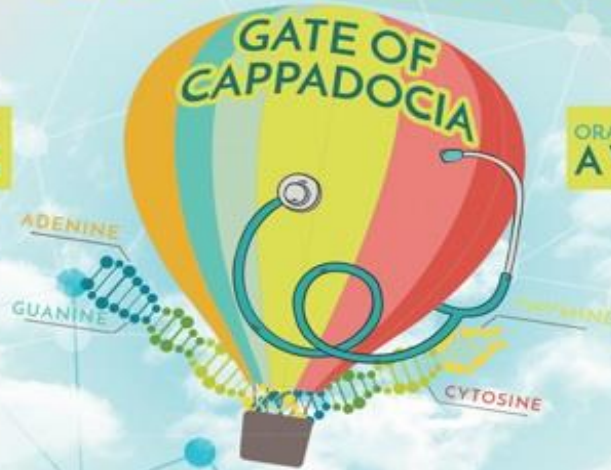




# INTERNATIONAL CONGRESS ON BIOLOGICAL AND MEDICAL SCIENCES NİĞDE / TURKEY / 2018

POSTER  
AWARDS

ORAL PRESENTATION  
AWARDS



ABSTRACT DEADLINE  
**31.07.2018**

**TREND TOPICS OF THE CONGRESS**

Aging  
Anatomy  
Biochemistry  
Biophysics  
Cancer Biology  
Histology  
Microbiology  
Molecular Biology  
Pharmacology  
Physiology  
Reproductive Biology  
Traditional and complementary medicine



**31 OCTOBER-3 NOVEMBER 2018**

**ŞEHİT ÖMER HALİSDEMİR CONGRESS CENTER**

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# International Congress on Biological and Medical Sciences 2018

*Life Science and Medicine*

31 October-03 November 2018

**NIGDE ÖMER HALİSDEMİR UNIVERSITY**

**TURKEY**



# ***ABSTRACT BOOK***

## **ORGANIZING COMMITTEE**

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Dr. Zeliha SELAMOGLU

### **CONGRESS SECRETARIAT**

Dr. Eylem TASKIN GUVEN

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Dr. Maria DAGLIA	The University of Pavia, Italy

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Dr. Viera HORVATHOVA	University of SS Cyril and Methodius, Slovakia
Dr. William A. COETZEE	New York University, USA
Dr. Yusuf SEVGILER	Adıyaman University, Turkey

Dear Colleague,

We courteously invite you to be a Scientific Committee Member for "International Congress on Biological and Medical Sciences 2018 will be dealt with around the theme " Life Science and Medicine" which held between 31 October-3 November 2018 in Niğde (Gate of Capodoccia), Turkey.

The congress will be organized by the Niğde Ömer Halisdemir University in Niğde, Turkey. This congress will provide an excellent opportunity to bring a team of experts from all around the world and from different disciplines. We believe this interaction is a unique platform to come together to discuss critically recent research and to intensify new collaborations and scientific research in Biological and Medical Sciences.

On Behalf Organizing Committee

Prof. Dr. Zeliha SELAMOGLU

**Chairman of Congress**

**PROGRAM**

**Venue: Şehit Ömer Halisdemir Congress and Culture Center**

HOUR	SESSIONS (DAY1)	Wednesday (31-10-18)
08:30-10:00		REGISTRATION
10:00-10:35	HALL 1923	WELCOME AND PROTOCOL SPEECH
10:35-11:00	HALL 1923	<p><b>Keynote Speaker</b>  <i>Prof. Dr. Mustafa B A Djamgoz</i></p> <p><i>Neuroscience Solutions to Cancer Research Group, Imperial College London, Department of Life Sciences, Sir Alexander Fleming Building, South Kensington Campus, London SW7 2AZ, UK</i></p> <p>Title: A New Vision of Metastasis: Voltage-Gated Ion Channels and Membrane Excitability</p>
11:00- 12:30		ANKARA TURKISH WORLD MUSIC ENSEMBLE ARTISTS SHOW
12:30- 13:30	LUNCH	LUNCH (University Restaurant)
13:30- 15:35	HALL 1923  Dr. Gabriel PLAVAN Dr. Sachiyo ABURATANI	<p><b>Dr. Nady BRAIDY</b>                      Intravenous NAD+ effectively increased the NADome, reduced oxidative stress and inflammation, and increased expression of longevity genes safely in elderly humans</p>
		<p><b>Dr. Gamal BADR</b>                      Bee venom accelerates diabetic wound healing by suppressing ATF-3- and iNOS-mediated oxidative stress; recruiting bone marrow-derived endothelial progenitor cells; and protecting functional macrophages from apoptosis through Nrf2, Ang-1 and Tie-2 signaling</p>
		<p><b>Dr. Hikmet GECKIL</b>                      Drugs from Bugs: Harnessing the Power of Bacterial Enzymes as Therapeutics</p>
		<p><b>Dr. Akifumi KISHI</b>                      Dynamics of sleep stage transitions: Toward understanding the basic physiology and clinical aspects of sleep in humans</p>
15:35- 15:45	Coffee Break	Coffee Break
15:45- 18:45	Travel	Travel (Roma pool, aqueducts)
19:30	Dinner	Dinner (SarayhanTermal Hotel)





HOUR	SESSIONS (DAY2)	Thursday (01-11-18) (Cont.)
11:45- 12:45	<b>HALL 1992</b> Dr. Gunseli Ayse GARIP Dr. Burcu BITERGE SUT	* <b>Muhammad MUSTAQEEM</b> Enhancement the solubility of Flurbiprofen and its derivative by using micro-emulsion
		* <b>Eminur ELCI</b> Investigation of Cherry Virus Diseases At Niğde Province
	<b>HALL AHMET YESEVI</b> Dr. Senay OZGEN Dr. Yusuf ÖZAY	* <b>Meral KEKECOGLU</b> Antimicrobial Effect of Different Types of Honey Samples Collected From Düzce City on Staphylococcus aureus
		* <b>Faruk SERHATLIOGLU</b> Our Multivessel Injury with Stabbing Experience
	<b>HALL DEDE KORKUT</b> Dr. Azhar RASUL Dr. Arzu AY	* <b>Usman Mir KHAN</b> Nutritional and Therapeutic delivery in Cheddar cheese through use of Nanotechnology in manufacturing process
		* <b>Cosar UZUN</b> Wound Healing Properties of Salvia Euphratica Var. Euphratica Extracts on Excisional And Incisional Wound Models In Diabetic Rats
12:45- 13:45	LUNCH	LUNCH (University Restaurant)
13:45-18:00	Travel	Travel (Gumusler Monastery and Castle of Nigde)
19:30	Dinner	Dinner (Grand Hotel)

HOURS	SESSIONS (DAY3)	Friday (02-11-18)
09:30-11:10	<b>HALL 1923</b> Dr. Antoni SUREDA GOMILA Dr. Nady BRAIDY	<b>Dr. Gabriel PLAVAN</b> Evaluation of Fipronil Potential on The Behavior of Zebrafish (Danio Rerio) And His Relevance to Autism Spectrum Disorder
		<b>Dr. Sachiyo ABURATANI</b> Statistical Approach for Network Inference by Structural Equation Modelling
		<b>Dr. Sanel RIDANOVIĆ</b> In - Situ Conservation Of Endemic Salmonid Species In The Neretva River
		<b>Dr. Lejla RIDANOVIĆ</b> Application of the Faecal Coliforms/Faecal Streptococci Ratio (FC/FS) in Assessment of Water Pollution
11:10- 11:20	Coffee Break	Coffee Break

11:20- 12:35

**HALL 1923**  
Dr. Mustafa DJAMGOZ  
Dr. Ismail GUNAY

**\*Usman Mir KHAN**  
Effect of Lactose fermentation and salting in Cheddar cheese ripening and nutritional value

**\*Ayşe IKINCI KELES**  
The effects of 900-MHz electromagnetic field applied throughout early and mid-adolescence on liver morphology and oxidative stress biomarkers in late adolescent male rats

**\*Mehmet Cihan YAVAS**  
Changes in the serum of individuals exposed to low frequency electromagnetic fields for a long time

**\*Figen CICEK**  
Effects of Pulsed Magnetic Fields to Vascular Responses

**\*Ibrahim ASLIYUCE**  
Responsibility of Medical Physicist: Tests Control Quality Routine Device Imaging Resonance Magnetic Siemens Tesla 1.5

**HALL 1071**  
Dr. Hikmet GECKIL  
Dr. Can DEMIREL

**\*Zahra ATGHIA**  
A Comparative Study on The Effect Of Zinc Oxide Nanoparticles on Germination Characteristics of Seedlings And Some Morphological Features of Two Cultivars; Iranian Parsley *Petroselinum Sativum* And Turkish Parsley *Petroselinum Crispum*.

**\*Sibel SILICI**  
Study of Glycemic Index of Monofloral Turkish Honeys And Serum Insulin & C-Peptide Levels

**C-Peptide Levels \*Burcin TEZCANLI KAYMAZ**  
Hitting the Molecular Target STAT3 via siRNA Applications Regains Chemotherapeutic Response and Modulates Glycolysis with Metabolic Potential in Leukemic Cells

**\*Sayad KOCAHAN**  
Effects of different exercise loads on the thyroid hormone levels and serum lipid profile in swimmers

**\*Betul YALCIN**  
Investigation Of The Histological Structure Of Cochlea And Corti In Light And Electron Microscope

**HALL 1299**  
Dr. Utku AVCI  
Dr. Leyla SAHIN

**\*Luis MAZON**  
When Formaldehyde Level Control is Possible: Our Experience With Photocatalysis Techniques

**\*Aysegul ORAL**  
Monte Carlo Simulation of Parathyroid Spect Imaging

**\*Aysenur YUKSEL**  
Monte Carlo Simulation of Sentinel Lymph Node SPECT/CT

**\*Caglar CENGIZLER**  
An Unsupervised Clustering Based Feature Evaluation Approach for Breast Cancer Identification

**\*Esin AKBAY**  
In vitro anti-tumorigenic effects of silver nanoparticles synthesis with *Allium sativum* extract

HOURS	SESSIONS (DAY3)	Friday (02-11-18) (Cont.)
11:20- 12:35	<b>HALL 1453</b> Dr. Ilkay ERDOGAN ORHAN Dr. Meral KEKECOGLU	*Rosa MARIA Evaluation Methodology of Medical Safety Device
		*Munire TURHAN Propolis And Medical Properties of Propolis
		*Suha CETIN Increased monocyte/HDL cholesterol ratio in ischemic stroke patients is associated with non-rheumatic valvular pathology
		*Tahir KARASAHIN Practitioner Effect On Embryo Collection in Cattle
	<b>HALL 1992</b> Dr. Lejla RİĐANOVIĆ Dr. Songul BARLAZ US	*Yekbun ADIGUZEL Protein secondary structure analysis with ATR-FTIR
		*Aslihan ORS GEVREKCI Functional Characterization of Polyamine Regulators
		*Celal BAL Antioxidant and Antimicrobial Capacity of <i>Ganoderma lucidum</i>
		*Mustafa SEVINDIK Use of Mushrooms and Lichenes in Alternative Medicine
	<b>HALL AHMET YESEVI</b> Dr. Farhat JABEEN Dr. Mustafa NISARI	*Ammara RIAZ Eriocalyxin B induces apoptosis in human triple negative breast cancer cells through inhibition of STAT3 and mitochondrial dysfunction
		*Cagil COSKUN BK channels and ROS on membran potential of skeletal muscle
		*Zeynep BAYAT ADAM 33 gene V4 C/G rs2787094 Polymorphism in Psoriasis
		*Sema TIMURKAAN The localisation of androgen and estrogen ( $\alpha$ and $\beta$ ) receptors in adult rat testis
<b>HALL DEDE KORKUT</b> Dr. Engin ULUKAYA Dr. Seval KELOGLAN	*Aylin KOSELER Mitochondrial DNA HVR I and HVR II variations in a Turkish population	
	*Haseeb ANWAR Probiotic strains and oxidative stress markers in rats	
	*Burak TUZUN Investigation of anti-cancer properties of derivaties of 2-benzimidazole	
	*Fatma BOZDAG Childhood Trauma Experiences in Mersin University Faculty of Medicine Students	
*Nalan GORDELES BESER Personality Traits and Dysfunctional Attitudes of Patients Diagnosed Irritable Bowel Syndrome	*Elif Tugce TOPAL The Effect of Silibin on Hyperlipidemia in Rats Fed High Cholesterol Diet	
	*Elif Tugce TOPAL The Effect of Silibin on Hyperlipidemia in Rats Fed High Cholesterol Diet	
12:35- 13:30	LUNCH	LUNCH (University Restaurant)

HOURS	SESSIONS (DAY3)	Friday (02-11-18) (Cont.)
13:30-15:10	HALL 1923 Dr. Gamal BADR Dr. Akifumi KISHI	<b>Dr. Farhat JABEEN</b> Assessment Of Titanium Dioxide Nanoparticles Induced Oxidative Stress, Hemato- And Intesto-Toxicity In Male Spague Dawely Rats
		<b>Dr. Utku AVCI</b> Illuminating Plant Cell Walls
		<b>Dr. Ilkay ERDOGAN ORHAN</b> Plant-Originated Molecules As Promising Enzyme Inhibitors: In Vitro And In Silico Approaches
		<b>Dr. Azhar RASUL</b> Discovery and characterization of novel microtubule disrupter by MorphoBase and ChemProteoBase Profiling
15:10- 15:25	Coffee Break	Coffee Break
15:25- 16:10	HALL 1923 Dr. Figen ÇİÇEK Dr. Necati TIMURKAAN	<b>*Zaheer AHMAD</b> Doxorubicin loaded methoxy poly (ethylene glycol) block-poly (glutamic acid) [DOX/mPEG-b-PLG] nanoparticles against human breast cancer cell lines
		<b>*Fatmanur ARI</b> Doxorubicin-induced cardiotoxicity
		<b>*Halime BAŞARAN</b> The one of insecticides toxicity on mitochondria
		<b>*Ghulam HUSSAIN</b> Selected indigenous plants intervention ameliorates muscle functional recovery following an induced injury to sciatic nerve in mouse model
	HALL 1071 Dr. Seyhan ALTUN Dr. Ayse İkinci KELES	<b>*Arzu AY</b> Assignment of the Effect of Plasminogen Activator Inhibitor-1 Gen Polymorphism on Ischemic Stroke Disease
		<b>*Nevra ALKANLI</b> Investigation of the Matrix Metalloproteinase-3 5a/6a Gen Polymorphism the Effect in Ischemic Stroke Development
		<b>*Azadeh HAMEDİ</b> Oriental plane hydrosol: composition and safety in oral consumption
		<b>*Songul BARLAZ US</b> Apoptotic Response of Prostate Cancer Cells to Combined Radiotherapy and Imipramine
	HALL 1299 Dr. Suha CETIN Dr. Dilara Fatma BALI	<b>*Burcu BİTERGE SUT</b> Genetic variations in Nrf2-Keap1 complex: a step towards understanding cancer resistance in blind mole rat Nannospalax subspecies
		<b>*Ibrahim YILMAZ</b> The Effect Of Exercise On Cognitive Function in High Fat Diet Induced Obesity
		<b>*Ahmet DOĞAN</b> Laurus Nobilis Fruit (Laurel Berry) Extract Mediated Biosynthesis of Silver Nanoparticles: Characterization, Antioxidant and Antibacterial Activity Studies
		<b>*Senay OZGEN</b> Glucosinolates in Cruciferous Vegetables and Health Benefits
	HALL 1453 Dr. Salih Tunc KAYA Dr. Cagil COSKUN	<b>*Nurhan AKARAS</b> Protective effects of agomelatine on testicular damage caused by bortezomib
	HALL 1992 Dr. Abdurrahman AKTUMSEK Dr. Aylin KOSELER	

HOURS	SESSIONS (DAY3)	Friday (02-11-18) (Cont.)
	HALL AHMET YESEVI  Dr. Burçin TEZCANLI KAYMAZ Dr. Sule ONCUL	*Hanife Guler DONMEZ Altered expression of beta-catenin in bacterial and fungal infections of cervicovaginal smears *Esra PEKOGLU The Effects of Trans-Cinnamaldehyde on Ischemia Reperfusion Injury *Tamer EROGLU Endovascular Repair Experiences for Aortic Disease
16:10- 16:25	Coffee Break	Coffee Break
16:25- 18:45	HALL 1923  MODERATOR  Dr. Muhsin KONUK	<b>PANELS</b>  <b>PANEL I: PHARMACOGENETIC</b>  Dr. Belgin SUSLEYICI Implementation of Pharmacogenetics in Turkish Clinical Practice: challenges and opportunities  Dr. Alexandros GEORGAKILAS Use of bioinformatics for the optimization of radiation therapy and personalized cancer treatment  Dr. Korkut ULUCAN From Personalized Genomics to Personalized Training  <b>PANEL II: NEUROSCIENCE</b>  Dr. Isil KURNAZ Brain tumors initiating cells  Dr. Pinar OZ Adult hippocampal neurogenesis and neurodevelopmental disorders
19:30	DINNER	GALA DINNER (Sofram Restaurant)

HOUR	SESSIONS (DAY4)	Saturday (03-11-18)
9:30- 10:30		Closing and Awards
10:30- 19:00		Travel (Cappadocia)

## POSTER PRESENTATIONS

**1. Seyhan ALTUN**

Ranolazine and Riluzole Combination in Prostate Cancer Proliferation

**2. Burak TUZUN**

Investigation of Spectroscopic, Theoretical and Molecular Docking of 5-Chlorosatin

**3. Eda USTUNTAS**

Linalool in Cilantro (*Coriandrum sativum* L.)

