptions related to sport with reference to the metaphors they have created. It is thought that students' active participation in sports activities will enrich their perceptions of the concept.

Keywords: Sport concept, metaphors, 3rd and 4th grade students

ID:151-EOP

Determining The Knowledge Level of The 8th Grade Students About the Parts of a Flower Through Drawings

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The fact that one of the most important subjects of biology is the reproduction subject is well known by everyone. Flower is the reproductive unit of the plants. The purpose of this study is to determine the knowledge level of eighth grade students about the parts of a flower through drawings. The sample of the study consists of 93 students, 49 females and 44 males, studying in two different 8th grade classrooms in a state secondary school in Ağrı province in the spring term of 2018-2019 academic year. Survey method is used in the study. Drawings have been used as data collection tool in the study. Within the study, the students have been asked to draw the parts of a whole flower and write the names of these parts. The data collected through the study have been analyzed with grading category based on the parts of a whole flower included in the science textbook. As a result of the study, it has been determined that the correct part of a flower is petal with the frequency of 81.7%, stigma is the least know flower part with the lowest frequency 13.9 %. It has also been determined in the study that the knowledge level of the female students is higher than those of the male students related to the parts of a flower. It is among the recommendations of the study that different teaching techniques should be used in the lessons for effective learning of science subjects.

Keywords: Parts of a flower, eighth grade students, knowledge level

ID:179-POP

A Linguistic Analysis of the Qur'an-Science Relationship and History of the Qur'an in the Context of Scientific Discoveries

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The History of the Qur'an-Science Relationship and a Linguistic Analysis of the Qur'an-Science Relationship in the Context of Scientific Discoveries

The tension between Christianity and science was one of the most debated issues in the past. One of the main reasons for the tension was undoubtedly that the Christian holy books contain doctrines that contradict the data of positive sciences. The first striking works on the tension between Christianity and science were written in nineteenth century by John Draper (A History of the Conflict between Religion and Science 1870) and by A.D. White (History of the Warfare. AD with the name Science with Theology in Christendom 1896).

Whereas in Islamic history, no such science-religion tension has been observed. the Qur'an has never taken a negative attitude against knowledge and scientific thought. Contrarily, in many verses it has persistently encouraged and praised science and scientists.

It is also observed that the Qur'an, in different terms, points to certain scientific realities unknown by the time of its revelation Two of the most striking examples of the Qur'an's many linguistic uses that go beyond the ages are the expressions; “levâkıh”, which indicates the role of the winds as “fertilization” and “alak/alaka”, which refers to the stage of attachment of the fetus to the uterine wall.

The paper will examine and evaluate the Qur'an-Science relationship throughout history, as well as the miraculous linguistic selectivity of the Qur'an that transcends its age through some examples.

Keywords: Yerinde, Qur'an, science

ID:180-AOP

Are Turkey's International Tourism Markets Converging: Evidence from Fourier Functional Unit Root Tests

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In this study, it is aimed to examine empirically the validity of convergence hypothesis for the international tourism markets of Turkey, which is one of the most important tourism destinations in the world. However, in the study is designed to evaluate the effectiveness of tourism strategies pursued by policy makers in international tourism markets in Turkey according to the tourism markets and to present policy outcomes according to the markets. In this study for the purpose, the validity of convergence hypothesis for the international tourism market, which constitutes an important part of Turkey's international tourism market, is examined econometically for the period 1996:M1-2018:M12 by using Fourier unit root tests in the context of time series analysis. As a result of this study, it was determined that the convergence hypothesis in 11 of the international tourism markets of Turkey was not empirically valid, and that the convergence hypothesis in 9 was empirically valid. These results show that the current tourism strategies pursued by policy makers in the international tourism markets in Turkey are effective in 9 tourism markets where convergence occurs, while the convergence is not relatively effective in 11 tourism markets where convergence does not occur.

Keywords: Convergence hypothesis of tourism markets, tourism strategies, fourier functional FKPSS, FFGLS, FADF unit root tests

ID:181-AOP

The Backwardness of The Eastern Anatolia Region and Tourism Sector

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Tourism has become an important sector that has an impact on development of country economy. The main benefits of tourism are income creation and generation of jobs. For many regions and countries it is the most important source of welfare. The ability of the national economy to benefit from tourism depends on the availability of investment to develop the necessary infrastructure and on its ability to supply the needs of tourists. Tourism is also a wonderful method for cultural exchange! Hence, every country should encourage tourism as much as possible because tourism lets us explore and discover how beautiful this world is. It is possible to summarize the importance of tourism with the following several titles; Economic importance of tourism: The tourism industry aids and supports the foreign exchange reserves. It benefits country in generating foreign currency. Every year a large number of tourists visit different countries and places. They visit places; stay and shop in countries. All this contributes to a significant amount of foreign currency generation. Being income source of tourism: Tourism is a continual source of income for the public and private income. The government charges various forms of tax that is called government revenue. The income generated through these taxes is the public income. The profit earned by a seller, by selling items like local artifacts, handicraft items, etc, to the tourists is called private income. Tourism also helps in employment generation.

Keywords: Tourism sector, the eastern anatolia, economic development

ID:214-EOP

Causes of Female Students in High School Dropout Solution and Suggestions (Ağrı Province Case)

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Leaving school is a concept with various dimensions. As the whole world is an important educational problems in Turkey. The problem of dropout in our country shows us the statistical data that is commonly seen in high schools. But this problem is not limited to high schools it is all levels of the education system. The presence of high school students during adolescence causes the problem to concentrate especially at these ages. When the results of the research in the literature are examined, it is seen that school dropout occurs as a result of a complex process related to structural, environmental and personal factors. Apart from the conscious choice, there are reasons that draw the student out of the school, as well as the attitude of the school administration and the problems and problems in the social and physical conditions of the school, causing the student to be pushed out of the education process. Student leaving school; as well as cultural and individual perceptions such as socio-economic factors and the importance given to education (Mau, 1995, akt Şimşek, Şahin, 2012). Especially young population like Turkey is more important for societies that high. One of the educational problems experienced in our country is experienced in the field of registration, attendance and completion at basic education level. Although the protection of the law during basic training republic in Turkey, the education of the population and in particular women's education has not come to the desired level(Yalın, 2004). Ağrı is a residential area where traditional life style, customs and religion are very strong in social life. Ağrı has been receiving immigration both in Turkey and abroad in recent years. However, according to the data of Tuik, it is a province that has doubled the current population. One of the important dynamics of social life is women. Today's young girl is the mother of tomorrow. This girl is not a problem for the reasons they leave school only pain is a major problem for Turkey.

Keywords: Leaving school, schoolgirl

ID:228-EOP

Analysis of the Science Teachers' Views About the New Applied Science Unit in the Science Curriculum

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In this study, it was aimed to determine the level of knowledge and views of science teachers about the science teaching curriculum updated in 2017. It was also aimed to determine the personal innovativeness levels of the teachers. The study was carried out using a mixed method approach. The study was carried out in the 2017–2018 school year on 22 science teachers working in Diyadin district of Ağrı province, Turkey. The data of the study were collected using the "Personal Innovativeness Scale" and a semi-structured interview form developed by the researcher. Moreover, a "Personal Information Form" was used to collect the demographic information of the teachers. Quantitative data were analyzed using the SPSS 22 package program, and qualitative data were analyzed using the descriptive analysis methods. The majority of the teachers were found to be knowledgeable about the changes in the curriculum. However, it was understood that the teachers only had superficial knowledge; that is, they did not have a good command of the updated curriculum. According to the Personal Innovativeness Scale scores, it was found that 59.1% of the teachers were highly innovative, 27.3% were moderately innovative, and 13.6% were slightly innovative. It was found that the personal innovativeness scores of most of the science teachers were in the "pioneer" category, followed by the "questioner" and "skeptical" categories, which were then followed by the "innovative" and "traditionalist" categories sharing equal weights. According to the quantitative data, the majority of the teachers were highly innovative. However, it was found that the teachers did not have thorough knowledge about the curriculum, according to the data obtained from the interview forms. This has shown that more in-service training is needed about changes in the curriculum. In-service trainings to be offered should be carried out to involve applications, just like the heading of the applied science unit implies. Moreover, every teacher should be given opportunities to create projects like a student.

Keywords: Science teachers, science education program, individual innovation

ID:249-EOP

Pre-school Teachers' Awareness of Drama Method and Their Use in Social Studies

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In this research, it is aimed to reveal how pre-school teachers perceive drama method, what subjects they use this method, self-efficacy perceptions in practice and various suggestions for using drama method more effectively. Case study, one of the qualitative research methods, was used in the study. The study was carried out with 10 pre-school teachers who were selected by random sampling from various schools in the central district of Ağrı. In the interviews, interview form including 12 open-ended questions, which were formed by the researchers with the opinion of experts, were applied to the teachers. One-on-one interviews were conducted with the teachers on the mentioned subjects and the opinions were analyzed by content analysis. The findings showed that teachers mostly defined drama method as empathy, animation and play; stated that the main purpose of using drama method is to develop children's empathy ability, to contribute to their socialization and to ensure that their knowledge is more permanent. On the other hand, they stated that the drama course should be given as a compulsory and practice-oriented course in universities. According to the results, it was seen that the duration of teaching profession and practicing drama courses had a positive effect on teachers' self-sufficiency in drama activities. It can be said that it is necessary to give applied drama courses, seminars, etc. to pre-school teachers for the effective use of drama method in pre-school.