**4. Ertugrul Emre GUNTURK**

N-Acetylcysteine in Cisplatin Cardiotoxicity

**5. Esma Nur OKATAN**

A Promising Anti-Diabetic Azoramide Modulates Activities of Both MMP2 and MMP9 in Insulin-resistant H9c2 Cells

**6. Esra M. CUCE AYDOGMUS**

Effect of 4- Aminopyridine on Paclitaxel Activity on MDA- MB 435 Breast cancer cell line

**7. Metin CAGLAR**

Some Physical and Chemical Properties of The Murat River's Section Between Palu District and Gölüşkür Region

**8. Nihal UREN**

The vitamin D receptor gene rs1544410 variant in patients with essential tremor

**9. Ozgur CANPOLAT**

Some Heavy Metals Changes in The Sediment of Lake Hazar (Elazığ) Depending on Geological Period

**10. Sevgi KOCYIGIT SEVINC**

Apoptotic effect of etodolac and its derivative on breast cancer cell line

**11. Tahir KARASAHIN**

Total Cholesterol Levels in The Kil Goat Growing in the Aksaray Region

**12. Tugcan KORAK**

BLM Gene (rs2270132) Variant in Patients with Breast Cancer

**13. Yılmaz DEMİR**

Biomechanical Investigation of Effects of Pulsed Magnetic Field on Wound Healing In Diabetic and Non-Diabetic Rats

**14. Yusuf OZAY**

In Vitro Antiproliferative Activities of Four Salvia Species on Human Lung Cell Lines

## POSTER PRESENTATIONS

### **15. Zeynep BAYAT**

The Association of Vaspin Gene Polymorphisms with Coronary Artery Disease in A Turkish Population

### **16. Pelin YAZGAN**

The Beneficial Effect of Turkish Classical Music on Spasticity in Hemiplegic Patient

### **17. Ertugrul YIGIT**

Determination of Concentration of Water Extract of Turkish Propolis Against Oxidative Damage Induced by Tert-Butyl Hydroperoxide on Erythrocytes Cells

### **18. Katip KORKMAZ**

Investigation of Protective Effect of Water Extract of Turkish Pollen Against Oxidative Damage Induced by Tert-Butyl Hydroperoxide on the Erythrocyte Cells

### **19. Figen CICEK**

PMF Regulate Fibrocartilage Activity in Microfractures

### **20. Miroslava CISAROVÁ**

Etiology and Antibiotic Resistance of Nosocomial Uropathogens

### **21. Salih Tunc KAYA**

The Effect of KATP Channel Opener on Pancreatic B-Cell Line with STZ Treated

### **22. Didem DUMAN**

The Effect of Silibin on Hyperlipidemia in Rats Fed High Cholesterol Diet

### **23. Aykut PELIT**

Isometric Contractile and Biochemical Performance Computational Theory Using Artificial Neural Network

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# ***INVITED PRESENTATION***

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**Dynamics of Sleep Stage Transitions: Toward Understanding The Basic Physiology and Clinical Aspects of Sleep in Humans**

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Considering that sleep contributes significantly to mental and physical health, elucidating the mechanism of sleep is of great biological and medical importance. Sleep is, by nature, not a static but a dynamic phenomenon, resulting from complex interactions among neuronal populations in the brain. This dynamic feature of sleep can be represented by sequential transitions between various sleep stages (wake, rapid eye movement [REM] sleep, non-REM sleep stages N1, N2, and N3) across night. My current research involves the analysis, assessment, modeling, and control of the dynamics of sleep stage transitions in humans; this work aims to provide novel insights into not only the basic mechanism of human sleep regulation, but also pathophysiological aspects of sleep regulation. In this talk, I would like to introduce some overview of our research focusing on the dynamic structure of sleep; 1) baseline statistics and characteristics of human sleep dynamics, 2) their alternations by factors such as disease and drug, and 3) modeling of sleep stage transitions and ultradian rhythm of sleep. I would also like to discuss future perspectives toward artificial manipulation of sleep stage dynamics in humans.

**Keywords:** Sleep stages, polysomnography, ultradian rhythm, chronic fatigue syndrome



**Mediterranean Diet to Prevent Cardiovascular Diseases: the PREDIMED Study**

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The Mediterranean Diet is characterized by its relatively high total fat intake (mainly from olive oil) that makes it palatable, but low in saturated fat and rich in nutrients and dietary fiber content. It is a diet rich in antioxidant compounds and bioactive elements with anti-inflammatory effects, and also has a low glycemic index. Poor diet quality is a primary cause for chronic disease, mainly cardiovascular disease, and mortality and the adoption of the Mediterranean Diet might be instrumental for reversing this situation. The PREDIMED trial is the largest primary prevention trial showing that an intervention to promote a Mediterranean diet is beneficial against the incidence of several major chronic diseases in subjects at high cardiovascular risk, particularly when improved adherence to the Mediterranean diet includes increased consumption of extra virgin olive oil and mixed tree nuts. This study was conducted in Spain with 7,447 participants who were at risk for developing future heart attacks and strokes but without any prior history of cardiovascular events. Participants were allocated to one of 3 groups: a Mediterranean Diet with supplemental extra virgin olive oil, a Mediterranean Diet with supplemental tree nuts, and a control diet consisting on advice to reduce all types of dietary fat, though actually there was little reduction in fat intake. The trial showed a significant (approximately 30%) reduction in the combined endpoint of heart attack, stroke and cardiovascular death but also evidenced significant benefits in the prevention of other diseases such as diabetes, hypertension, cancer or neurodegenerative diseases.

**Keywords:** cardiovascular disease, chronic disease, lifestyle, Mediterranean diet.

## The Genus *Scrophularia*: A Source of Iridoids and Terpenoids with a Diverse Biological Activity

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The Scrophulariaceae family consists of 220 genera. *Scrophularia* genus is one of the large genera of the Scrophulariaceae. Distribution of these genera occurs mainly through mountainous regions (e.g. *S. farinosa* and *S. amplexicaulis*) to rarely in deserts (e. g. *S. deserti*). This genus is represented by 60 species in the flora of Iran and can be used as heart stimulant, circulatory stimulant and diuretic. Among these traditional uses of the *Scrophularia* genus (Scrophulariaceae), anti-inflammatory and anti-infections treatment in different types of diseases are common. These therapeutic potentials of *Scrophularia* genus have led researchers to focus on the isolation and determination of their probably bio-active compounds. phenylpropanoid glycosides, glycoside esters and iridoids are characterized in this genus. Phenylethanoid as one of the main phytochemical compounds plays specific role in biological activity of these plants. Many biological activities such as neuroprotective activity and anti-inflammatory. Sixteen phenylethanoid glycosides compounds have been isolated from the *Scrophularia* genus until now. In addition to this class of compounds glycoside esters constituted most important compounds with excellent neuroprotective activity. Another important *Scrophularia* genus compositions is iridoid glycosides, more than 72 iridoid glycosides reported from this genus until now. Many of these compounds demonstrated various pharmacological activities such as hepatoprotective and anti-inflammatory activity. Among the main composition of this genus, iridoid structures have shown potential for anti-inflammatory, hepatoprotective and wound healing activity effects. Glycoside esters compounds shown high neuroprotective activity in different models.

**Keywords:** Scrophulariaceae; neuroprotective activity; anti-inflammatory

**Discovery and Characterization of Novel Microtubule Disrupter by Morphobase and Chemproteobase Profiling**

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In our pursuit of discovering novel simple small molecules that potently inhibit cancer cell growth, NPDepo library containing small molecules was screened. Here, we report a novel potent cytotoxic agent that displayed broad cytotoxic activity against panel of cell lines. In this study, target of small molecule was recognized by phenotypic profiling systems (MorphoBase and ChemProteoBase). These results were further validated by in vitro polymerization assays. Furthermore, small molecule inhibits the microtubule formation and induces G2/M phase cell cycle arrest, indicating that potential cytotoxic effects might be through tubulin polymerization inhibition. This novel scaffold can serve as templates for developing novel microtubule-targeted agents, overcoming the confines of existing microtubule-inhibiting drugs.

**Keywords:** Cancer cell, Microtubule, MorphoBase, ChemProteoBase

**Serum Cell Death Biomarkers in Translational Cancer Research: Helpful or Doubtful?**

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Cell death is an important process in both biological and medical science although it has been ignored for many years. The monitorization of it has a great potential to open up new horizons. The investigations into the relationship between different types (apoptosis, necrosis, postmitotic cell death, autophagy) of cell death and the diseases is in increase recently. Among the diseases, the place of cell death in cancer treatment is especially promising. For example, an apoptosis marker called caspase-cleaved cytokeratin 18 (also named as M30 or ccK18) has been reported to release into the serum following cell death/apoptosis resulted from the action of anticancer drugs. Therefore, it has been claimed that serum M30 could be used as a pharmacodynamic biomarker of apoptosis<sup>1</sup>. Taking this into account, it may be a wise idea to use it as a tool for the prediction of response to chemotherapeutics, even the survival, in lung or breast cancer patients<sup>2,3</sup>. However, M30 on its own may not be good enough to provide a reliable data in all the cases because of the fact that some tumors may respond to the same treatment in a different way, for example necrosis, rather than apoptosis, or even autophagic cell death. In the case of necrosis, different cell death marker should be employed. M65 ELISA assay has been introduced for his aim. M65 represents to the intact cytokeratin 18 that is released into the serum from the necrotic cells. However, there may still be some obstacles to fully understand the amplitude of cell death following chemotherapy because the level of neither M30 nor M65 increases although the patients respond to treatment very well<sup>4</sup>. In this talk, the reason for this will be discussed.

**Keywords:** Serum Cell Death, Cancer

**Plants - Potential Source of Antibiotics and Pharmaceuticals**

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Resistance of microorganisms to antibiotics is a global problem and the need for new sources of substances with antimicrobial effect is urgent. Many substances of plants were found to have broad-spectrum activity against bacterial and fungal pathogens.

We focused our work on screening on the biological activity of accessible plant material, which may be of servant as a source for production of natural antibiotics and pharmaceuticals related to preventive effects and curative impacts on humans and animals.

The antimicrobial activity was screen from the methanolic crude extracts or essential oils from cca.70 plants and their parts. The antimicrobial effect was determinate by disc diffusion method; it was observed size of inhibition zone in the time. Extracts with biocide potency were effective on the one of study strains. The antimicrobial activities were detected using the crude extracts or essential oils of hop, onion, garlic, mint, sage, cherry, violet, willow, pepper, walnut, birch.

Collections of cereals (*Triticum* sp., *Hordeum vulgare*, *Avena sativa*) and hop varieties (Bohemie, Saaz Late, Agnus, Bor, Kazbek, Harmonie, Sldek, Vital) were tested by simple biological assays on in vitro level to antioxidant activity parameters and enzyme inhibitions activity parameters on proteinases.

**Acknowledgement:** This work was financially supported within the grants APVV-16-0173.

**Keywords:** antimicrobial activity, antioxidant activity, enzyme inhibitions

**Assessment of Titanium Dioxide Nanoparticles Induced Oxidative Stress, Hemato- and Intesto-Toxicity in Male Sprague Dawley Rats**

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Nanotechnology which includes materials and process on a small scale is an area of intense scientific research and it has led to the advancement in nanoparticles. Titanium dioxide nanoparticles are being used in pharmaceutical and cosmetics due to their unique properties derived from their small size. However, environmental exposure to titanium dioxide may lead to the lungs, skin, spleen, kidney and gastro intestinal tract abrasion. This study investigated the histopathology and oxidative stress mediated toxicity of titanium dioxide nanoparticles on intestine of male Sprague Dawley rats as small intestine is the site of nutrient absorption. This study was carried out in the animal house of Government College University Faisalabad after approval from the ethical committee on animal experimentation of the said University. The experiment was initiated after acclimatization of rats for 7 days. After acclimatization the experiment was conducted for 28 days. This study involves post weaning 25 rats of almost similar weight which were divided into 5 groups and each group has 5 rats. Rats were subcutaneously injected with 18nm TiO<sub>2</sub> NPs at four different dose level of 0, 80, 120, 160 mg/kg body weight of rats to find the toxicity of TiO<sub>2</sub> NPs. Animals mortality, histology, haematology and Enzyme linked immunosorbent assay (ELISA) of small intestine tissues were examined after 28 days of exposure. TiO<sub>2</sub> nanoparticles treated groups showed noteworthy pathological changes in treated groups. Haematological parameters like WBC, LYM%, MID%, GRA%,LYM count, MID count, MCV, HCT, HGB, MCH, MCHC, RDW and PLT show significant differences (P<0.001) while RBC, GRANC and PCT show non-significant differences (P<0.05). Enzyme linked immunosorbent assay of small intestine showed highly significant differences in the production of inflammatory cytokines in all treated groups as compared to control groups. The histopathological study showed that villi of small intestine become shortened in treated groups at higher doses of TiO<sub>2</sub> NPs. This study showed that titanium dioxide nanoparticles caused toxic effect in dose dependent manner in Sprague Dawley rats. So TiO<sub>2</sub> must be used carefully.

**Keywords:** Oxidative Stress, Sprague Dawley, Haematological

## Evaluation of Fipronil Potential on The Behavior of Zebrafish (*Danio rerio*) and His Relevance to Autism Spectrum Disorder

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The aim of this study was to observe the acute toxicity of fipronil, an insecticide which exerts a neurotoxic effect by blocking the GABA function on zebrafish behaviour with further relevance to modelate autism spectrum disorder. In this experiment fipronil was administrated in the water and it was absorbed by zebrafish through gills and skin. The fipronil solution used for this experiment was from a standard solution 1 g L<sup>-1</sup> from a product which is found on the market. From this solution we prepared the following concentrations: 25 µg L<sup>-1</sup> and 50 µg L<sup>-1</sup>. Each testing group had 10 specimens (5 males and 5 females). The control group had the same size. 48 hours was the exposure time for zebrafish. During this time it was applied two tests in a T maze: social test and agresivity test. The behavioural measurements were done with the software EthoVision XT 11.5 from NOLDUS, Holland-USA couplet to multipurpose cross maze system and infrared camera. The measurements were conducted at 24 h and 48 h after administration of fipronil solution and for the control group. The social test measured the capacity of interaction with another fish from its testing group. The agresivity test measured the agresivity of individuals when they saw their reflection in the mirror. Velocity, total distance, acceleration, moving, not moving and the period of time when they stayed in a certain arm were the main variables analyzed. The experiment was done in triplicates.

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**Keywords:** fipronil, zebrafish behavior, neurotoxicity.

## Plant-Originated Molecules as Promising Enzyme Inhibitors: In Vitro and In Silico Approaches

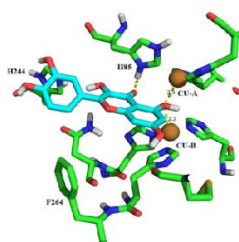
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Nature has always afforded many drug molecules to treat human diseases. Among them, some reputed drugs such as aspirin, morphine, quinine, artemisinin, taxol, etc have been gifted from plants. On the other hand, enzyme inhibition has been a quite attractive target for scientists in drug discovery as it is one of the common mechanisms of action for many clinically available drugs.

Relevantly, during our extensive screening of natural products to explore new enzyme inhibitory molecules using in vitro methods using ELISA microplate reader, up to date, we have reported a good number of molecules with promising inhibitory effects against various target enzymes comprising tyrosinase, elastase, collagenase, cholinesterases (acetyl- and butyryl- derivatives), xanthine oxidase, phosphodiesterase, carbonic anhydrase, urease, etc. Then, the inhibiting molecules were subjected to molecular docking (in silico) experiments to examine possible interactions at molecular level. During these efforts, we have recently revealed a number of promising molecules such as coumarin derivatives (e.g. pteryxin), isoflavone derivatives, tanshinones (diterpene derivatives) as selective butyrylcholinesterase inhibitors, luteolin 5-O- $\beta$ -glucoside as potent carbonic anhydrase type-II inhibitor, quercetin as tyrosinase inhibitor, etc. In the present talk, current data obtained from our enzyme inhibition experiments on natural compounds will be discussed.



Quercetin and tyrosinase interaction

**Keywords:** Enzyme inhibition, natural molecules, in vitro study, molecular modelling



## Application of the Faecal Coliforms/Faecal Streptococci Ratio (FC/FS) in Assessment of Water Pollution

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Traditional indicators of bacterial pollution of waterways such as faecal coliforms and faecal streptococci, although reliable in detecting pollution, do not provide information about a pollution source. The present study aimed to investigate the microbiological quality of the Neretva river using total coliforms, faecal coliforms and faecal streptococci as classical indicators of water quality. It was also aimed to evaluate FC/FS ratio as a tool for assessing water pollution and determining its sources. The study was conducted in the middle catchment area of the river Neretva in Bosnia and Herzegovina. The sampling was performed in quarterly intervals, from September 2015 to August 2016, at seven selected sites. The results show that values of total coliforms, faecal coliforms and faecal streptococci are significantly increased at all sampling sites. Comparison of obtained values across the sampling sites shows degradation of water quality along a longitudinal gradient, coinciding with inadequately treated domestic wastewater effluents. The highest total coliform count of 22800 (cfu/100 ml) was observed during summer. While the highest FC/FS ratio of 13.71 was recorded at S6 in winter, the lowest value of 0.65 was obtained at S1 in the same season. The FC/FS ratio identified contamination but did not reliably differentiate between animal and human sources of contamination. FC/FS ratio does not indicate a true extent of pollution.