Keywords: Drama, pre-school, social studies

ID:250-EOP

Evaluation of Student Opinions on Drama and Computer Assisted Teaching Methods in 5th Grade Social Studies Course

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In this research, it is aimed to reveal the views of middle school 5th grade students about the use of computer-assisted teaching and drama methods in the teaching of some abstract concepts in the "One Country One Flag" unit prepared based on 2005 Social Studies Curriculum. Case study, one of the qualitative research methods, was used in the study. In the study, semi-structured interview form which was formed by the researchers based on expert opinions was used. The interviews were conducted with 18 students studying in the 5th grade of a secondary school in the central district of Ağrı. The data were analyzed by content analysis method. As a result of the findings obtained, it was determined that the students were learned with fun by the factors such as audio and visual elements and ready feedback, also understood the lesson better thanks to the possibility of repetition provided by the computer assisted teaching method. In order to use this method effectively, it is seen that it is necessary to have sufficient technical equipment and to eliminate technical problems. It was seen that the students had active participation in the drama classes and they could easily learn with this method. However, in order to use drama method effectively in crowded classrooms, it is demonstrated that time control should be done well and discussions should be managed properly. As a result, it is seen that the majority of students have very positive opinions about computer-assisted teaching and drama methods.

Keywords: Computer-assisted teaching, drama, social studies

ID:340-EOP

Oriental Motives in the Works of I. A. Bunin

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At the end of the XIX – beginning of XX centuries Russian culture was experiencing the original (and essentially new) discovery of the East, its religion, philosophy, and artistic creation. I. A. Bunin was one of those writes who never lost interest to the East. In Bunin's opinion, the East with its primitiveness and stylish beauty was distinctively colorful and captivating. Its poetic imagery, which attracted Bunin, was reflected in modern aestheticism. Oriental motives in Bunin's poetry covers the wide geographical space ("Istanbul", "Shiraz", "Elbrus", "Remembering the graveyard in Scutari", "Lebanon", "By Nubian black huts", "Kovser") etc. Bunin loved Turkey and wrote about it in exile: "I remembered again April, 1903 "Constantinople, The Princes Islands» . In 1907, I. A. Bunin traveled to the East with his young wife V. N. Muromtseva, and left us unforgettable pages dedicated to what he saw at the beginning of the twentieth century - "Is there any other land in the world where there are so many memories valuable for human heart" (Bunin "The Devil's Desert"). There are many proper names included in different subjects: Cannes, Lucifer, Timur, Agir, Magomet and Sophia, Saadi, Zeynab, Diya and others. The eastern cycle of Bunin's poems reflects Sabeism, pre-Islamic worship of the heavenly bodies. Bunin translated the works of Imru-ul-Kais, who was the famous Arabic poet of the sixth century. Bunin's Metaphors in Oriental themes: sand - water – Qur'an are revealed in the figurative field of their national system: it is being, life, spiritual realm. Green is the color of faith: "Say hello, but remember: you are in green! When they come look at the cypress" ("Prophet's Descendants"), filled with other semantic content "Zaynab, the freshness of the eyes! You are an Arabic jug". Pretext quotes from the Koran - epigraphes accompany many Bunin's texts: "We tied each bird to the neck" ("Bird"), "Raise Up Praise when the Stars Leave" ("The Beggar"), "He puts the guides Signs" ("The Guiding Signs").

Keywords: Oriental motives, metaphor, Bunin's manner, the heavenly bodies, artistic creation

COMPUTER
ORAL PRESENTATIONS

ID:171-COP

Monitoring Instant Data Flow in Organizations

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Many data transactions have been processed in organizations through information systems. Information systems are using databases to keep this data. Databases are managed by database management systems. This paper analyzes models and tools which are for monitoring instant data flow in organizations. Therefore, we focus on achieving instant data flow from the database management system. In the research, we are sharing our experience about this subject. We have tested and evaluated these tools. There are three important steps in monitoring instant data flow. These are; data source, data collection, and data analysis. The data source is database management systems. Data collection tools can establish a connection to these database management systems and retrieving relevant data. Data analysis tools are tools to analyze that retrieved data. Apparently, there is no single software for instant monitoring of flowing data in organizations. In order to realize this, it requires a combination of different tools. Striim and Confluent which have the capability of both data collection and data analysis tools. However, the problems that we faced are; supports certain versions of database management systems, this software must remain running, their installation and configurations are very complex, and their limited licensing is one of the biggest challenges for researchers. In this case, the tools have many negative factors in terms of incompatibility, installation of each tool, continuity of the system, and maintenance. This research guided us developing a new prototype system which is eliminating these negativities.