**Keywords:** bacterial indicators, faecal coliforms, faecal streptococci, FC/FS ratio, water quality

**A New Vision of Metastasis: Voltage-Gated Ion Channels and Membrane Excitability**

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Metastasis remains the most critical problem in the clinical management of cancer. Several different lines of experimental data suggest that acquisition of metastatic potential in cancer cells is accompanied by de novo expression of functional voltage-gated sodium channels (VGSCs). This phenomenon is common to all carcinomas examined (in vitro and in vivo). Where also examined, the VGSC expression was found to be paralleled by down-regulation of outward currents (mainly potassium channel activity) thereby making metastatic cancer cell membranes electrically excitable. Thus, hyperactive behaviour of these cells may be driven, at least in part, by their regenerative membrane excitability. We call this the “CELEX” (for ‘cellular excitability’) hypothesis of cancer progression.

Importantly, House et al. (2010) have shown that the VGSC is upstream of a network of ‘canonical’ genes (including MAPK) controlling invasiveness, i.e. the VGSC expression is an early event in the acquisition of metastatic potential and is an integral part of the oncogenic process. In all carcinomas tested, blocking VGSC activity with tetrodotoxin, siRNA or an antibody suppressed cellular invasiveness in vitro and in vivo.

Importantly, also, the VGSC was found to be a neonatal (‘oncofoetal’) splice variant, seen most clearly in breast and colon cancer where neonatal Nav1.5 (nNav1.5) is the predominant VGSC. Neonatal Nav1.5 differs from the adult variant by 7 amino acids including a charge-reversed (aspartate → lysine) residue (K211D) in an extracellular DI:S3-S4 region of the VGSC protein. This enabled the generation of a polyclonal antibody with at least 100-fold selectivity for nNav1.5 compared with the adult splice form expressed mainly in cardiac muscle.

The VGSC has several characteristics that would make an ideal diagnostic marker since its expression is (1) early, (2) ‘neonatal’ (hence, different from its ‘nearest neighbours’ in the rest of the body), and (3) functional, thereby also enabling matching therapies to be applied. One particular therapeutic strategy of current interest is use of blockers of the persistent component of the VGSC current (INaP) by drugs like ranolazine with little effect on the transient component. This persistent current is potentiated by hypoxia which is well known to occur during tumour growth. INaP is the likely cause of the Na<sup>+</sup> accumulation in cancer cells and the subsequent pH changes that promote extracellular proteolysis and invasiveness. Inhibition of INaP by drugs like ranolazine as a therapeutic strategy would have the major advantage of being free from major ‘toxic’ side effects unlike, say, chemotherapy.

We conclude that there is significant, multi-faceted in vivo evidence for the proposed role of the functional VGSC expression in cancer progression. Thus, application of a new technique (electrophysiology), extended to molecular pathology, has generated a novel vision of the metastatic process in which VGSC expression/activity leading to membrane excitability plays a significant role and represents a novel anti-metastatic target.

**Keywords:** Metastasis, Voltage-Gated Ion Channels, cancer

**Intravenous NAD<sup>+</sup> Effectively Increased the Nadome, Reduced Oxidative Stress and Inflammation, and Increased Expression of Longevity Genes Safely in Elderly Humans**

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Nicotinamide adenine dinucleotide (NAD<sup>+</sup>) is an important coenzyme that serves important roles in hydrogen transfer in several metabolic pathways. It also serves as the cosubstrate for other NAD-dependent enzymes including poly(ADP-ribose) polymerase (PARPs) which are involved in DNA repair, the sirtuin (SIRT1-7) family of enzymes which are main regulators of ageing, and CD38 glycohydrolases, which are involved in secondary messenger signalling. Recently, intravenous (IV) NAD<sup>+</sup> therapy has been used as a holistic approach to treat withdrawal from addiction, overcome anxiety and depression, and improve overall quality of life with minimal symptoms between 3-7 days of treatment. We evaluated repeat dose IV NAD<sup>+</sup> (1000 mg) for 6 days in a population of 8 healthy adults between the ages of 70 and 80 years. Our data is the first to show that IV NAD<sup>+</sup> increases the blood NAD<sup>+</sup> metabolome (NADome) in elderly humans. These findings were accompanied by increased concentrations of glutathione peroxidase -3 (GPX-3) and paraoxonase-1 (PON1), and decreased concentrations of 8-iso-prostaglandin F<sub>2</sub> $\alpha$  (8-iso-PGF<sub>2</sub> $\alpha$ ), advanced oxidative protein products (AOPPs), protein carbonyl (PCO), C-reactive protein and interleukin 6. IV NAD<sup>+</sup> infusions also altered the plasma lipid profile in a favourable manner. We also report a significant increase in the mRNA expression and activity of SIRT1 (a nuclear sirtuin), and Forkhead box O1 (FOXO1), and reduced acetylated p53 in peripheral blood mononuclear cells isolated from these subjects. No major adverse effects were reported in this study. The study shows that repeat IV dose of NAD<sup>+</sup> is a safe and efficient way to slow down age-related decline in NAD<sup>+</sup>.

**Keywords:** Oxidative Stress, Antioxidant, Longevity, NAD<sup>+</sup>, Sirtuins

**Statistical Approach for Network Inference by Structural Equation Modelling**

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Inference of gene regulatory network is a useful approach to understand the control systems in living cells. To obtain the better insights into the gene regulation, I developed statistical approach, based on Structural Equation Modeling (SEM) in combination with factor analysis and new algorithms for initial model assumption and model optimization. The significant features of SEM are the inclusion of latent variables within the constructed model and the ability to infer the network, including its cyclic structure. Furthermore, the SEM approach allows us to strictly evaluate the inferred model by using fitting scores. I improved several methods for construction of initial models for SEM calculation, and applied my approach to estimate the regulatory network for several types of gene transcriptional controls. In this presentation, I'll introduce the details of my developed method and one application example for detection of toxicity dependent effects in embryonic stem cells.

**Keywords:** Structural Equation Modeling, gene regulatory

**Association between Ischemic Heart Disease and Abiotic Ecological Factors in Mostar, Bosnia and Herzegovina**

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Ischemic heart disease, including acute infarct of myocardia, is a leading cause of the morbidity and mortality in the World and its in association with abiotic ecological factors. In this study, patients diagnosed with *Mors cordiata subita*, *Block atrioventricularis completus*, *Infarctus miocardii subendocardialis acutus*, *Insufficiencia cordis*, *Status post infarctus miocardii*, *Infarctus miocardii inferiores transmuralis acutus* and *Infarctus anteroapikalis acutus* were analysed in association with temperature, humidity, rain/precipitation, wind, atmospheric pressure. Data of all patients was obtained from registers of CH “Dr Safet Mujic” Mostar and UCH Mostar, in total of 559 registered patients (male and female; 28-89 years old) diagnosed with the acute infarct of myocardia. The statistical analysis used in this study was Cochran’s modification of the  $\chi^2$  test. These results indicating that the incidence of different diagnosis were more often due to different abiotic factors. The higher incidence of diagnosis *Mors cordiata subita* was associated with higher temperature with 60% and lower atmospheric pressure with more than 60%. Higher atmospheric pressure was associated with *Infarctus miocardii subendocardialis acutus* and *Block atrioventricularis completes* with 60%. Furthermore, *Infarctus miocardii subendocardialis acutus* had incidence of 60% in the presence of higher humidity while the reduced precipitation was associated with *Infarctus miocardii subendocardialis acutus* with 100%, *Block atrioventricularis completus* with 90%, and *Insufficiencia cordis* with 80 %. Abiotic ecological factors are statistically significant in the relation with acute infarct of myocardia incidence indicating that male population over 65 are more vulnerable to the climate and weather changes.

**Keywords:** acute infarct of myocardia, abiotic ecological factors, incidence

**In- Situ Conservation of Endemic Salmonid Species in the Neretva River**

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The river Neretva is the longest karst river in the Dinaric Alps, and the largest tributary of the Adriatic sea from the Balkans. It is internationally recognised for its outstandingly rich biodiversity, including endemic Salmonid species. The habitat fragmentation, caused by dams, prevents natural upward migration of fish to suitable spawning areas, while also preventing gene flow between emerging local populations. Salmonid populations in the Neretva are currently fragmented into five local populations, physically isolated by high dams, without adequate migration passages. There is a decrease of the overall genetic diversity of the fragments, due to genetic drift. With the absence of gene flow, fragmentation typically leads to an increase of inbreeding and the loss of genetic diversity, leading to genetic differentiation and a higher risk of extinction. A planned construction of a number of the small mini hydro power stations on the Neretva River, and its tributaries, would cause uneven fragmentation of emerging populations. The newly formed fragments would be very small, leading to an increased variation in allelic frequencies. Smaller populations are also subjected to mutational meltdown which leads to reduced fitness, decrease of a population size, and accumulation of deleterious mutations. It is possible that some of the smallest fragments of populations of Salmonids in the waters of Neretva are already experiencing this process. Some isolated small populations of brown trout are possibly extinct due to mutational meltdown.

The aim is to analyse mitochondrial DNA, with the aim of determining haplotype and potential interspecies hybridisation; nuclear marker LDH (lactated hydrogenase), in order to establish existence of interspecies hybridisation; molecular analysis of appropriate microsatellite loci with the view of analysing genetic variability and population structure. Data will be used to analyse abundance and the current status of populations. It is expected to establish a link between disruption of migratory fish routes and the current ecological status (abundance, dynamics, regeneration, genetic diversity of populations) of Salmonid populations, determine the effects of fragmentation of populations and conduct a detailed genetic analysis of endemic and critically endangered populations. Measures of conservation and protection of these species are to be considered, including concerted efforts in placing them on the IUCN red list of critically endangered species.

**Keywords:** In –situ conservation, habitat fragmentation, Neretva, MHPPs, Salmonids, critically endangered species

## **Illuminating Plant Cell Walls**

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Plant cell wall is considered as dead tissue for a long time. However, with the extensive research, scientists have realized that it actually is a highly dynamic structure that can undergo modifications upon biological cues. Due to highly complex and changeable architecture, elucidating the structure and functional properties of plant cell walls have been challenging. Diverse cell wall composition can show changes in distinct regions even around a cell, as well as in different tissues and across taxonomic groups. Furthermore, considering its key importance in cell growth and differentiation, it is important to reveal dynamic nature of this cellular component.

Currently, one of the most effective ways to image diverse cell wall polysaccharides at the cellular level is to use plant cell wall-directed monoclonal antibodies. These antibodies can recognize specific cell wall components and help us illuminate the plant cell walls. Several different research areas for the use of these cell wall-directed antibodies will be discussed. Insights obtained from these areas will be shared as well.

**Keywords:** cell walls, imaging, microscopy, monoclonal antibodies, plant



# ***ORAL PRESENTATION***

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## Effects of Grayanotoxin (GTX III) on BNP Expression in Rat Heart Tissue

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Mad honey poisoning is commonly observed in the Blacksea Region of Turkey, however, it has also become a worldwide issue due to the increasing demand towards mad honey products and the fact that they are easy to transport and in a rapid way. It is a commonly known fact that the consumption of Grayanotoxin (GTX) leads to mad honey poisoning. The aim of this study is to immunohistochemically determine how Grayanotoxin (GTX) effects the BNP expression in rat heart tissue. In this study, animals were divided into equal groups of 5 to determine the acute and chronic effects. Both acute and chronic groups have five subgroups. The grouping was made as follows: Group I: Control Group, Group II (0,1 µg/kg/bw GTX III i.p.), Group III (0,2 µg/kg/bw GTX III i.p.), Group IV (0,4 µg/kg/bw GTX III i.p.) and Group V (0,8 µg/kg/bw GTX III i.p.). The acute study groups received one single dose of GTX III, whereas the chronic study groups received one dose per day for a period of three weeks. BNP (Brain Natriuretic Peptide) immunostaining were applied to cross sections with a thickness of 5-6 µm by avidin-biotin-peroxidase method. In addition, apoptosis were evaluated by the TUNEL staining method. BNP expression increased in chronic groups, while it decreased in acute groups. Furthermore, apoptosis in heart tissue increased in both acute and chronic groups. Finally, Grayanotoxin (GTX) induced heart tissue damage negatively affected expression of BNP.

**Keywords:** Grayanotoxin, Heart, BNP.

**Practitioner Effect on Embryo Collection in Cattle**

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The superovulation program for embryo transfer in cattle is a costly process. After superovulation in the embryo collection process, all cells (oocyte, degenerate embryo, and embryo) from the corn uterus through the oviduct channel are obtained through uterine wash. Embryo collection for embryo transfer after superovulation has a very important role in the success and cost of this technique. In the present study, embryo collection of 4 different applicators was evaluated. For this, the ratio between the number of cells obtained after uterine wash and the number of corpus luteum on the ovary was calculated. According to the obtained data, the cell uptake rate of 4 different applicators was; 51.0%, 53.3%, 78.3%, and 85.9% respectively. As a result; it was determined that the experience of the superovulation practitioner is an element that influences the success and cost of the embryo collection technique.

**Keywords:** Embryo transfer, Superovulation, Practitioner, Collection.

**Beneficial Effects of Azoramide on Palmitate-Induced Insulin Resistance in H9c2 Cells**

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The aim of the study is investigating the mechanisms underlying the beneficial effects of azoramide on insulin resistance. Azoramide is a new compound that has been shown to improve endoplasmic reticulum (ER) protein folding ability and it activates ER chaperone capacity to protect cells against ER stress. It has been showed that azoramide has also anti-diabetic activity on genetically or diet-induced obese mice and only one week of azoramide administration had been enough to improve insulin resistance in these subjects. The main question that how azoramide exerts this dramatic effects on insulin resistance is still unknown. In order to, at least partly, answer this question palmitate-induced insulin resistance model established on H9c2 cells. The model and effects of azoramide on insulin resistance were verified using the 2-DG uptake kit. The effects of azoramide on insulin signaling pathway are investigated by western blot analysis of IRS1 or Akt phosphorylation levels as well as GLUT4 protein levels. The results indicate that azoramide ameliorates the altered activity of both IRS1 and Akt and upregulate GLUT4 in palmitate-induced insulin resistance model on H9c2 cells. This study points out, for the first time, that azoramide possibly affects the insulin resistance via improving insulin signaling pathway.

**Acknowledgment:** This study supported by the Scientific Research Project Fund of Cumhuriyet University under the project number T-668 and Turkish Diabetes Foundation.

**Keywords:** Azoramide, insulin resistance, H9c2, IRS1

**Selected Indigenous Plants Intervention Ameliorates Muscle Functional Recovery Following an Induced Injury to Sciatic Nerve in Mouse Model**

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Nervous system communicates with all other systems by sending electrochemical messages by a complex network of nerves. Peripheral nerve injury is one of the serious health concerns. Several factors such as trauma, congenital anomalies, metabolic disorders, infections and mechanical injuries and chemical agents can cause injury to nerves. These injuries may disturb sensory, motor or both types of functions. In most of the cases, disability for whole life or partial functional loss is observed. The emphasis in such conditions is on the functional recovery of sensory and motor abilities. The functional recovery of nerve occurs after regeneration of injured axon, but the recovery is terribly slow. Several plants have been tested to accelerate nerve regeneration and functions. In the present study, we tested indigenous plants in an induced nerve lesion mouse model. Food intake and weight of animals were noted for the whole experimental period. Muscle strength and walking track analysis were performed at decided interval during the 14 days of study period. Tests for sensory functions were performed at regular time points. Serological analyses for oxidative stress and measurement of organs mass were done at the end of experiment. The treated group gained grip strength earlier than control group ( $p < .05$ ). The restoration of mass of muscle was better in treated group than in control group ( $p < .05$ ). Sensory response was also ameliorated in treated animals. A trend of reduced oxidative stress was noted in response to treatment. These results show that plants can be used to promote muscle function recovery.