Keywords: Information systems, data flow, streaming data

ID:234-COP

Finding the Best Population Size for Optimizing the Rastrigin Function Using Genetic Algorithm

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The concept of optimization has great significance in both human affairs and the laws of nature which is the inherent characteristic to achieve the best or most favorable (minimum or maximum) from a given situation. The study of design optimization can help not only in the human activity of creating optimum design of products, processes and systems, but also in the understanding and analysis of mathematical/physical phenomenon and in the solution of mathematical problems. Genetic Algorithms are adaptive heuristic search algorithm based on the evolutionary ideas of natural selection and genetics. Genetic algorithms are a part of Evolutionary computing, a rapidly growing area of artificial intelligence. It has three main functions as selection, crossover and mutation. In addition, some of the important parameters of the algorithm are population size, crossover rate and mutation rate. In this study, the effect of population size on genetic algorithm was investigated. The selected test function is the Rastrigin function. Several population sizes have been tried to optimize this multimodal function. Comparisons were also made based on a fixed generation number. The population size giving the optimum value of the function was determined. However, evaluation of the results was made by considering the working time.

Keywords: Genetic algorithms, population size, rastrigin test function

ID: 235-COP

Designing a Changeable Mutation Operator for Optimizing of the Rastrigin Function using Genetic Algorithm

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Optimization studies have an important place in engineering. The study of design optimization can help not only in the human activity of creating optimum design of products, processes and systems, but also in the understanding and analysis of mathematical/physical phenomenon and in the solution of mathematical problems. Genetic Algorithms represent an intelligent exploitation of a random search used to solve optimization problems. These algorithms are far more powerful and efficient than random search and exhaustive search algorithms. Unlike traditional search methods, Genetic Algorithms rely on a population of candidate solutions. An important concept of Genetic Algorithms is the notion of mutation. Test functions are frequently used in the evaluation of optimization algorithms. One of these test functions is the Rastrigin function. This function is also multimodal. Optimization of Rastrigin function using genetic algorithm is aimed in this study. A changeable mutation rate was proposed to increase the success of the genetic algorithm. The search for the solution of the genetic algorithm is based on generations. The mutation rate may change as generations progress. Comparisons were also made based on a fixed generation number. According to the experimental results, when the proposed approach is used, the genetic algorithm can achieve good results in a fixed generation number.

Keywords: Genetic algorithms, mutation rate, rastrigin test function

ID:317-COP

An Analogy for Basic Computer Block System: Furniture Factory

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A good understanding of the computer basic block system is effective in students' understanding of computer usage and programming. This information is also necessary for choosing the right computer when purchasing a computer. Otherwise, the user may spend unnecessary money on a technology that he will not use. In this study, the basic components and system of a computer which necessary for a computer to work are likened to the parts of a factory and an analogy is designed. The motherboard is likened to the factory's campus area, the hard drive to the warehouse, the memory to the workshop, the processor to the employees, the power supply to the cafeteria and the sales office to the graphics card. This system can also be adapted to other peripherals, for example; for example, a microphone can be likened a forklifts or the speaker to the elevator. This analogy was used in the Basic Information and Communication classes at undergraduate and associate degree level and their knowledge was tested by asking at least one question in the midterm / final exams. The success rate was found to be between 65-92% depending on the level of the class.

Keywords: Computer education, analogy, instructional technologies

MEDICAL SCIENCES
ORAL PRESENTATIONS

ID: 161- MOP

Determination of Antioxidant Capacity of Methanol Extract of *Hippophae rhamnoides* L. Leaf via FRAP and CUPRAC Methods

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The present study was carried out to investigate the antioxidant activity of methanol extract of *Hippophae rhamnoides* L. (HR) leaves. Oxidative stress is a process in which the physiological balance between oxidants and antioxidants is impaired and the organism can potentially be damaged. HR leaves contain wide-ranging bioactive compounds. HR leaves were successively extracted with methanol using a Soxhlet extractor for 72 h. In procedure, HR leaf methanol extract were prepared in 20 µg/mL and then the samples were analyzed with FRAP (ferric reducing antioxidant power) and CUPRAC (CUPric Reducing Antioxidant Capacity assays) methods. In order to compare and calculate the equivalant antioxidant capacity of each sample, different concentration of reference samples were prepared in between 1-100 µg/mL. All measurements were performed in Thermo Surveyor Multiscan Go. Calibration curves of trolox were linear and coefficient of determination for FRAP and CUPRAC method were found to be 0.9961 and 0.992, respectively. The mean antioxidant activity of HR (20 µg/mL) determined by FRAP and CUPRAC method were equivalent of 10.16 and 19.62 µg/mL trolox, respectively. According to the results, HR leaf ethanol extract exhibit antioxidant capacity in terms of FRAP and CUPRAC. These observations suggest that methanol extract of HR leaves have marked antioxidant activities.

Keywords: Antioxidant capacity, cuprac, frap, *Hippophae rhamnoides* L.

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ID:162-MOP

Determination of Antioxidant Capacity of Ethanol Extract of *Hippophae rhamnoides* L. Leaf via FRAP and CUPRAC Methods

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Hippophae rhamnoides L. (HR) is a member of the Eleagnaceae family. Being a rich source of bioactive compounds, this medicinal herb has multiple nutraceutical, biomedical and therapeutic properties. HR leaves have shown immunomodulatory, anti-stress, anticancer, antioxidant activities [1].Oxidative stress is a process in which the physiological balance between oxidants and antioxidants is impaired and the organism can potentially be damaged. In this study, ethanol extract of HR leaf were analyzed with antioxidant activity methods as FRAP and CUPRAC which are the most common antioxidant capacity measurement method. In procedure, HR leaf ethanol extract was prepared in 20 µg/mL and then the samples were analyzed with FRAP and CUPRAC methods [2, 3]. In order to compare and calculate the equivalant antioxidant capacity, different concentration of reference samples (trolox) were prepared in between 1-100 µg/mL. All measurements were performed in Thermo Surveyor Multiscan Go. Calibration curves of trolox were linear and coefficient of determination for FRAP and CUPRAC method were found to be 0.9961 and 0.992, respectively. The mean antioxidant activity of HR (20 µg/mL) determined by FRAP and CUPRAC method were equivalent of 8.21 and 14.56 µg/mL trolox, respectively. According to the results, HR leaf ethanol extract exhibit antioxidant capacity in terms of FRAP and CUPRAC.

Keywords: Antioxidant capacity, cuprac, frap

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ID: 172-MOP

Determination of Intraocular Pressure in Clinically Healthy Turkish Eastern Anatolian Red Cattle of Different Age Groups Using Rebound Tonometry

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The aim of this study is to determine the IOP of healthy Turkish Eastern Anatolian Red (EAR) cattle eyes using the ICare® rebound tonometer (RT). Also, we aimed to evaluate whether there is a difference in IOP values depending on the eye sides, time of day, gender and age of animals. The animal material of the study consisted of a total of 42 Turkish EARs cattle. The cattle randomly were divided into 3 equal groups, a group I (7 male, 7 female, n = 14), group II (7 male, 7 female, n = 14) and group III (7 male, 7 female n = 14) 6, 12, 24 months old, respectively. Measurements were performed three times per day, in the morning (6:00 a.m.), in the noon (12:00 a.m.) and in the evening (6:00 p.m.) throughout 7 days by the only one investigator. Measurements were repeated 6 times in every measurement and arithmetic means were taken. The average IOP values for groups I, II and III was 24.51±0.91 mmHg (p=0.520), 24.23±0.87 mmHg (p=0.621) and 23.98±0.82 mmHg (p=0.772), respectively. According to the findings of this research in the values IOP of EAR cattle using the RT no statistically significant differences between side eyes, time of day, gender and age were found for any of the results (p>0.05), also has proven to be a safe diagnostic tool for IOP measurement in EAR cattle. In this study, the reference IOP for EAR cattle were determined as 24.24±0.54 mmHg due to any variable without, using the RT.

Keywords: Intraocular pressure (IOP), tonovet, cattle

ID:173-MOP

Antioxidant and Anticholinesterase Potential of Extracts and Fractions of *Epilobium angustifolium* L., *E. stevenii* Boiss. and *E. hirsutum* L. (*Onagraceae*) Growing in Turkey

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The genus *Epilobium* (*Onagraceae*) includes more than 200 species. These plants are conventionally utilized internally for prostate and gastrointestinal diseases and externally as antiphlogistic and antiseptic remedies, to cure mycoses and to improve the healing of wounds. The genus name *Epilobium* derives from the Greekwords epi' (upon) and lobos' (a pod); the herb is so called because the flowers are arrayed upon long, thin, pod-like seed cases. The medicinal parts are the herb and the roots that include: flavonoids, principally, myricitrin, guaiaverin, quercitrin, quercetin-3-O-β-D-glucuronide); steroids, principally beta-sitosterol and its esters; tannins In the present investigation antioxidant and anticholinesterase activities of extracts and fractions from aerial parts of *E. angustifolium*, *E. stevenii* and *E. hirsutum* were investigated. Phenolic contents, antioxidant activities of samples were estimated via Folin-Ciocalteu, and DPPH methods. Anticholinesterase activity was revealed via Ellman's method. The highest phenolics level and DPPH antioxidant capacity were detected in EtOAc fractions of Epilobium angustifolium. At the same time the EtOAc fractions of E. angustifolium and E. stevenii displayed the highest acetylcholinesterase inhibition (36.51±1.88 and 39.89±3.09%, respectively), while EtOAc fraction of E. angustifolium had the best inhibition towards butyrylcholinesterase (62.09±1.98%). These species can be utilized as a potency for pharmaceutical products which have antioxidant and anticholinesterase effects.