**Keywords:** Nerve injury; Oxidative Stress; Functional Recovery; Phytochemicals

## Glucosinolates in Cruciferous Vegetables and their Health Benefits

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Cruciferous vegetables belong to *Brassicaceae oleracea* family that includes different genus. The vegetables in this family contain chemically stable glucosinolates that has a protective role of both in plant and human body. Variation in the glucosinolates compound of Brassica vegetables can be influenced by variety, maturity at harvest, growth conditions, environmental stress, storage, processing and cooking methods. Glucosinolates are group of nitrogen and sulphur containing compounds that are biologically inactive when tissue is intact. However, when tissue is ruptured by pests, harvesting, food processing or chewing enzyme myrosinase is activated which leads to hydrolysis of glucosidic bond of these compounds. The isothiocyanates (sulphoraphane, benzyl isothiocyanates-BITC and phenethyl isothiocyanates-PEITC) and indoles (indol-3-carbinol) are the important and most investigated hydrolysis compound. Epidemiological studies indicated that isothiocyanates are modulating the balance of Phase I and II xenobiotic metabolizing enzymes that are excrete in liver and epithelial cells. Recent studies have provided evidence that glucosinolates brake down products can play a crucial role in the prevention of cancer, chronic and degenerative diseases. It is stated that bladder cancer was decreased 51% by high intake of cruciferous vegetables per week. Similarly, prostate cancer was decreased 41% by three or more serving of cruciferous vegetables per week. Although Brassica vegetables are good sources of nutrition excess amount of consumption may cause some toxic effects, such as decreasing reproductive performance and growth, goiter and limiting effect of trace mineral absorption. As a result, further research is needed to understand both production system to increase amount of glucosinolates content of plant and health benefits of them.

**Keywords:** Brassica vegetables, antioxidant activity, isothiocyanates, indoles

## The Effect of High Glucose on Hypertrophic Cardiomyocytes

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Cardiac hypertrophy (CH) is known as a response of heart to pathophysiologic or physiologic stimulus, such as myocardial ischemia/reperfusion injury and hypertension. When CH is prolonged, it can eventually cause heart failure. CH is characterized by the enlargement of myocardium. That is why; cardiomyocytes alter energy supply to glycolysis. The aim of the present study was to investigate whether hyperglycemia could be protective in H9c2 cells with cardiac hypertrophy. H9c2 rat cardiomyoblast cell-line was used to carry out four groups as control, hyperglycemia (HG, 30 mM), cardiac hypertrophy and hyperglycemia plus cardiac hypertrophy. CH was induced by using norepinephrine at 2.5  $\mu$ M dose for 24 hours. After the incubation period, total oxidant (TOS), total antioxidant status (TAS) were measured, and oxidative stress index was calculated. Mitochondrial membrane potential (MMP) was measured by a using JC-1 dye. HG caused to decrease MMP while HG plus cardiac hypertrophy led to elevate MMP. HG-induced folia podia in H9c2. In addition, there were no significant differences in TAS, TOS and oxidative stress index between groups. Hyperglycemia may have a protective effect on the myocardial hypertrophy via preserving MMP without changing oxidative status of the cell.

**Keywords:** Cardiac hypertrophy, Hyperglycemia, Mitochondria membrane potential, Oxidative stress

## Apoptotic Response of Prostate Cancer Cells to Combined Radiotherapy and Imipramine

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The combination of pharmacologic drugs and radiotherapy in prostate cancer may increase the effectiveness of treatment. In this study, it was aimed to investigate the apoptotic response of combined radiotherapy (RT) and imipramine (an antidepressant) treatment on prostate cancer cells. In this study, DU-145 prostate cancer cell lines were used. The cells were divided into 4 groups (n=4). Group 1 was the control group. Group 2 was the imipramine group (1 µM imipramine). Group 3 was the RT group (6 Gy radiation as a single fraction). Group 4 was the RT+ imipramine group (6 Gy RT+1 µM imipramine). All cells were stained with AnnexinV-FITC. After 72 hours incubation the early and late apoptosis were determined with the flow cytometry. Early apoptosis value in all treatment groups was significantly higher than control group. In the imipramine group, the value of late apoptosis significantly increased compared with the control, RT and RT+imipramine groups. There was no significant difference between control, RT and RT+imipramine groups for late apoptosis value. In this study, imipramine increased both of early and late apoptosis but RT and RT+imipramine treatment increased only early apoptosis. This study suggests that imipramine may be more effective than combination of RT and imipramine in the treatment of prostate cancer. This result is promising for the treatment of radioresistive prostate cancer. However, this hypothesis should be supported by *in-vivo* studies.

**Keywords:** Radiotherapy, Imipramine, Prostate cancer, DU-145, Apoptosis

## Investigation of Cherry Virus Diseases at Niğde Province

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Cherry belongs to family *Rosaceae* is one of the important fruit tree among the stone fruits producing annually about 495.000 tons in Turkey. Sweet cherry (*Prunus avium* L.) and sour cherry (*Prunus cerasus* L.) production and cultivation are mostly for industrial purposes. Niğde province has an importance for cherry cultivation in Turkey. Cherries are susceptible to many viruses and most common viruses that can infect cherries are: *Cherry leaf roll virus* (CLRV), *Cherry virus A* (CVA), *Cherry necrotic rusty mottle virus* (CNRMV), *Cherry green ring mottle virus* (CGRMV), *Little cherry virus 1*, *Little cherry virus 2*, *Cherry twisted leaf virus* (CTLV), *Cherry rasp leaf virus* (CRLV), *Prune dwarf virus* (PDV), *Prunus necrotic ringspot virus* (PNRSV), *Apple chlorotic leaf spot virus* (ACLSV), *Apricot latent virus* (ApLV), *Plum bark necrosis stem pitting associated virus* (PBNSPaV), *Prunus necrotic ringspot virus* (PNRSV), and *Apple mosaic virus* (ApMV). In this study, totally 90 suspicious samples were collected from both sweet and sour cherry trees for investigation of these viruses' incidence in Niğde region of Turkey. Total nucleic acids were extracted from these samples using Guanidium thiocyanate method and used as a template for cDNA synthesis (*abm's EasyScript™ cDNA Synthesis Kit*). PCR analysis was carried out by using virus specific primers. TaqMan RealTime PCR system and DNA sequence analysis were performed. Among the various collected samples only 7 samples were found to be infected by LChV1 while others show negative results. TaqMan RealTime PCR analyses were done and DNA sequence analysis confirmed virus incidence. It can be concluded that only low quantity of LChV1 infections were observed on some of the screened cherry samples. These findings will be helpful in any further study on cherry viruses.

**Keywords:** Cherry, *Little cherry virus 1*, Nucleic acids, Reverse transcription, PCR.



**Increased Monocyte/HDL Cholesterol Ratio in Ischemic Stroke Patients is Associated with Non-Rheumatic Valvular Pathology**

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Cardiac embolization plays an important role in the etiology of ischemic stroke. Valvular pathogenesis may lead to intracardiac thrombus formation by inducing blood stasis in the left atrium/left atrial appendage. MHR is an inflammatory marker and is associated with many cardiovascular diseases. This study tried to elucidate the association between MHR and rheumatic and non-rheumatic pathologies in patients with ischemic stroke. A total of 69 patients with the diagnosis of ischemic stroke were enrolled in this study. Eleven patients (10 male; 51.4±10.7 years) were diagnosed with moderate-to-severe valve disease. Forty patients (26 male; 67.9±8.5 years) showed a moderate-to-severe non-rheumatic valve disease. Eighteen patients (15 male; 54.7±8.6 years) had mild rheumatic or non-rheumatic valve disease or normal valvular anatomy or function. A transesophageal echocardiography has been performed within one week of the diagnosis of ischemic stroke to quantify and qualify valvular disease. Further, blood samples were taken to calculate MHR neutrophil-to-lymphocyte ratio (NLR), which is also a systemic inflammatory marker. There was a significant positive correlation between MHR and NLR ( $r=0.60$ ;  $p<0.001$ ). In group II, MHR was significantly increased compared to group III ( $p=0.030$ ). Between group I and III and between group I and II. The ROC curve analysis showed an area under the curve of 0.664). For a sensitivity of 85% and a specificity of 70% in the group with non-rheumatic moderate-to-severe valve disease the MHR cutoff value was given as 0.15. In patients with ischemic stroke non-rheumatic valve disease is often present. The association between non-rheumatic valve disease and MHR suggests that increased systemic inflammation may play a role in the etiopathogenesis of ischemic stroke.

**Keywords:** Monocyte/HDL cholesterol ratio, rheumatic valve disease, stroke

## **Our Multivessel Injury with Stabbing Experience**

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Vascular injuries should be evaluated for the location, the amount of bleeding and the time of transportation to hospital before the decision made for the surgery type; limb salvage or life salvage.

A 58-year-old male patient admitted to emergency service with left axillary artery, anterior and posterior tibial artery injuries in hypovolemic shock situation. Emergent operation performed under general anesthesia. Axillary artery reached by the enlargement of the injury side and repaired with primary suturation and 6/0 prolene suture used. Anterior and posterior tibial arteries also reached by the enlargement of the injury side and repaired with safenous vein interpositioning, harvested from the controversial leg. The autogeneus safen vein grafts are more resistant to infection and to thrombosis when used in dirty injury areas and distal extremity arteries than synthetic grafts. In the presence of these facts we prefer autogeneus safen vein graft in our case. The patient consulted by orthopedia clinic for the injury of axillary nerve and repaired. The patient discharged in postoperative day 7.

In the presence of life-threatening bleeding, vascular injury should be evaluated quickly and carefully. Bleeding control and stabilisation the viable functions of the patient is the main target, after stabilisation of the patient limb salvage should be considered.

**Keywords:** Multivessel injury, stabbing, life/limb salvage

## Functional Characterization of Polyamine Regulators

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Polyamines are involved in multiple cellular processes including cell growth, survival, stress response and proliferation. Polyamines are vital for many different organisms, thus they are strictly regulated by polyamine biosynthetic enzymes and plasma membrane transporters. Biosynthesis and transporter proteins are also important drug targets against Protozoa parasites, fungi and bacteria infections. This study aims to functionally characterize polyamine transporters and their functional interaction with each other using single and double mutants. Polyamine transporter *caf5<sup>+</sup>* gene was deleted from *S. pombe* genome using Bähler method of transformation and deletion was confirmed using colony PCR. Double mutants were formed by crossing single mutants of opposite mating type. The mutant cells were examined in terms of osmotic stress response induced by exposure to extreme amounts of salt and DNA damage response induced by exposure to UV irradiation and hydroxyurea. Mitotic/meiotic progression and spore formation was observed under the microscope upon DAPI and calcofluor staining. Polyamine transporter *caf5<sup>+</sup>* gene mutants developed sensitivity to UV induced DNA damage as well as defects in normal cellular growth. Double mutants of spermine transporter *caf5<sup>+</sup>* and spermidine transporters showed that *caf5<sup>+</sup>* has differential functional interactions with different spermidine transporters as shown by exacerbated cell size and DNA damage response effects in only particular double mutations. *caf5Δ* cells were shorter in cell length compared to wild type cells ( $p < .006$ ) and in double mutants, only *caf5Δ SPCC569.05Δ* cells reverted the phenotype and had similar cell length with the wild type cells ( $p < .783$ ). The rest of the double mutants were similar to *caf5Δ* in length. We conclude that redundant mechanisms exist in the regulation of intracellular polyamines, and consequently cell division and stress response. Therefore, loss of polyamine regulator genes can be relatively more tolerable and drugs against their protein products should target multiple transfer molecules.

**Keywords:** polyamines, cell survival, cell division, DNA damage.

**Inhibition of HBsAg with Anti-HBsAg ScFv in PLC/PRF/5 Cell Line**

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Hepatitis B virus (HBV) is one of the most serious global health problems. 3.5% of worldwide population is chronic HBV carriers, which are at a high risk of developing liver cirrhosis and hepatocellular carcinoma. However, the new treatments are emerged to fight with HBV infection. In this study, we aimed to examine the therapeutic capacity of the Lig7 single chain variable fragment, which has already been selected against Hepatitis B surface Antigen (HBsAg) using phage display technology. Lig7 encoding gene was transfected into PLC/PRF/5 cell line for inhibiting HBsAg. In the current study, Lig7 gene was chosen to inhibit HBsAg in PLC/PRF/5 cell line. Lig7 coding sequence was cloned into a mammalian plasmid that includes GFP reporter gene. Initially, PLC/PRF/5 cell line was cultivated in proper cell culture conditions before transfection. Later, different reagents and conditions were chosen to get maximum transfection efficiency. Finally, transfected cells were visualized under fluorescence microscopy and the cell supernatant was analyzed by ELISA. PLC/PRF/5 cell culture conditions were optimized to monitor HBsAg production through ELISA. Lig7 production was detected with fluorescence microscope and by ELISA after the transfection. Lig7 gene was produced in the mammalian cell. Preliminary data indicated that the recombinant antibody has the potential to block HBsAg.

**Keywords:** Hepatitis B, Single chain variable fragment, Gene Therapy

## Endovascular Repair Experiences for Aortic Disease

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The aim of this retrospective study is to evaluate outcomes of endovascular repair in patients with thoracic aortic disease. Between November 2015 and October 2017, 24 patients (19 males, 5 females; mean age  $63.38 \pm 11.10$ , range 36-80 year) admitted at our clinic and endovascular repair performed for thoracic aortic disease. Endovascular repair was performed under general anesthesia. Five patients had aneurysm and nineteen had type B dissection. Mean aortic diameter was  $5.53 \pm 1.04$  cm (range 3.6 to 8 cm). All patients were treated by endovascular repair, this means 100% technical success rate. Patients followed in intensive care unit after operation. Mortality, femoral/iliac arterial injury, stent migration and surgical site hematomas were not presented after operation. Endovascular repair is a comparable alternative method to open repair in the treatment for thoracic aortic disease. Endovascular repair seems to be associated with low mortality and morbidity rate and short hospital stay when compared with open repair. Unlikely, the high cost of the technique, high potential of secondary attempt and the inadequate reports about the long term results are the disadvantages of endovascular repair.

**Keywords:** Endovascular repair, thoracic aortic disease, open repair.

**Responsibility of Medical Physicist: Tests Control Quality Routine in Device Imaging  
Resonance Magnetic Siemens Tesla 1.5**

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In this study; It is aimed to compare the performance of magnetic resonance imaging (MRI) device, image quality, patient safety and quality control tests performed by the medical physicist described in American College of Radiology (ACR). Quality control tests, were performed on December 21, 2016 together with the authorized service engineer of the Siemens medical device company. 1.5 Tesla Siemens MRI device in the OMU Medical Faculty Hospital Radiology Clinic and phantom compatible with this device were used. Resulting phantom images and graphics of the quality control tests were obtained. By evaluating the obtained phantom images and graphics, no problems and image artefacts were observed in the related MRI device.

**Keywords:** Magnetic Resonance Imaging, Quality Control

**A Comparative Study on The Effect of Zinc Oxide Nanoparticles on Germination Characteristics of Seedlings and Some Morphological Features of Two Cultivars; Iranian Parsley *Petroselinum sativum* and Turkish Parsley *Petroselinum crispum***

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Parsley consists of three major varieties such as common Parsley with curly leaves (*Petroselinum hortense*), flat leaf Parsley (*Petroselinum neapolitanum*), and fern leaves Parsley with tuberous root (*Petroselinum tuberosum*). Iranian Parsley is the common variety; *Petroselinum sativum var.hortense*; has been less investigated under the stress by scientist. Therefore Auxin is a kind of growth hormone for plant growth, the Zinc Oxide Nano particle that synthesizes the Tryptophan Amino Acid while being a precursor to Auxin production, is considered as a stress factor. So Seeds of curled leaves (*Petroselinum crispum* Line. Var.hortens) and (*Petroselinum sativum Hoffm. Var.hortens*) are selected as Turkish and Persian Parsley alternatively. The statistical population for each *P.sativum* and *P.crispum* species was selected 100 seeds. The Seeds of the plant were treated under treatment 0 (as control group), 3mM, 6mM and 12mM of ZnO Nano Particle in two repeats for each species. By using this numerical data daily from plates under different concentrations of ZnO (n), comparative study was carried out on SPSS statistical graphs. The test results showed that treatments in 3mM and 6mM, significant positive difference in the percentage of germination than control in the rate of germination of seeds treated, compared to control was observed such as highest rate of seed germination, also the morphological difference in treated seedlings has seen include of longer root and faster growing up than control, the lamina of their leaves were more extended, while the treatments in 12mM showed the no significant negative difference compared of the other treatments in 3mM and 6mM and control. These negative difference consist low rate of treatments germination, short roots than control and sometimes it looked like the adventitious roots, also in the treated seedlings in 12mM, the leaves lamina was smaller than control. These treated seedlings in 12mM were not able to exist more than two to three days and their leaves were going to weaken, necrosis and finally leaded to cut down. According to these results the optimum concentration of ZnO (n) has seen 0mM to 6mM. In this rank of ZnO (n) concentration, it can act as growth hormone for plants so the seedlings have been growing up in optimum rate and situation.

**Keywords:** Zinc Nanoparticle, Auxin, Growth hormone, *Petroselinum crispum*, *Petroselinum sativum*, Parsley

**Antioxidant and Antimicrobial Capacity of *Ganoderma lucidum***

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In this study, it was aimed to determine the total antioxidant level (TAS), total oxidant level (TOS), oxidative stress status (OSI) and antimicrobial activity of *Ganoderma lucidum* (Curtis) P. Karst. mushroom which is a medical fungus. In this context, mushroom samples collected as a result of field studies were dried and pulverized. Extraction was then carried out with methanol and dichloromethane in soxhlet apparatus. TAS, TOS and OSI values were determined by using Rel Assay Kits. Antimicrobial activity was determined on 9 different bacteria and fungi (*Staphylococcus aureus*, *S. aureus* MRSA, *Enterococcus faecalis*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Acinetobacter baumannii*, *Candida albicans*, *Candida krusei* and *Candida glabrata*) using modified agar dilution method. As a result of the studies performed, the value of TAS was  $5.509 \pm 0.198$  mmol/L, TOS value was  $10.177 \pm 0.116$   $\mu$ mol/L and OSI value was  $0.185 \pm 0.008$ . Methanol extracts of mushrooms were found to be effective in test microorganisms at concentrations of 50-200  $\mu$ g/mL. In addition, DCM extracts were effective on test microorganisms at concentrations of 100-200  $\mu$ g/mL. As a result of the studies, the antioxidant potential of *G. lucidum* was found to be high. Antimicrobial activity was also found to be normal. In this context, *G. lucidum* may be a natural source of antioxidant and antimicrobial sources.