Keywords: Antioxidant, anticholinesterase, *Epilobium*

ID: 222-MOP

Determination of Antioxidant Activity of Daidzein by Using FRAP and CUPRAC Methods

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There is plenty of research on soybean products containing the phenolic compounds (flavonoid, isoflavone, etc.) and the antioxidant activities of these compounds. Isoflavones (genistein, daidzein (DZ), etc.) may have either weak pro-estrogenic and antiestrogenic effects. Soy isoflavones have many health benefits and thus, they have been safely consumed in Asia Countries [1]. DZ is a water-insoluble compound and has several effects such as anticancer, anti-inflammatory, anti-diabetes and neuroprotective activity [2]. The aim of this study is to determine the antioxidant activity of DZ by using FRAP and CUPRAC methods used commonly as antioxidant activity measurement methods. In this study, 20 µg/mL of DZ was prepared in DMSO and then, its antioxidant activity was analyzed with these methods [3]. For determination of the equivalent antioxidant capacity of each sample, different concentration of the reference samples were prepared in between 1-100 µg/mL. All measurements were performed in UV-Spectrophotometer (Thermo Surveyor Multiscan Go). Calibration curves of trolox were linear and the determination coefficients for FRAP and CUPRAC method were found to be 0.9961 and 0.992, respectively. The trolox equivalent values found for DZ using FRAP and CUPRAC methods were 2.39 and 11.35 µg/mL, respectively. According to the obtained results, DZ exhibits antioxidant activity.

Keywords: CUPRAC, daidzein, FRAP

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ID:223-MOP

Determination of Antioxidant Capacity of Methanol and Aqueous Extracts of Inula Graveolens

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Recent studies have shown that reactive oxygen and nitrogen-induced oxidative stress play a role in various inflammatory and degenerative diseases such as cancer, diabetes, rheumatoid arthritis and aging. Normally, antioxidant system in human body can scavenge these radicals and maintains the balance between oxidation and antioxidation. However, exposure to cigarette smoke, alcohol, radiation or environmental toxins causes excessive production of ROS and RNS and disrupts the balance. Increased intake of exogenous antioxidants in the body prevents the damage caused by oxidative stress. Therefore, there is increasing interest in natural antioxidants from plant sources. Inula graveolens has anti-inflammation, anti-rheumatism, antitumor and anti-pathogene properties so it is used as traditional herbal medicine. The present study was carried out to investigate the antioxidant effects of methanol and aqueous extracts from aerial parts of Inula graveolens. Antioxidant capacity measurements give the amount of a heterogeneous antioxidant mixture that determines the total sweep capability of the sample. The extracts were successively obtained by using horizontally shaking water bath. In procedure, extracts were prepared in 200 µg/mL concentration and then the samples were analyzed with FRAP (ferric reducing antioxidant power), CUPRAC (Cupric Reducing Antioxidant Capacity assays) and DPPH (1,1-diphenyl-2-picrylhydrazyl) methods. For determination of the equivalent antioxidant capacity of each sample, different concentration of the reference samples were prepared in between 1-100 µg/mL. According to the results, methanol and aqueous extracts of Inula graveolens exhibit antioxidant capacity in terms of FRAP, CUPRAC and DPPH methods.

Keywords: Antioxidant capacity, inula graveolens

ID:258-MOP

The Effect of Pycnogenol and Curcumin on Cisplatin Cytotoxicity in Hepatocellular Carcinoma Cells

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Introduction: Epidemiological studies have suggested that antioxidant agents can prevent or delay the development of oxidative stress-related diseases such as diabetes, cardiovascular diseases, and cancer. Cisplatin-induced antitumor activity may be potentiated by antioxidant phenolic compounds. However, the mechanisms of the interaction between antioxidant agents and antineoplastic drugs have not been clarified. Pycnogenol and curcumin are potent antioxidant and antitumor agents. Cisplatin is known to be one of the antineoplastic drugs used in the therapy of many solid tumors including hepatocellular carcinoma. We aimed to evaluate the effects of pycnogenol and curcumin in cisplatin-treated hepatocellular carcinoma (HepG2) cells. Materials and Methods: MTT assay was used to determine the cytotoxicity for 24 h and 48 h.Results: The IC50 doses of pycnogenol and curcumin in HepG2 cells were found to be 192 μM and 236 μM for 24 h, 51.5 μM and 98.3 μM for 48 h, respectively. It was found that pycnogenol (1.3 fold, 2.5 fold, and 4.45 fold for 125 μM, 250 μM, and 500 μM, respectively, for 24 h; 1.3 fold, 1.6 fold, 3.0 fold, and 6.6 fold for 62.5 μM, 125 μM, 250 μM, and 500 μM, respectively, for 48 h vs. IC50 doses of cisplatin) increased the cytotoxicity of cisplatin in HepG2 cells. Curcumin (1.8 fold and 3.5 fold for 250 μM and 500 μM, respectively, for 24 h; 1.7 fold, 4.1 fold, and 19.0 fold for 125 μM, 250 μM, and 500 μM, respectively, for 48 h, vs. IC50 values of cisplatin) increased the cytotoxicity of cisplatin in HepG2 cells. Conclusions: It seems that the combination of antioxidant agents such as pycnogenol and curcumin with cisplatin is a promising therapeutic approach in the chemotherapy of hepatocellular carcinoma. However, further in vitro studies as well as in vivo studies are required to confirm their interactions with cisplatin.