**Keywords:** *Ganoderma lucidum*, Medicinal Mushroom, Antioxidant, Antimicrobial, Oxidative stress



## Probiotic Strains and Oxidative Stress Markers in Rats

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The gastrointestinal tract is a multifaceted ecosystem host to an assorted and highly evolved microbial community comprised of different microbial species. The interactions that occur between this multifarious microbial community and the host have become the focus of scientific research due to involvement of deficient or compromised microflora in the increased occurrence of illnesses. Probiotics are composite of these live microbial preparations which can be used as supplementation to boost or alter the gut microbial ecology. However the viability and adaptation of these supplemented microbial population is of great concern. Current Project is designed to investigate the efficacy of locally prevailing microbial species (LP group) compared with the commercially available probiotic supplements (IP group) which are imported in nature. The significance was tested regarding the oxidative stress markers, liver enzymes, cholesterol profile and hormonal dynamics in albino wistar rats model. Total oxidant status decreased significantly ( $P \leq 0.05$ ) in the LP group as compared to IP and Control (Cont). The TAC was improved ( $P \leq 0.05$ ) in LP as compared to the IP group. Liver enzymes AST, ALT and total cholesterol decreased ( $P \leq 0.05$ ) in LP group as compared to IP. Growth and luteinizing hormone decreased ( $P \leq 0.05$ ) in IP as compared to LP. The use of local probiotic strains shows promising results over imported strains in the reduction of oxidative stress, liver enzymes and cholesterol profile.

**Keywords:** Probiotics; Oxidative Stress; Hormones; Cholesterol

## The Effects of Trans-Cinnamaldehyde on Ischemia Reperfusion Injury

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Ischemia-reperfusion (I-R) injury is a serious problem during various medical and surgical interventions such as thrombolytic therapy, organ transplantation, coronary angioplasty, cardiopulmonary bypass and compartment syndrome. Studies have reported that skeletal muscle function is impaired due to lower extremity I-R injury. In this study, we investigated the protective effects of trans-cinnamaldehyde (TCA) on the impairment that may occur in EDL muscle after I-R injury. Twenty-four rats were used in our study. The experiments were carried out in 3 groups (1. Control group, 2. I-R+SF group, 3. I-R+TCA group) as 8 rats in each group. 24 hours before ischemia, 3 times in 8 hours orally, rats in group 2 were given saline solution and rats in group 3 were given TCA solution. At the end of 24 hours, rats in the 2nd and 3rd groups were given reperfusion for 5 hours after the ischemia for 3 hours with the tourniquet method. Then, the mechanical and electrical activity of EDL muscles in all groups were measured. In addition, malondialdehyde and myeloperoxidase levels and catalase activity were detected in serum and muscle tissue, and the ultrastructural changes of EDL structure and laminin levels of extracellular matrix protein were evaluated. Analysis of the electrobiophysical recordings made showed that after I-R, electrical and mechanical activity and laminin levels decreased significantly, TCA has treated the deteriorations from the I-R conclusion. It was concluded that severe impairment of muscle function in I-R treated rats, which may be due to increase of free radical and neutrophil and decreased amount of laminin, TCA, which is used for therapeutic purposes, is thought to have a protective effect on muscle fibers with antioxidant, antiinflammatory and neuprotective effects.

**Keywords:** Ischemia-reperfusion, EDL muscle, Trans-cinnamaldehyde, Laminin, Rat.

## Investigation of the Matrix Metalloproteinase-3 (5a/6a) Gene Polymorphism the Effect in Ischemic Stroke Development

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Ischemic stroke is a disease that characterized by cell damage a consequence of cerebral blood flow inhibition. Matrix metalloproteinases (MMPs) are one of the important members of the zinc binding endopeptidase family. Polymorphisms occurring in the MMP gene are thought to be important risk factors for the development of ischemic stroke. MMP-3 (Stromelysin-1) is a 51 kilodalton protein produced by various cell types including fibroblasts, smooth muscle cells and macrophages. MMP-3 gene polymorphisms occur in both promoter and coding regions and are associated with ischemic stroke. It has been found that the 5A/6A polymorphism in the promoter region of the MMP-3 gene regulates MMP-3 transcription. It has been also determined that the 5A allele of 5A/6A gene polymorphism of the MMP-3 enhances MMP-3 transcriptional activity. Therefore, the purpose of this study is to investigate the role of MMP-3 (5A/6A) gene polymorphism in the development of ischemic stroke. Our study consisted of 52 patients with ischemic stroke and 54 healthy controls. Isolation of DNA of patient and control groups was performed using DNA isolation kit. The purity and quality of the isolated DNAs were measured by the Nanodrop spectrophotometer. Polymerase Chain Reaction (PCR) and Restriction Fragment Length Polymorphism (RFLP) methods were used to determine genotype distributions of MMP-3 (5A/6A) gene polymorphism. When the genotype distributions of MMP-3 (5A/6A) gene polymorphism were compared between patient and control groups, no statistically significant difference was determined. MMP-3 (5A/6A) gene polymorphism was found to have no genetic effect on the development of ischemic stroke.

**Keywords:** Ischemic stroke, MMP-3 (5A/6A) gene polymorphism, PCR, RFLP

**Assignment of the Effect of Plasminogen Activator Inhibitor-1 Gene Polymorphism on Ischemic Stroke Disease**

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It is known that environmental and genetic factors are effective in the pathogenesis of ischemic stroke. One of the key genes involved in the development of ischemic stroke is the plasminogen activator-inhibitor-1 (PAI-1) gene. Many polymorphisms have been described in this gene. One of these polymorphisms is the 4/5 guanosine (4G/5G) polymorphism occurring in the PAI-1 promoter region. PAI-1 levels are affected by this polymorphism. Both 4G and 5G alleles have the same binding domain for transcription activity, which causes the transcription rate to decrease, thus causing concurrent PAI-1 activity. In variety of studies, thus, individuals carrying homozygous 4G/4G have the highest PAI-1 activity, whereas individuals with 5G/5G homozygotes have the lowest PAI-1 activity. It is thought that there is a relationship between increase of ischemic stroke disease and PAI-1 (4G/5G) gene polymorphism. Therefore, in our study, we aimed to investigate the effect of PAI-1 (4G/5G) gene polymorphism on ischemic stroke disease. Our study was performed with 59 ischemic stroke patients and 63 healthy controls. DNA isolation was carried out from peripheral bloods containing ethylenediaminetetraacetic acid (EDTA) of patients and control groups. Nanodrop spectrophotometer was used to measure the purity and quality of the isolated DNA. PAI-1 (4G/5G) gene polymorphism was detected by Polymerase Chain Reaction (PCR) and Restriction Fragment Length Polymorphism (RFLP) methods. There was no significant difference in PAI-1 (4G/5G) gene polymorphism genotype distributions between patients and control groups. PAI-1 (4G/5G) gene polymorphism was found to have no significant effect on ischemic stroke disease.

**Keywords:** Ischemic stroke, PAI-1 (4G/5G) gene polymorphism, PCR, RFLP

**Effects of Paclitaxel on Lipid Peroxidation and Antioxidant Enzymes in Tissues of Mice Bearing Ehrlich Solid Tumor**

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Several chemotherapeutic drugs have been studied for anticancer activity. Paclitaxel is one of the chemotherapeutic drugs of high medicinal interest. This study was performed to investigate effects of paclitaxel on lipid peroxidation and antioxidant enzymes in tissues of mice bearing Ehrlich solid tumor. In this study, 36 Balb/C male mice aged 8-10 weeks were used. Six mice were kept as cancer stock to produce Ehrlich ascites tumor (EAT) cells. Thirty mice were distributed to three groups as healthy control, tumor control and paclitaxel treatment. The animals in tumor control and Paclitaxel treatment groups received  $1 \times 10^6$  EAT cells via s.c. route through nape skin on the first day of the experiment. After EAT cells application, 10 mg/kg Paclitaxel injected via intraperitoneal route on days 4, 9 and 14. At the end of the study animals were sacrificed. The liver, kidney, brain and testis tissues were collected and analyzed for malondialdehyde (MDA) by TBARS method, superoxide dismutase (SOD) and catalase (CAT) activities spectrophotometrically. Paclitaxel treatment significantly reduced the increased MDA levels in kidney and liver. Paclitaxel had no effect on testis MDA but brain MDA level reduced. Paclitaxel returned the brain MDA level close to the level of healthy control. EAT cell injection reduced CAT activity in kidney and liver and Paclitaxel had no effect on CAT activities in these tissues. In EAT cell injected mice; testis and brain CAT activities were higher than healthy controls by Paclitaxel treatment. Paclitaxel had no significant effect on decreased kidney and liver SOD activities whereas significantly reduced the increased SOD activities in testis and in brain. Paclitaxel alleviated the lipid peroxidation in kidney and liver but had no effects on antioxidant status in these tissues of Ehrlich solid tumor-bearing mice.

**Keywords:** Paclitaxel, Ehrlich solid tumor, lipid peroxidation

## An Unsupervised Clustering Based Feature Evaluation Approach for Breast Cancer Identification

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Identification of breast tumors from fine needle aspiration (FNAs) samples would require skill and experience. Accordingly, automated supporting systems that programmed to help physicians to classify malignancy would increase the efficiency of the examinations. Extraction of most distinctive and compatible features would be one of the most crucial stages of any automated system. In this study, it was aimed to examine shape and texture based salient features for identification of malignancy. A total of 569 sample images from Wisconsin Diagnostic Breast Cancer (WDBC) dataset are examined in the study. All subsets of a feature space consist of 11 features are evaluated. Two well known unsupervised clustering methods (Fuzzy C-Means and K-Means) are utilized for evaluation stage. Each subset is divided into 2 clusters namely malignant and benign. Classification ability of each clustering method is accepted as performance for each subset. Objective evaluation of performance is achieved via F-Score. Both of the methods classified all subsets up to 85% F-Score. Additionally, Fuzzy C-means functions with better accuracy however K-means classified all of the subsets faster. It should be noted that most successfully classified feature subsets by both methods include radius and mean texture features. Results showed that unsupervised clustering approach would be efficient for feature selection as well as identification of malignancy for breast cancer. Also it should be noted that K-means would be a faster classifier while Fuzzy C-Means method performs with better accuracy. Also radius and texture of the cell images would be a distinctive feature for a possible automated unsupervised classifier.

**Keywords:** Breast Cancer, Classification, Cluster, Feature Selection

**Genetic Variations in *Nrf2-Keap1* Complex: A Step towards Understanding Cancer Resistance in Blind Mole Rat *Nannospalax* Subspecies**

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The blind subterranean mole rats (Spalacidae, Rodentia) are model organisms for hypoxia tolerance, cancer resistance and longevity. Nuclear factor erythroid 2 like 2 (NRF2) is a transcription factor which regulates transcription of multiple genes that are involved in tumorigenesis and is negatively regulated by Kelch-like ECG-associated protein 1 (KEAP1). This study aims to investigate genetic variations in Keap1-Nrf2 complex due to their importance in cancer pathogenesis, in different chromosomal forms of blind mole rats to understand their cancer resistance. A total of 21 wild-type specimens of chromosomal forms in the genus *Nannospalax* were obtained from different regions in Turkey. Total genomic DNA was isolated from their frozen muscle tissues. The promoters and coding regions of Nrf2 and Keap1 genes were amplified by PCR and sequenced. Data were analyzed using Data Collection Software and Chromas in comparison to reference Keap1 and Nrf2 sequences from Ensemble genome browser. Comparison between the reference Upper Galilee mountains blind mole rat genome (*S. galili\_v1.0*, GenBank Acc:103751782) and our sequencing results identified 10 genetic variants for Keap1 gene for the first time (Table 1). Interestingly, we detected a missense mutation (p.Tyr212Cys) located within the highly conserved Keap1 IVR domain in all specimens tested when compared with the reference human genome GRCh38.p12. Within our sample group, no genetic variations are detected in the evolutionarily conserved Nhe2 domain, ETGE or DLG motifs that help regulate Nrf2 stability. Nevertheless, sequencing results identified 9 novel genetic alterations in the 5'UTR region of Nrf2, which are reported for the first time in this study. Nrf2/ Keap1 complex regulates the expression of various target genes, including oxidative and electrophilic stress-related genes. The mutations we identified in Turkish mole rats' Keap1 gene could explain its evolutionary adaptation to survive in underground hypoxia environment.

**Keywords:** Nrf2, Keap1, genetic variations, cancer resistance, blind mole rat, *Nannospalax*

**Antimicrobial Effect of Different Types of Honey Samples Collected from Düzce City on *Staphylococcus Aureus***

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Honey is a widely appreciated food in traditional and complementary medicine. Especially, raw honey has intense medicinal use considering their antimicrobial activities since ancient times. Therefore, it has received attention as an important therapeutic way against strains of bacteria. This study aims to compare the effects of different types of raw honey against *Staphylococcus aureus*. 24 honey samples were collected from Düzce city. *Staphylococcus aureus* (MSSA), *S. aureus* (MRSA) strains were grown from cultures stored at  $-80^{\circ}\text{C}$  on Mueller–Hinton broth. Anti-microbial effects of honey samples were compared with the antibiotics (including penisilin, sefoksitin, eritromisin, klindamisin, etc.). Each well was put in with 50  $\mu\text{L}$  of the honey, the plates were incubated at  $37^{\circ}\text{C}$  for 24 h. Flower honeys, were evaluated for their anti-bactericidal activities against to methicillin resistant and sensitive *Staphylococcus aureus*. The inhibitory effect of honey on bacterial growth was evident at concentrations of 50% and 100% (v/v). The efficacy of different types of honey against MSSA and MRSA were dependent on honey type and the concentration at which it was administered. The results of *in vitro* studies showed that raw honey have varying degree of antibacterial activity against Gram-positive bacteria as well as Penisilin, eritromisin, vankomisin, teikoplanin. These activities might be occurred by the pH and osmotic effects, also the sensitivity of these organisms to hydrogen peroxide that are unsuitable for bacterial growth.

**Keywords:** row honey, Antimicrobial property, Methicillin resistant *Staphylococcus aureus* (MRSA), Düzce

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## In Silico Analysis on HypoxamiRs as Potential Biomarkers for Early Diagnosis of Myocardial Infarction

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Deadliest human diseases including cancer and cardiovascular diseases (CVD) are associated with various levels of hypoxia. The mortality is very high after myocardial infarction (MI) among CVD, especially in the absence of any treatment. MI, necrosis of the myocardium, caused by an obstruction of the blood supply to the heart leads to serious damage to the affected part of the heart by the absence of the prompt treatment. The role of hypoxia in the pathogenesis of cardiac processes has shown by its regulatory mechanism known as hypoxia inducible factor signalling pathway (HIF). Various miRNAs, recently called hypoxamiRs, are linked to the genes of this pathway. In this study, the role of hypoxamiRs was investigated and their potential interactions with certain genes in HIF signaling pathway were analyzed by using *in silico* analysis including multiple sequence alignment and phylogenetic analysis. In the literature, expression levels of mir-1, mir-499 and mir-208 were found to be important for the early diagnosis of MI in some other pathways but our analysis did not reveal any interactions between these microRNAs and HIF signalling pathway. However, some other microRNAs were found to be related to HIF signalling pathway. Our analysis propose that certain miRNAs and their related genes' expression levels may have a critical role for the early diagnosis of MI. Further *in vitro* studies are necessary to confirm these interactions between the proposed hypoxamiRs and HIF signalling pathway in order to use these molecules as biomarkers in the early diagnosis of MI.

**Keywords:** MicroRNA, Myocardial Infarction, Biomarker, In Silico Analysis, Hypoxia Inducible Factor

## Use of Mushrooms and Lichens in Alternative Medicine

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Synthetic drugs used by humans can cause negative effects such as toxic and mutagenic effects. Due to these negative effects, the use of natural products instead of synthetic drugs is more preferred to create a healthy life and a good defense system. Since ancient times, people have consumed many plants, mushrooms and lichen species from their natural habitat. In addition to their nutritional properties, these natural materials contain many different biologically active compounds. Mushrooms and lichens, which are rich in organic and inorganic substances, are natural sources with different impact spectrum. As a result of metabolic and physiological processes, the secondary metabolites produced continuously in their bodies form different biological activities for the organisms they are synthesized as well as for other living groups consuming these natural materials. Mushrooms and lichens form a good defense mechanism for their organisms with the secondary metabolites they synthesize. In addition, the organisms consuming these natural materials have a high potential in their defense mechanism and in their use as a foodstuff with their nutritional value. About 97.000 species have been named so far as cosmopolitan fungi and this number is increasing. In addition, it is stated that the number of lichen species known in the world is around 20.000. In this study, the use of fungi and lichens in alternative medicine is emphasized. The importance of potential impacts and alternative food and medicinal natural resources have been emphasized.

**Keywords:** Alternative medicine, Medicinal mushroom, Medicinal Lichens

## Effects of Different Exercise Loads on the Thyroid Hormone Levels and Serum Lipid Profile in Swimmers

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The aim of this study was to investigate the effects of different exercise loads (short, medium, and long swimming distances) on the thyroid hormone levels and serum lipid profile of male professional swimmers. The participants in this study were 20 healthy male professional swimmers aged 18–22 years, who all competed at an elite level. The thyroid hormone levels (TSH, T3, and T4) and serum lipid profile were also obtained. It was determined that the TSH, T3, and T4 values all increased after exercise ( $P<0.001$ ). When compared to the pretest values, the increase in the TSH, T3, and T4 values following the L400 tests was statistically significant ( $P<0.001$ ). It was also determined that the changes in the cholesterol, HDL, and TG values were significant after exercise ( $P<0.001$ ). There was no significant difference between the groups in terms of the LDL values ( $P=0.07$ ). According to the results, the cholesterol counts for the M200 and L400 groups were lower than the pretest counts ( $P<0.001$ ). When compared to the pretest values, the decrease in the HDL counts for the M200 and L400 groups was higher than the pretest HDL counts ( $P<0.001$  and  $P<0.05$ , respectively). Further, the triglycerides counts for the M200 and L400 groups were higher than the pretest counts ( $P<0.001$ ). Different exercise loads can have a positive impact on the physical health of swimmers via their lipid profiles and thyroid hormones. Additionally, swimming exercise could be considered an efficient protective strategy against metabolic disorders, since it serves to balance the serum lipid levels.

**Keywords:** Exercise, lipid metabolism, swimming, thyroid hormones

## Changes in the Serum of Individuals Exposed to Low Frequency Electromagnetic Fields for A Long Time

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Electric and magnetic field exposures that we are exposed to constantly at home and in our workplaces cause concern. Especially, a large part of the society interacts with the hair dryer continuously, especially in the hairdressers' centers, and it is not yet known what level this effect is. Purpose of our study is to research the effect of the electromagnetic fields generated by the hair dryer device on the hormone, biochemical and blood values of the male workers working in the hairdressing saloons. Eight male workers were included in the study, with exclusion factors being applied, with two equal groupings as control (n: 8) and test group (n: 8). All groups included in the study were surveyed and taken first. Then the blood of the workers working in the hairdressing centers and the control group not exposed to these effects was taken. In the study, biochemistry, hormones and whole blood levels of sera were analyzed by means of full automatic analyzers. When all biochemistry and hormone parameters were examined, no significant difference was found between control and experiment group ( $p>0.05$ ). When whole blood values were examined, red blood cell was high significantly ( $p<0.01$ ) and hemoglobin and hematocrit were significant ( $p<0.05$ ) and other parameters were not found significant ( $p>0.05$ ). The results suggest that very low frequency electromagnetic fields over a long period of time may affect men working in hairdressers on hormone, biochemistry and whole blood parameters.

**Keywords:** Male worker, hair dryer, electromagnetic field, hormone, biochemistry, whole blood

**Effect of Long Term Treadmill Exercise Hippocampal Learning Genes and Neurogenesis in Social Isolated Rats**

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The mechanisms underlying suppression in hippocampal cell proliferation and neurogenesis as a consequence of prolonged social isolation stress are poorly understood. Despite the positive effects of exercise on numerous studies, the relationship is not clear between hippocampal genes. Therefore we aimed to investigate the effects of prolonged treadmill exercise on long term learning, and hippocampal gene expression, which involves in learning and plasticity. Male Wistar rats (n=32) randomly assigned into four groups: control (C), social isolation (SI), exercised (E), social isolation+exercise (SE) during postnatal days (PNDs) 21-34. Social isolation protocol was applied during 14 days by placing rat in a cage one by one. Rats were exercised daily, 5 days per week, for overall 4 weeks. Exercise duration was 20 min in the first week followed by 30, 50, 60 min in the consecutive weeks. Finally, the rats were decapitated to isolate hippocampus tissues for learning related gene expression namely Cdk5, Cdk5r, Arc, C-fos, Dcx, BDNF by RT-PCR. The Cdk5 gene expression increasing in E group compare to SE group ( $p<0.05$ ). The Ascl gene expression increased in E group compare to SE group ( $p<0.05$ ). The Dcx gene expression increasing in C compare to SI and SE groups ( $p<0.05$ ). But we did not find any significant differences in BDNF, cdk5r, Arc and c-Fos gene level. Taken together these findings may point out that long-term social isolation down regulated learning-related genes.

**Acknowledgment:** The study was supported by Amasya University (Research Found No: FMP BAP 15-016).

**Keywords:** Social isolation, stress, exercise, learning, neurogenesis

## The Localization of Androgen and Estrogen ( $\alpha$ and $\beta$ ) Receptors in Rat Testis

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Sex steroids stimulate the development of the embryonic reproductive system; masculinize or defeminize the brain at birth; control development of secondary sexual characteristics; control synthesis of protein in muscle, bone and skin; and govern reproduction and reproductive behavior in the adult. Until recently it has been known that estrogen is femininity hormone and testosterone is masculinity hormone. Nowadays, it is proven that estrogens have crucial roles in male reproductive system. Androgens and estrogen are generate their effects via binding-activated nuclear receptors, which are members of the steroid / thyroid hormone receptor superfamily. The aim of this study investigated immunohistochemical distribution of androgen receptor (AR), estrogen receptor alpha (ER $\alpha$  and estrogen receptor beta (Er $\beta$ ) in rat testis. In the present study 6 male animals were used. After anesthesia, the testes were quickly removed from the body and fixed in 10% buffered neutral formalin, and embedded in paraffin. Sections were stained after microwave antigen retrieval for immunohistochemistry. AR immunostaining was detected in the nuclei of peritubular myoid cells, pericytes, Sertoli cells and Leydig cells but not in germ cells. Positive ER $\alpha$  staining was observed in the nucleus of spermatogonia and in developing acrosomal region of round spermatid. Also it was observed in the cytoplasm of Leydig cells. Er $\beta$  immunoreaction was dedected in nuclei of spermatogonium, round spermatid and elongated spermatid. In this study, AR positive staining was observed in testicular somatik cells. These results are consistent with the interpretation that androgen regulation of spermatogenesis occurs solely via somatic cells. In addition, the presence of ER $\alpha$  and Er $\beta$  in testicular tissue suggests that estrogen plays an important role in spermatogenesis and male fertility.

**Keywords:** Androgen receptor, estrogen receptor ( $\alpha$  and  $\beta$ ), immunohistochemistry, testis, rat

## Antioxidant Pigments and Their Micro-Encapsulation

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Plant pigments with high antioxidant activities have free radical scavenging actions. Various novel products were developed by studying antioxidant activities in vegetables. For a long time, the consumption of fresh and processed vegetables were known for protecting the human body from various critical diseases such as diabetes, brain and heart diseases, cancer and also, neurodegenerative diseases. Currently, it is believed that the protective properties of these foods resultant of low-molecular antioxidants found in these vegetables which protect the human organ cells and their structures from oxidative damage. A new technology known as micro-encapsulation is carried out for protecting these antioxidants against degradation, controlling their release, as well as masking their taste and flavor. Microencapsulation is a process in which active ingredients are enclosed by various small coated materials. The success of this technology depends upon the correct source of wall and core materials. Therefore, in this review specific microencapsulation techniques will be explained for encapsulation of well-known antioxidant pigments.

**Keywords:** Anthocyanin, industrial vegetable, fruit, microencapsulation techniques.

**The Effects of 900-Mhz Electromagnetic Field Applied Throughout Early and Mid-Adolescence on Liver Morphology and Oxidative Stress Biomarkers in Late Adolescent Male Rats**

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The aim of this study was to investigate the effects of 900 megahertz (MHz) electromagnetic (EMF) field on liver during adolescent period using histopathological and biochemical analysis methods. Twenty-four male Sprague Dawley rats aged 21 days were randomly and equally divided into control, sham and EMF groups. The EMF group rats were exposed to 900 MHz during early and mid adolescence in EMF-cage. The sham group rats were placed in the EMF-cage without exposure to EMF. No procedure was performed in control group. At the end of the experiments, all animals' liver were removed in late adolescent. The right livers was used for histopathological evaluation and the biochemical analyses. The EMG male rat biochemical analyses results showed that glutathione (GSH) and malondialdehyde (LPO) values increased, while superoxide dismutase (SOD) and catalase (CAT) values levels decreased. Examinations under transmission electron microscope revealed that EMF group sections exhibited necrotic hepatocytes with many cytoplasmatic and mitochondrial vacuoles. In addition we observed enlarged endoplasmic reticulum and loss of mitochondrial matrix together vacuoles being observed. Inner and outer mitochondrial membrane integrity is lost monitored. Light microscopy, EMF group showed sinusoidal capiller dilatation and degeneration in hepatocytes with cytoplasm swelling, vacuolar degeneration and pyknotic nuclei. Additionally, there was a deterioration in the integrity of the collagen fibers around the vena centralis. As a result, changes may occur in morphology and oxidative stress biomarkers in the adolescent rat liver after continuous 900-MHz EMF treatment.

**Keywords:** Adolescence, electromagnetic field, electron microscopy, oxidative stress, liver, male rat



## Protein Secondary Structure Analysis with ATR-FTIR

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Protein structure is vital to many physiological processes and secondary structure of proteins is of clinical importance. Protein secondary structure can be estimated by computational methods and experimental techniques. In relation, this work is about determination of protein secondary structure with Fourier Transform Infrared (FTIR) spectroscopy. FTIR relies on absorbance of infrared energy by molecular bond vibrations. It is a rather affordable technique and advantageous, considering high information content of the data it provides. Proteins that we measured were either bovine serum albumin (BSA) alone or basic fibroblast growth factor and BSA mixture in lyophilized forms. Curve-fit analysis of 1600-1700  $\text{cm}^{-1}$  absorbance region of the attenuated total reflectance (ATR-)FTIR spectrum of the proteins was performed first. Curve-fit is a mathematical procedure to resolve overlapping curves underlying a broad spectral band. Underlying curve-volumes provide information on protein secondary structure content. We later implemented a modified version of an alternative secondary structure analysis method (Goormaghtigh et al. 2006. Biophys J 90:2946). There were differences in results, likely due to the initial parameter optimization step of the curve-fit procedure that we followed. In conclusion, obtaining high quality spectral data with proper sampling procedures and selection and optimization of the curve-fit parameters are crucial for the success of curve-fit analysis with FTIR data. Alternative methods that are less dependent on initial parameter selection can be utilized. Yet, obtaining high quality spectral data with proper sampling procedures would still be essential. Applying alternative approaches is suggested, considering that different methods should eventually converge to the same results under optimal conditions in case that the methods are valid. Eventually, protein secondary structure analysis with protein FTIR data is promising and attractive for simplicity, low sample requirement, and enabling different sampling modalities.

**Keywords:** Methodology, spectroscopy, spectrum analysis.

## Early Results of Carotid Endarterectomy with Patch Angioplasty

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In this study, patients undergoing carotid endarterectomy (CEA) with patch angioplasty for carotid artery disease were retrospectively evaluated and early results were presented. In our clinic, 23 (15 males, 8 female; mean age:  $62,7 \pm 9,16$ , range 46-87) patients who performed CEA for carotid artery disease between November 2013 and May 2017 were enrolled in the study. The files of patients were reviewed retrospectively. All procedures were carried out under general anesthesia. Presurgical informed consent was obtained from all patients. After CEA, arteriotomies were closed by patch angioplasty. Patch angioplasty was performed using dacron patch (in 12 patients) or bovine pericardial patch (in 11 patients). Right sided CEA was performed in 7 cases (30,5%) while left sided CEA was performed in 16 cases (69,5%). In all patients, 12 (52,1%) patients were asymptomatic and 11(47,9%) patients were symptomatic. Coronary bypass grafting was performed simultaneously in 6 patients. One patient (4%) died due to postoperative stroke. Neck hematomas, infection, restenosis were not presented after operation. Carotid artery stenosis is one of the most important causes of ischemic stroke. Numerous studies have shown that carotid endarterectomy reduces the risk of stroke and death in patients with both symptomatic and asymptomatic lesions. Patch angioplasty is commonly performed after carotid endarterectomy. Our study results have shown that the closure of arteriotomy with patch angioplasty after CEA is a safe method in terms of early results.

**Keywords:** Carotid endarterectomy; patch angioplasty; early results

## Monte Carlo Simulation of Sentinel Lymph Node SPECT/CT

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Although single-photon emission computed tomography/computed tomography (SPECT/CT) systems have been in use to enhance the detection of sentinel lymph nodes (SLNs) with lymphoscintigraphy, recently no study has focused on SPECT/CT imaging of SLN detection in breast cancer examinations using SPECT simulations. The purpose of this study was to carry out SLN detectability measurement with a SPECT Monte Carlo simulation for the first time. SIMIND Monte Carlo simulation program was used to model The Symbia T6; Siemens, Erlangen, Germany SPECT/CT system equipped with Low Energy High Resolution (LEHR) collimator. In order to simulate SPECT imaging of a realistic patient with breast cancer, a voxel-based anthropomorphic phantom (ZUBAL torso + head phantom) was constructed. SPECT images were taken with 60 equally spaced projection angles in a 360° stepwise rotation and a time per projection of 20s in a 128 x 128 data matrix having a pixel size and slice thickness as 0.4cm. 12 iterations with 15 subsets and attenuation correction were performed with CASTOR software. Quality of reconstructed image was evaluated by SLN's contrast with respect to background. Initial simulated and reconstructed SPECT images were obtained. SLN's contrast was found 0.4. The results are in agreement with the literature. The method presented in this study will enable optimization of acquisition and processing parameters of SLN SPECT imaging such as different gamma camera, collimator settings, patient dimensions and reconstruction correction methods (attenuation, scatter) in breast cancer examinations realistically, and accurately at a lower cost than phantom or patient studies.

**Keywords:** SPECT -Computer simulation -Sentinel lymph node -Breast cancer

## Essential Oils: Potential Applications in Ruminant Production

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Essential oils (EO) are volatile aromatic compounds extracted from whole plants, are secondary metabolites usually made up of terpenoids and phenylpropanoids. Since the middle ages, essential oils have been widely used for bactericidal, virucidal, fungicidal, antiparasitical, insecticidal, medical and cosmetics applications, especially now a day, in pharmaceutical, sanitary, agriculture and food industries. Different type of EOs from a wide range of herbs and spices have been identified to have the potential for rumen manipulations and enhancing animal productivity as alternatives to chemical feed additives. Essential oils as natural feed additives to enhance fiber digestion, reduce methane production, increase microbial protein synthesis and improve microbial activity. They help to maintain microflora balance, inhibit gut pathogens and reduce shedding of foodborne bacteria. They are being used to treat gut disorder and diseases. A major concern of this review is to summarize the role of ES as a substitution of antibiotic growth promoters, the effect on rumen digestion and improving animal performances. Antibiotics have been completely banned as feed additives in European Union since 2006 because they are suspected of contributing substantially to increasing resistance among human pathogens. The uses of essential oils in the livestock industry possess a risk for their use as a replacement of antibiotic growth promoters. Essential oils are replacing antibiotics for the preservation of foods as well. In this context, we will elaborate different effects of EO on rumen with major concern to antimicrobial activity. This study will also pinpoint the paucity of knowledge and research gaps regarding essential oils from a future perspective.

**Keywords:** Antibiotic resistance, animal health, food preservation, growth promoters.

### Bio-Active Plant Extracts in Poultry Production

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Different parts of the plant are producing essential oils that are volatile or ethereal oils which are aromatic having liquid texture. These compounds are being used for many purposes in poultry production. They enhance digestion, stops diarrhea, constipation & food poisoning. It increases abdominal contractions and decreases abdominal microorganisms. They reduce the foodborne pathogens. From past to present antibiotic growth promoters have got resistance against pathogenic bacteria. Due to the potential ability of bacteria to develop resistant strains resulting from antibiotic feed additives; consumers' pressure has resulted in the development of non-antibiotic feed-additives that may improve broiler strength. Essential oils (Eos) have the potential to replace the antibiotic growth promoters in poultry production. Antimicrobial resistance is an alarming situation not for a country but whole world for humans as well as animals. Components of essential oils (EOs) have been recognized as an effective antibacterial agent against *Listeria monocytogenes*, *Salmonella typhimurium*, *Escherichia coli* O157:H7, *Shigella dysenteria*, *Bacillus cereus*, and *Staphylococcus aureus*. A higher concentration is needed to achieve the same effects in food. This study highlights the use of essential oils as antimicrobial agents and different effects on the digestive system of poultry.