Keywords: HepG2, pycnogenol, curcumin

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MAGIC-Type Polymer Gel for Three-Dimensional Dosimetry in Radiotherapy

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During the radiotherapy, it is only possible to determine whether or not the prescribed dose is delivered to the tumor and whether the critical organs exceed the tolerance doses by dosimetric control of the dose calculation algorithms of the treatment planning systems. Nowadays, dosimeter systems such as point (ion chambers, TLDs, diodes) or planar dose measurement (such as radiochromic film or 2D diode array) are used in clinics. With these dosimetric systems, point or planar dose measurement is possible.

Radiotherapy, a three-dimensional treatment approach using more than one beam that is not in the same plane, requires dosimetric systems that can show three-dimensional (3D) dose distributions. For this reason, studies on three dimensional dose measurements by using different gel compounds, and magnetic resonance imaging (MRI) are being carried out.

In this study we used a new formulation of polymer gel dosimeter, MAGIC (Methacrylic and Ascorbic acid in Gelatin Initiated by Copper). It has been developed that responds well in normal atmosphere to produce dosimeter gels, an aqueous solution of gelatin, open to the atmosphere, is mixed with methacrylic acid, copper(II) ions, ascorbic acid and hydroquinone. The gel was irradiated using a linear accelarator and MR images of gel dosimeters are taken with 1.5T MR device.

Keywords: Radiotherapy, MAGIC polymer gel, dosimetry, MRI

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Determination of Monoamine Oxidase Inhibition Potential of Rose Extract

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Rosa damascena Mill., also known as oil rose or rose of Isparta, is one of the most important roses among the fragrant roses in the world. The essential oil obtained from Isparta rose is used especially in cosmetics, perfumery, pharmaceutical and food industries. Isparta rose is traditionally used in the treatment of chest and abdominal pain, strengthening of the heart, constipation, digestive problems and is used in the treatment of neural diseases [1]. Most of the studies showed that *R. damascena* as a natural plant with high source of flavonoids such as quercetin, kaemferol, myricetin, gallic acid, and their glycoside derivatives may have curable effect on treatment of diseases [2,3]. It is known that the products obtained from rose (especially its oil) are used for the relief of sadness, pain and stress caused by psychological disorders. The Ottomans obtained the oil by fermenting the rose to a certain extent and using water vapor distillation. This oil is known to be used in the treatment of many diseases, both internally and externally (tonsillitis, pharyngitis, throat and respiratory diseases) [4]. So, we initiated a study to screen their MAO A and B inhibitory activities, which are the key enzymes taking place in pathogenesis of norodegenerative dissease. For this purpose, we investigated the effects of rose water extract on these enzymes.

Keywords: *Rosa damascena*, monoamin oxidase, inhibition, traditional drug

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Solution of an Intermittent Problem on a TLD Reader: A Technical Report

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Thermoluminescence dosimetry (TLD) is a robust radiation measuring technique being used several decades. Sensitivity of radiation dose measurements mainly depend on calibration procedure of TLD elements. In this study the solution of an intermittent problem on TLD reader is presented as a technical report. Thermocouple of TLD reader device was found not to measure the temperature of the planchet properly. This was causing abrupt changes in planchet temperature due to contact problems. It was found that after correcting contact problem system consistency is increased but TLD elements were damaged due to excess planchet temperatures. TLD elements are replaced by new ones and calibration process is repeated.

Keywords: Thermoluminescence, dosimetry, TLD reader

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A Current Approach to New Generation Drug Delivery Systems

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Developments in technology have brought with a new innovation process for the fields of medicine and pharmacy. In line with these innovation processes, to increase the specificity and effectiveness of therapeutic agents, it has been designed the controlled-drug release systems with long-term local or systemic effects. The controlled release systems release the desired amount of active substance in the specified time as well as setting up active substance release velocity. Thus, the side effects arise from misuse of drugs could be minimized. The first controlled release products were called as spansules. In later times, controlled release systems, prepared by microencapsulation method, were designed as implants. By using implant systems, it was able to achieve that the drug active substances avoid from the first transition effect in the liver. In addition, the controlled release systems were minimized the problems such as frequent dose intake in conventional medicines, of patient carry a drug continuous beside and reaching the toxic level of the active substance amount. These dosage forms, gained importance in veterinary as well as the medical field, provides important contributions to the development of livestock sector too. In addition to these benefits, controlled release products can be used to reduce treatment costs.