**Keywords:** Microbial resistance, foodborne pathogens, poultry problems, antibiotics.

**Wound Healing Properties of *Salvia euphratica* var. *euphratica* Extracts on Excisional and Incisional Wound Models in Diabetic Rats**

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The aim of this study was to indicate the effects of ointment prepared with *Salvia euphratica* var. *euphratica*, an endemic plant from Turkey, on diabetic wounds. Male Wistar albino rats were used in this study (n:60), divided into 5 groups. A single dose of 45 mg/dl streptozotocin was given to rats (i.p.) to introduce diabetes. Excisional and incisional wounds were created under anesthesia. Ethanol extracts of 0.5% and 1% of *S. euphratica* var. *euphratica* were added respectively in mixtures to prepare the simple ointment and were topically applied to wounds. Tissues were evaluated with macroscopic, histopathological and biochemical analysis. Wound healing ratios of 0.5% *S. euphratica* var. *euphratica* group ( $63.4 \pm 7.7$  &  $98.9 \pm 1.5$ ) and 1% *S. euphratica* var. *euphratica* group ( $63.6 \pm 12.8$  &  $99.7 \pm 0.6$ ) were statistically significant ( $P < 0.01$ ) compared to diabetic control group ( $36.2 \pm 24.7$  &  $73.2 \pm 20.8$ ) in excisional skin wounds on the 7th and 14th days. Also healing ratios in incisional skin wounds of 0.5% ( $72.0 \pm 8.6$  &  $96.9 \pm 3.0$ ) and 1% *S. euphratica* var. *euphratica* groups ( $77.5 \pm 17.5$  &  $99.2 \pm 1.2$ ) were statistically significant ( $P < 0.01$ ) compared to diabetic control group ( $29.5 \pm 17.6$  &  $73.5 \pm 11.9$ ) on the 7th and 14th days. Hydroxyproline ( $0.37 \pm 0.03$  &  $0.34 \pm 0.04$ ) and MDA ( $7.2 \pm 1.0$  &  $4.6 \pm 1.1$ ) levels of 0.5% and 1% *S. euphratica* var. *euphratica* groups were statistically significant ( $P < 0.01$ ) on the 14th day. Histopathological results revealed reepithelialization and formation of granulation tissue in all *S. euphratica* var. *euphratica* groups as well. Ointment prepared with extract of *S. euphratica* var. *euphratica* has a healing effect on both excisional and incisional diabetic wounds.

**Keywords:** *Salvia euphratica* var. *euphratica*, Diabetes mellitus, Diabetic wound, Histopathology, Biochemical, Rat.

## Altered Expression of Beta-Catenin in Bacterial and Fungal Infections of Cervicovaginal Smears

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Beta-catenin plays important roles in regulating adherence junction and the Wnt/Beta-catenin signaling pathway. Altered immunocytochemical expression and distribution of beta-catenin is associated with inflammation and neoplastic transformation. Therefore, the aim of our study was the evaluation of membranous, cytoplasmic, and nuclear expression of beta-catenin in inflammatory cervicovaginal smears. Cervicovaginal smears were evaluated by using Papanicolaou staining. Periodic Acid-Schiff and Gram-staining were also used to confirm the presence of fungal infection and Bacterial vaginosis (BV), respectively. Anti-beta-catenin antibody was used for immunocytochemical analysis and H-scores were calculated. Totally 112 women, aged between 23-76 years ( $42.02 \pm 12.15$ ) were included in this study. Cases without any infection ( $n = 74$ , 66.1 %) were considered as the control group. Fungal infection and Bacterial vaginosis (BV) were found in 28 of 112 (25 %) and 10 of 112 (8.9 %), respectively. The mean of both membranous and cytoplasmic H-scores of beta-catenin decreased substantially in the presence of fungal infection and BV ( $P < 0.05$ ), but the nuclear beta-catenin was not affected ( $P > 0.05$ ). We also investigated whether the existence of yeast or filamentous forms of fungal infection effect expression of beta-catenin. The association between different morphological forms and beta-catenin was not statistically significant ( $P > 0.05$ ). Our results show that the presence of fungal infection and BV cause alterations in the membranous and cytoplasmic beta-catenin in squamous epithelial cells. This decrease may be related to the degradation of E-cadherin in adherence junction, causes progression of these infections, facilitating to invade mucosal tissues. Effects of the yeast and the filamentous form were not different from each other. This may suggest that both forms have pathogenic activity.

**Keywords:** Beta-catenin, fungal infection, bacterial vaginosis, cell adhesion

**Evaluation Methodology of Medical Safety Device**

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To determine the effectiveness of safety devices in front of a puncture, ICS team has developed a methodology for evaluating safety medical devices. We chose to do the presentation in two parts: Technical report on Needle stick and cutting material in ICS. Territorial Program to monitor the SMD. The First part was developed with a multidisciplinary team from different hospitals and primary care from Institut Català de la Salut. The Methodology was published in NTP 875 Biological risk: methodology for the evaluation of sharp and cutting equipments with built-in biosafety devices. Spanish Government and WHO Manual on Selection and Evaluation Medical Safety Device.

**Keywords:** Safety device, needle, biosafety



## The Effect of Exercise on Cognitive Function in High Fat Diet Induced Obesity

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Obesity is caused by consuming high calories of fat or sugar then, individual displays obesity with abnormalities such as elevated blood glucose, insulin resistance, high lipid level. Cognitive impairment caused by consuming high fat diet is associated with impaired insulin signaling and oxidative stress causing inflammation. Thus, the molecular and genetic mechanisms leading or reversing obesity must be uncovered. Rats were randomly divided into 4 experimental groups, which were control (C), control + exercise (C+E), obese (Ob), Obese + Exercise (Ob + E) and each has 8 rats. Rats in obese groups (Ob and Ob+E) were fed with high fat diet including 45 kcal % fat (HFD) to induce obesity for 8 weeks. After induction of obesity, rats in exercise groups were exercised 30 minutes/day in a swimming pool for eight weeks. After that, rats in all groups were trained in Morris water maze to test spatial reference memory. After 8 – week high fat diet feeding obesity is induced and diagnosed by the lee index for each group. When results getting from Morris water maze of all groups are compared, it was found that there was a statistically significant difference between C and Ob groups ( $p<0.05$ ) for escape latencies, distance travelled and the number of entries the platform's quadrant, between C+E and Ob+E ( $p<0.05$ ) for escape latencies and the number of entries the platform's quadrant. This experiment has demonstrated that high fat diet impair cognitive functions and exercise has regulatory effect on this impairment.

**Keywords:** Obesity, high fat diet, Cognitive Function, exercise.

## Personality Traits and Dysfunctional Attitudes of Patients Diagnosed Irritable Bowel Syndrome

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Irritable bowel syndrome is a bowel disease characterized with reducing abdominal pain end of the defecation and changes in bowel habits. Psychosocial stressors in human life are both the cause of the disease and the factors that increase the symptoms of the disease. These psychosocial factors are the events that cause the individual to live anxiety, the way they perceive these events, the individual aspects of the events, personality traits, behavioral characteristics. This information is in the light; examination of the personality traits and non-functional attitudes of the patients is very important for the patients to be treated as a holistic. For this reason, this study is done to determine the personality traits and non-functional attitudes of patients with Irritable Bowel Syndrome. 227 patients who have been diagnosed with Irritable Bowel Syndrome, who agree to participate in the study, and who apply to Niğde Ömer Halisdemir University Training and Research Hospital Internal Medicine Polyclinic have been included in the scope of the research. The sample of the research was calculated according to the method of determining the sample which is not definite. Research has been started after the written permission has been received to Niğde Ömer Halisdemir University Ethics Board and Niğde Ömer Halisdemir University Training and Research Hospital management. So data have been collected between 25<sup>th</sup> June 2018 and 20<sup>th</sup> October 2018. Information Form, Five Factor Personality Scale and Dysfunctional Attitudes Scale are used to collect data. Data have been evaluated using SPSS (16.0) program on computer. The average of the scores obtained from the scales and standard deviation has been calculated. Socio-demographic characteristics of patients have been identified by number and percentage. Finally, socio-demographic characteristics and scale scores have been compared using Kruskal-Wallis, Mann-Whitney U Tests because of groups providing nonparametric assumptions. 30.4% of the patients were in the 25-44 age group, 63.4% were female, 40.6% were graduated from university, 67.8% were married and 36.2% worked as civil servants who participated in the study. 33.0% of patients use medication as a regular form. 60.8% of the patients stated that they

had disease symptoms due to stress. The average score of Perfectionism Subscale of Dysfunctional Attitudes Scale was found  $58,79 \pm 12,03$ , and average score of Dependency Subscale was found  $27,18 \pm 8,64$ . The average score of Extraversion Subscale of Five Factor Personality Scale was found  $7.34 \pm 2.03$ , the average score of Agreeableness Subscale was found  $8.18 \pm 1.84$ , the average score of Conscientiousness Subscale was found  $7.47 \pm 1.92$ , the average score of Neuroticism subscale was found  $5.85 \pm 1.86$ , and the average score of the Openness Subscale was found  $6.58 \pm 1.81$ . According to the findings, it can be said that the patients are more perfectionist, moderately depended, open to experience, neurotic, more conscientiousness and extroverted

**Keywords:** Irritable bowel syndrome, personality, dysfunctional attitudes, holistic treatment.

## Study of Glycemic Index of Monofloral Turkish Honeys And Serum Insulin & C-Peptide Levels

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In this study, it was aimed to determine the change in serum insulin and C-peptide concentrations after consuming different monofloral honey in healthy volunteers. The glycemic index of citrus and thyme honey used in the study was low, the glycemic index of milk-vetch, chestnut, lime and pine honey was medium. The study group composed of 20 healthy students with a mean age of  $20.8 \pm 1.8$  years and enrolled at Erciyes University. Venous blood samples were taken from all individuals for biochemical analysis (Glucose, insulin and C-peptide) before and after the test. Serum insulin and C-peptide of all honeys after consumption was found to be lower than the reference food ( $p < 0.05$ ). A decrease in serum insulin levels was observed after the consumption of chestnut, lime, thyme honeys, while the decrease that occurred after the consumption of chestnut honey was significant ( $p < 0.05$ ). We believe that insulin and C peptide levels are also important in studies related to the glycemic index of honey and that it will be useful to investigate the effects of different monofloral honeys on glucose metabolism.

**Keywords:** glycemic index, blood glucose, monofloral Turkish honeys, C-peptide

## Propolis and Medical Properties of Propolis

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Bee products such as honey, royal jelly, pollen, bee venom, propolis are obtained from beekeeping. Propolis is a natural dark sticky resinous material collected by worker bees from buds and barks of the trees. It is used for filling cracks holes in a hive to protect from cold weather and other predators. The bees bring them on their hind legs, just like pollen, to the hive. Propolis is used as a food, in food processing, as a traditional medicine and in cosmetics. The composition of propolis depends on the type of plants accessible to the bees. Propolis, a resinous substance has pharmacologically active constituents as flavonoids, phenolics and other various aromatic compounds. It has antimicrobial, antifungal, antibacterial, antiviral, anti-inflammatory, antitumor, antioxidant and antibiotic properties. It is used to treat mouth and gum disorders, gum decay, resistance to general illness, cure burns and fungal skin complaints. Propolis changes in colour, odour and probably medicinal characteristics, according to source and the season of the year.

**Keywords:** Honeybee (*Apis mellifera* L.), propolis, pharmacology, medical

**BK Channels and ROS on Membran Potential of Skeletal Muscle**

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Large-conductance calcium-activated potassium (BK) channels have vital role on electrical properties of cell membrane. But, there is no any detailed data about how the channel contributes membrane potentials in skeletal muscle. Thus, the aim of the study was to determine contributions of BK channels to membrane potentials by using NS1619, a BK channel activator. In addition, effects of reactive oxygen species(ROS), which is even produced during muscle exercise, on BK channels were also investigated in the study. In the present study, gastrocnemius muscles of frog (*R.camerani*) were used. Membrane potentials of skeletal muscle fibers were measured by using conventional intracellular microelectrode techniques. Action potentials (AP) were recorded for all 5 groups: C-Control (no additive); N3-NS1619 (3 $\mu$ M); N30-NS1619 (30 $\mu$ M); H-H<sup>2</sup>O<sup>2</sup> (1mM); H+N3- H<sup>2</sup>O<sup>2</sup>(1mM)+NS1619 (3 $\mu$ M). Amplitude of AP: Amplitude was decreased by NS1619 addition, dose-dependently (C-113mV; N3-83,68mV; N30-60,28mV). Although H<sup>2</sup>O<sup>2</sup> didn't effect, H<sup>2</sup>O<sup>2</sup> and NS1619 together presence decreased amplitude but not as much as did N3 alone (H-114mV, H+N3-95,7mV). AP Rise-Time (%10-%100): Presence of NS1619 extended depolarization time (C-0,77ms; N3-0,9ms N30-0,99ms). AP fall-time: Repolarization time were highly increased in group H<sup>2</sup>O<sup>2</sup> (C-1,54ms; H-2,53ms). This is the first study to show that BK channel activation affects AP rise time as well as amplitude in skeletal muscles. H<sup>2</sup>O<sup>2</sup> was mostly effective at repolarization phase. The AP amplitude of the H+N3 group was higher than that of N3. According to this result, it may be concluded that ROS show their modulatory effect on the channel and change (decrease) channel open probability.

**Keywords:** BK Channels, Reactive Oxygen Species, Skeletal Muscle, Action Potential.

## Effects of Pulsed Magnetic Fields to Vascular Responses

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Pulsed Magnetic Field (PMF) is a widely investigated method for the treatment of various diseases and disorders such as cancer. However, its action mechanism not fully understood. In this study, the effects of PMF on the vascular signaling pathway were investigated through the contractility and apoptotic protein expressions (caspase-3). To investigate PMF application rats were exposed to 40 Hz-1.5 mT/day PMF for 30 days. Then their aortas excised and cut into 2-3 mm rings, hanged onto isometric force transducers and the responses recorded. Rings stabilized and contractility examined according to 60 mM KCl. Cumulative dose response curves to Phe and KCl show no difference for both PMF exposure groups and controls, with or without endothelium. However, with the H<sub>2</sub>O<sub>2</sub> stimulation PMF exposed group with intact endothelium (e+) had decreased contractions according to controls. While, endothelium denuded groups constricted with equivalent forces with each other. This differentiation in the responses also observed with KCl and Phe stimulation after the H<sub>2</sub>O<sub>2</sub> incubation. H<sub>2</sub>O<sub>2</sub> induced apoptosis alter the contraction of KCl and Phe significantly in (e+) PMF group. Also with the caspase-3 expression, we showed the effect of H<sub>2</sub>O<sub>2</sub>. As a result, the effects of PMF become observable with the H<sub>2</sub>O<sub>2</sub> responsive and apoptotic pathways in aorta, which needs further investigations

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**Keywords:** H<sub>2</sub>O<sub>2</sub>, Pulsed magnetic field, thoracic aorta, caspase-3, apoptosis

***In Vitro* Anti-Tumorigenic Effects of Silver Nanoparticles Synthesis with *Allium Sativum* Extract**

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This study aims to evaluate anti-proliferative capacity of silver nanoparticles synthesis with *Allium sativum* (Garlic) extract (G-AgNPs). The anti-tumor activities of G-AgNPs were tested on T98G cell line derived from a human glioblastoma multiforme tumor under *in vitro* conditions. The G-AgNPs were analyzed by UV–visible spectroscopy and transmission electron microscopy (TEM). G-AgNPs exhibited absorption maxima at 428 nm. TEM images revealed bimodal size distribution of G-AgNPs. The mean particles sizes are found to be approximately 47.2 nm and 7.4 nm respectively. Cell viability was evaluated by 3-(4, 5-dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) assay. The apoptosis was determined by Acridine orange (AO) and propidium iodide (PI) double staining. MTT assay and apoptotic analysis were conducted after 24, 48, and 72h incubation periods of cells with nanoparticles. Seven different dilutions (10, 25, 50, 100, 250, 500, and 1000 ng/mL) of particle solution were prepared for cell interactions. The control group with no treatment was referred to as having 100% cell viability. MTT results showed that there were no significant differences between the particle dilutions across all time intervals. Within the 72h, G-AgNPs D6 ( $p \leq 0.05$ ) and G-AgNPs-D7 ( $p < 0.01$ ) groups were significantly difference from control group. Also, the results of the AO/PI staining were supported MTT assay. The outcomes of our studies suggest that, depending on doze, G-AgNPs effects negatively cell proliferation. These results revealed the potential drug like efficiency of G-AgNPs for cancer therapy.

**Keywords:** *Allium sativum*; silver nanoparticles; cancer treatment; cell proliferation; MTT



**Violence, Suicide Behavior and Related Factors In Adolescents in Mersin University**

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In this study, we aimed to evaluate violence, suicide behaviour and related factors in adolescents in Mersin University. The data of the cross-sectional study was taken from Risky Behaviours Project in Adolescents in Mersin University between September 2015 and May 2016. The population was 21230 students, the minimum sample size was calculated as 1017 people. 1059 people have been reached. Permission has been obtained from Mersin University Clinical Research Ethics Committee. A questionnaire including sociodemographic characteristics and risky behaviours was applied. Chi-square and binary logistic regression analysis tests were used. The mean age was  $18.9 \pm 0.1$  years. The results revealed that violence behaviour in boys was 2.1 times higher than in girls; in students living in extended family was 1.6 times higher than in nuclear family, in students with bad family relations was 2.0 times higher than those who were good; in students who have tried tobacco product, alcohol and addictive substance, was 1.9, 2.2 and 2.4 times higher than those who not tried, respectively. 25 students (2.5%) reported suicide. Suicide attempt in students with bad family relations was 3.2 times higher than those who were good and in students who have tried alcohol was 5.3 times higher than who not tried. Increase the level of the education of the parents and adolescents and prevention of trying addictive products by adolescents is important in terms of protecting adolescents from violent behaviour and suicide attempts.