Keywords: Controlled release systems, spansules

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An Overview of The Targeted Treatment

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The conventional drugs affect not only the pathological region but also the whole parts of the body. In this situation, the efficacy and safety of the treatments seriously decrease due to the lack of specific treatment for the pathological area. Recently, researchers from different disciplines including chemistry, nanotechnology, biology, pharmaceutics, medical and bioengineering have been working together for soluble of these critical problems. As a result of these interdisciplinary studies, it has been achieved the design of drug delivery systems only affecting the specific area and maximizing the efficiency of treatment. The targeted treatment is defined as the accumulation ability of therapeutic agents in the pathological site regardless of the chemical structure and the pharmaceutical form of the active substance. Minimization of the drug side effects and the ensuring of effective treatment have become possible with targeted treatment via drug delivery systems. Nano carriers, defining nano-size drug carrying systems, have an important place in targeted treatment. These carriers are highly successful in targeting and imaging; therefore, researchers have focused on drug targeting with nanoparticles. In the targeted treatment, the effectiveness of drug active substance on the pathological site is both higher and more specific. Thus, this treatment type is more promising for the treatment of many diseases compared to treatment with conventional drugs.

Keywords: Drug delivery systems, nano carriers, targeted treatment

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Determination of the Effects of Life Forms of Nursing Students on Vital Signs

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Health affects the whole life of the human, such as physical, social, emotional and spiritual situation, and includes the quality of life. With the start of university education, leaving their habitual environment has changed their way of life completely. Vital signs are indications of health status of individuals. Diseases, environmental and physical effects may lead to changes in life signs or may go beyond normal limits. Our study was carried out to determine how students' life styles affect their vital signs. Our study consisted of 222 Nursing Departments students in Agri and Artvin. The personal information forms that determine the life styles were filled in by interviewing the students and then vital signs were measured. The results were analyzed with SPSS packet program and $p < 0.05$ was considered significant. In our study, it was determined that life styles caused changes in vital signs but not statistically significant. As a result, in this study we made in students, it was determined that life styles had effects on vital signs. Since there is not enough research in the literature, it is aimed to shed light on future studies.

Acknowledgement: In this study, ethical approval was obtained with the letter of AICU Scientific Ethics Committee dated 27/04/2018 and numbered 10235.

Keywords: Vital Signs, life forms, nursing students

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Determination of Body Composition of Nursing Students

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It is defined as healthy lifestyle when the individual controls all the behaviors that affect his / her health and selects the behaviors according to his / her health status while regulating daily activities. Our study was carried out in order to determine the body weight and analysis of nursing students in the nursing department due to their effect on the body composition of the nursing department students who will be a professional member of the health discipline. The personal information form which identifies the socio-demographic characteristics of the students studying in the nursing department in Agri and Artvin, was completed and the measurements were made for body analyzes. In order to evaluate the results and demographic characteristics, statistical analyzes were done in SPSS 21.0 program. When the life styles and body analyzes of the students were examined, it was found that there was a statistically significant difference. As a result, in our study, body weight and analyzes of 179 students in nursing departments were made. Since there was no similar study, it was aimed to shed light on the studies.

Acknowledgement: In this study, ethical approval was obtained with the letter of AICU Scientific Ethics Committee dated 27/04/2018 and numbered 10235.

Keywords: Body composition, lifestyle behaviors, nursing students

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MEDICAL SCIENCES
POSTER PRESENTATIONS

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Essential Oils and Antimicrobial Effects

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Essential oils are hydrophobic, typically fragrant plant extracts. These oils are usually obtained by steam distillation and contain a number of terpene hydrocarbons. Essential oils can be obtained from any part of the plant. Since ancient ages, essential oils, upper respiratory tract infections, skin diseases, kidney stones, stomach and liver diseases, are used for the treatment of parasitic diseases. Recently, the resistance of bacteria to antibiotics and the treatment of some infections led researchers to natural resources. Essential oils have the potential to be bactericidal, namely their inhibition doses on microorganisms and their lethal doses are close. Therefore, it is promising especially in the elimination of bacteria with multiple antibiotic resistance.

There are many studies on the antimicrobial effects of essential oils derived from various plant species. However, the antimicrobial effects of some plant families have proven to be stronger. *Lamiaceae*, *Apiaceae*, *Lauraceae*, *Myrtaceae*, *Rutaceae*, *Poaceae* are some of them. Among the microorganisms they are effective in; *S. aureus*, *E. coli*, *Klebsiella spp*, *Salmonella spp*., *P. aeruginosa*, *L. monocytogenes*, *C. jejuni, C. albicans*, *Aspergillus* spp, *Cryptococcus* spp., and *Fusarium* spp. Studies on how essential oils kill organisms have revealed some ideas about their mechanisms. Gram (+) bacteria have been reported to be more durable to essential oils than Gram (-). In general, essential oils act by disrupting the cell membrane integrity of microorganisms. It has also been reported that they deform the intracellular structures depending on the dose and duration.

The use of essential oils brings some risks in addition to the advantage. Unconscious use of essential oils that in the drug class Over-the-counter (OTC) may result in overdose, intoxication or drug interactions, resulting in serious injury and organ failure. The aim of this study was to review the potentials and probable risks of essential oils for antimicrobial activity.

Keywords: Antimicrobial, essential oil, volatile oil