**Keywords:** Adolescent, violence behaviour, suicide attempt

## Childhood Trauma Experiences in Mersin University Faculty of Medicine Students

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It was aimed to investigate the sexual abuse and abuse experienced by students in their childhood and factors affecting them. The population of this cross-sectional study is medical faculty students. 650 students were included in the study. Questionnaires and the Childhood Trauma Questionnaire Short Form (CTQSF) were administered and taken in sealed envelope. The scale consists of five sub-dimensions: physical–emotional–sexual abuse, physical- emotional neglect. The scale can be scored between 25-125. The increase in score indicates the concentration of childhood abuse experiences. Mean age of participants was 21.7±2.2, 51.8 % were male. The mean total score of CTQSF was 37.12±9.07 and the mean score of sexual abuse was 7.12±2.85. Total scores are higher in men, extended family members, who lives with stepmother, whom mother isn't working ( $p<0.01, p<0.01, p=0.02, p=0.03$ ). As the number of siblings and birth orders increased, the total scores were higher ( $p<0.01, p<0.01$ ). Low education levels of parents were increased total scores. The total score was high among those who spent most of their childhood in the village/town, who comment perception as 'generally having economic difficulties'. 26.2% of participants had suicidal thoughts, 3.4% had suicide attempts. Suicidal thoughts were high in students who had high total and sexual abuse scores ( $p<0.01, p=0.01$ ). Suicide attempts were high in those with high total score ( $p<0.01$ ). In this study, we found being a male, living in an extended family, uneducated parents, unemployed mother, the sense of economic hardship and living in the village/ town increase the risk of childhood traumatisation. Preventive studies should be making about this subject.

**Keywords:** child abuse, childhood trauma questionnaire, medicine students

## Mitochondrial DNA HVR I and HVR II Variations in a Turkish Populations

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Recently, mitochondrial DNA (mtDNA) mutations or alterations have also been identified in bladder cancer, breast cancer, esophageal cancer, head and neck cancer, hepatocellular carcinoma, lung cancer, ovarian cancer, prostate cancer, renal cancer, thyroid cancer and a number of blood cancers. Various types of molecular alterations in mtDNA such as point mutations, polymorphisms, deletion, insertions, microsatellite instability and changes in mtDNA copy number have been characterized throughout the mitochondrial genome in human cancers. In the present study, we investigated two hypervariable mitochondrial hypervariable region I (HVR I) and hypervariable region II (HVR II) in a total of 100 samples. A total of 47 nucleotide polymorphisms were detected in both regions, and 39 out of 47 sites were in HVR I region, whereas 8 were in HVR II region. Transition, transversion, insertion, and deletion were observed in the examinations. In HVR I region, the most frequently observed nucleotide alterations were at the positions 16221 (84.2%) (nucleotide transversion from C to A). In HVR II, the most frequently observed nucleotide alterations were at the positions 263 (nucleotide transition from A to G) with the frequency of 100%. Overall, these findings support a role for mitochondrial genome variations. Databases from the present study will abet the expanding role of mtDNA typing in different genetic information.

**Keywords:** Variation, Mitochondrial DNA, HVR I, HVR 2, Humans, Turkey.

## Raman Spectroscopy: A Novel Experimental Approach to Evaluating Cisplatin Induced Tissue Damage

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The most commonly used alternative treatment method for reducing tissue damage during chemotherapeutic use is the use of antioxidants. The aim of this work is to clarify the effect of curcumin and beta-carotene on cisplatin-induced tissue damage and to demonstrate the potential of Raman spectroscopy to detect tissue changes consistent with liver and kidney histopathology as a potential diagnostic adjunct.

In the study, 56 Wistar albino female rats were used and randomly divided into 7 groups (n: 8). Sham group received only sesame oil; Cisplatin group, received a single dose injection of cisplatin; Beta-carotene group, treated with beta-carotene; Cisplatin+Beta-carotene group, pretreated with beta-carotene 30 min prior to the cisplatin injection, then received cisplatin; Curcumin group, treated with curcumin; Cisplatin+Curcumin group, pretreated with curcumin 30 min prior to the cisplatin injection, then received cisplatin. The second application was performed 1 week after the first application. One of the liver and kidney tissues was taken to 10% form for histopathological examinations and the others were taken to -80°C for Raman spectroscopy. Received sections were hematoxylin-eosin stained. The avidin-biotin peroxidase method was used for to investigate anti-TNF- $\alpha$  and IL1- $\beta$  activities. TUNEL method was applied to determine apoptotic cells.

According to our histopathological findings, beta-carotene and especially curcumin have been found to possess hepatorenal protective activities. These data were supported by the microscopic damage scores. Although some of these findings were observed in both the cisplatin+curcumin and cisplatin+beta-carotene groups, the incidence and severity of histopathological lesions were less than the cisplatin group. Both TUNEL, immunohistochemical studies and Raman spectroscopy results consistent with histopathological examination of hematoxylin-eosin stained sections.

Raman spectroscopy represents a suitable tool to provide insights into structural factors involved in the mechanisms underlying antitumor effects of platinum drug.

**Keywords:** Cisplatin, Curcumin, Beta-Carotene, Raman spectroscopy

## Development of Molecular Imprinting Technology and The Effective Use of Molecular Imprinted Polymers

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Highly selective molecules used for antibodies or enzymes have great importance in chemistry, diagnosis and biology. However, the production of these natural receptors is difficult and expensive. Their longevity and applicability are also limited. Molecular imprinting technique (MIT) has been developed to overcome these limitations. The functional groups of the polymerizable monomers are combined with the template molecule to enable the desired selectivity. After polymerization in the presence of cross-linkers, template molecules in the polymer are removed to obtain molecularly imprinted polymers (MIPs) recognizing the size, shape and surface chemistry of the template molecule. Polymers that are selective to template molecule are cheaper, simpler and more durable than their counterparts. Polymers with different properties can be produced using a wide variety of monomers.

MIT development has been ongoing for over 30 years and it's an effective method for preparing synthetic molecular recognition systems with similar binding properties like natural antibodies. MIPs used as initial separation methods are polymers, synthetic enzymes, biological receptors and biosensors with catalytic activity under the influence of progressive studies and technological developments.

MIT can be adapted to the Enzyme Linked Immunosorbent Assay (ELISA), an immunological assay based on antibody-antigen interaction. MIPs are used in drug development studies, drug delivery and medicine as biomimetic antibodies.

In our study, we showed that MIP imprinted against template molecule, can bind its target molecule in *in vitro* cell culture assays and can also be used in an ELISA.

**Keywords:** Molecular Imprinted Polymer, Biomimetic Antibody.

## When Formaldehyde Level Control is Possible: Our Experience with Photocatalysis Techniques

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In anatomical pathology, there are a variety of chemical agents that must be controlled due to their carcinogenic potential, such as formaldehyde (CH<sub>2</sub> O), Xylene and Volatile Organic Compounds (VOCs).

To evaluate the effectiveness use of purifiers by photocatalysis and freezing systems for the control of exposure levels to CH<sub>2</sub> O, Xylene and VOCs. To compare the Formaldehyde measurements among other 3 hospitals in the Community of Madrid. 26 environmental assessments were performed in the Anatomical Pathology Department at the Hospital Universitario de Fuenlabrada (HUF, Madrid), in February 2017 and in March of the same year, after installing the purifiers and the freezing systems in the laboratory and room carved areas. Xylene and VOCs are evaluated using the PID method (Photo-Ionization Detector) and CH<sub>2</sub> O through a Gas Detection System. As a criterion for assessing exposure to VOCs, isobutylene was used as a reference gas with a VLA-EC of 100 ppm. For Xylene the results were compared with the VLA-EC 100 ppm and for the CH<sub>2</sub> O with the VLA-EC of 0.3 ppm, established in the guide of "Occupational Exposure Limits for Chemical Agents" from the National Institute of Occupational Safety and Health. Previous exposure levels did not exceed the limit values. It was observed that these values decreased after the implementation of collective preventive measures, obtaining statistically significant results: VOCs (p = 0,0002, 95% CI 2,393-5,506), Xylene (P = 0,0002, 95% CI 1,021-2,359) and CH<sub>2</sub> O (p = 0,0004, 95% CI 0,210-0,350). The integrated system of freeze-thawing and photocatalytic purification optimize the exposure control to these chemical agents, canceling emission sources. Med Segur Trab (Internet). 2017;63(249):319-30

**Keywords:** Formaldehyde, xylenes, volatile organic, compounds, occupational exposure, pathology, prevention and control, photocatalytic, titanium dioxide, freezing, effectiveness

**Adam 33 Gene V4 C/G Rs2787094 Polymorphism in Psoriasis**

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Psoriasis is a common chronic inflammatory disease. A disintegrin and metalloproteinase 33 (ADAM33) gene is the first novel susceptibility gene for asthma. The aim of this study was to investigate the relationship of ADAM 33 gene V4 C/G rs2787094 polymorphism with the risk of psoriasis in the Turkish population. ADAM33 gene polymorphism (V4 C/G rs2787094) were analyzed in 97 psoriasis patients and 50 healthy control subjects. This study was performed by polymerase chain reaction-based restriction fragment length polymorphism (PCR-RFLP) analysis. There was no significant difference in ADAM33 genotype and allele distributions between psoriasis and the control groups ( $p>0.05$ ). the ADAM33 V4 C/G rs2787094 polymorphism was not associated with psoriasis risk in the Turkish population. Larger studies with different ethnicities are needed to determine the impact of ADAM33 polymorphism on the risk of developing psoriasis.

**Keyword:** ADAM 33, V4 C/G gene polymorphism, psoriasis

## Enhancement The Solubility of Flurbiprofen And Its Derivative by Using Micro-Emulsion

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Flurbiprofen is one of the most potent non-steroidal anti-inflammatory drugs. It is widely used for relief of pain in patients suffering from rheumatic diseases, migraine, sore throat and primary dysmenorrhea. However, its aqueous solubility is very low and hinders the skin permeation. Thus, it is imperative to develop such a drug delivery systems which can improve its aqueous solubility and hence improve the skin permeation and therapeutic compliance. Micro-emulsions have been also proven to increase the cutaneous absorption of lipophilic drugs as compared to conventional vehicles. Microemulsion is thermodynamically stable emulsion that has the capacity to 'hide/solubilize' water-insoluble molecules within a continuous oil phase. Therefore, flurbiprofen was converted to Esters through chemical reactions with alcohols such as methanol, ethanol, propanol and butanol. The product was further treated with hydrazine to get hydrazide. The solubility of the parent drug Flurbiprofen and derivatives were solubilized in micro-emulsions formed using various surfactants like ionic, non-ionic and zwitterions. It has been concluded that the product was more soluble than the parent compound. The biological activities of these were also investigated. The outcome was very promising and the product was more active than the parent compound. It therefore concluded that in this way we can not only enhance the solubility of the drug, increase its bioactivity but also reduces the risk of stomach cancer.

**Keywords:** Flurbiprofen, Derivatives, Micro-emulsion, Surfactants,



**Microbiological Quality of Curd Cheeses Sold in Kahramanmaraş, Fecal Originated *Escherichia Coli*, *Klebsiella Pneumoniae* and Their Antibiotic Resistance**

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Determination of microbiological quality of curd cheese sold in Kahramanmaraş and antibiotic resistance profiles of fecal-originated *E. coli* and *Klebsiella* spp. In this study, 30 different samples of curd cheese were examined. Total coliform bacteria were determined from collected cheese samples and *E. coli* and *Klebsiella* sp. were isolated in MDCLS (modified Deoxycholate Lactose, sucrose) medium. Among the isolates, on efor each samples considered as *E. coli* and *Klebsiella* sp. strains were confirmed with Vitek 2 system. The isolates were then investigated for their resistance to 12 different antibiotics. Antibiotic resistance was assessed according to disc diffusion method and evaluated according to CLSI criteria. While coliform group bacteria were observed in 29 of 30 cheese samples, total of 74 *E. coli* and 17 *K. pneumoniae* bacteria strains belonging to Enterobacteriaceae family were determined. According to data obtained from MDCLS agar, 93%, 50%, 30% and 14% of the samples of the curd cheese were found to be contain *E. coli*, *K. pneumoniae*, *Enterobacter* and *Citrobacter*, respectively. *E. coli* and *Klebsiella pneumoniae* strains tested among these bacterial strains were found to be resistant to many antibiotics. In our study, 74 *E. coli* strains isolated resistance to cefuroxime was determined in a ratio of 88%. Resistance rates to amoxicillin/clavulanic acid, ampicillin/ sulbactam, gentamicin, tetracycline, ofloxacin, nitrofurantoin, streptomycin, ceftriaxone, ciprofloxacin, cefepime were as 79%, 67%, 54%, 48%, 30%, 30%, 23%, 20%, 2% and 1%, respectively. Any resistance wasn't detected to levofloxacin. Among 17 isolated *Klebsiella pneumoniae* strains, the highest resistance was determined against tetracycline with a resistance of 70%. Resistance rates to cefepime, gentamicin, ofloxacin, nitrofurantoin, ciprofloxacin, amoxicillin/clavulanic acid, ampicillin/sulbactam, streptomycin, cefuroxime, levofloxacin and ceftriaxone were as 64%, 59%, 58%, 53%, 52%, 47%, 42%, 35%, 30%, 29 and 23%, respectively. As a result the findings revealed that curd cheeses are rich in coliform bacteria. Abundance of coliform bacteria could be because of curd cheese are produced from raw milk. Due to its extensive consumption among the people, strict regulations and hygienic conditions should be implemented between production and consumption.

**Keywords:** Antibiotic Resistance, Microbial, *E. coli*, *K. pneumoniae*.



***POSTER***  
***PRESENTATION***

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**Linalool in Cilantro (*Coriandrum Sativum* L.)**

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Cilantro (*Coriandrum sativum* L.) is a species of the family Apiaceae which is known as coriander or Chinese parsley. Coriander is an annual spice plant that has been known from the ancient times. It is cultivated in many countries due to essential oils of plants and their constituent that are the products from the secondary metabolites of plants that have been used in food conservation, pharmaceuticals, alternative medicine and natural therapies. *Coriandrum sativum* L. is one of the most useful essential oil bearing spices, besides medicinal plants, containing essential oils in its leaves, stem, flowers, fruits and seeds. Coriander contains 60-80% linalool, 1.2-4.6% geraniol and trace-3% terpinen-4-ol. Approximately two thirds of the essential oil in coriander consist of linalool. Linalool oil is a naturally occurring monoterpene alcohol (a volatile unsaturated element composed of two units, carbon and hydrogen) that is present in high concentrations in many flowers and spices. Results of some studies reported that linalool has anticancer activity against several cancer cell lines such as leukemia, lymphoma, breast, liver, melanoma, and renal cancer cell lines. Further studies should be conducted both on breeding high linalool coriander varieties and benefits of linalool on human health.

**Keywords:** *Coriandrum sativum*, Cilantro, Linalool, Essential oil

**A Promising Anti-Diabetic Azoramide Modulates Activities of both MMP2 and MMP9 in Insulin-resistant H9c2 Cells**

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Insulin resistance is closely related with extracellular matrix (ECM) remodeling. Matrix metalloproteinases (MMPs), a family of zinc-dependent proteinases, are responsible for the degradation of the ECM. It has been shown that MMPs are key molecules for the development of several diseases. Dysregulation of MMPs has also indicated a close relationship with the pathophysiology of obesity and diabetes. Tinahones et al reported that gene expression of adipose tissue MMP9 levels correlates positively with the insulin resistance in morbidly obese subjects. In this study, we aimed to investigate whether collagenases (MMP2 and MMP9) upregulated in palmitate-induced insulin resistant H9c2 cells and ameliorative impacts of azoramide on insulin resistance include the modulation of MMPs. First we established insulin resistant cells via palmitate incubation and then incubate them with azoramide for 48 hours. MMP activities were measured by zymography and protein levels by Western blotting experiments. As a result, we found that both activity and protein levels of MMP2 and MMP9 increase in our experimental conditions and azoramide incubation leads to restore these changes. In order to understand if azoramide has scavenging effects on oxidants and modulate the MMPs via reversing oxidative stress-associated MMP activation, we measured the total antioxidant capacity of the azoramide by commercial kits from Rel Assay Diagnostics. Results indicate that azoramide modulate the MMP activity in palmitate-induced insulin resistance in H9c2 cells and the possible mechanism is antioxidant-like effects of this novel anti-diabetic.

**Acknowledgment:** This study supported by the Scientific Research Project Fund of Cumhuriyet University under the project number T-668 and Turkish Diabetes Foundation.

**Keywords:** Azoramide, insulin resistance, MMPs, antioxidants

## **Etiology and Antibiotic Resistance of Nosocomial Uropathogens**

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The knowledge about the etiology and antibiotic resistance pattern of the organisms causing hospital-acquired urinary tract infection is essential. Therefore, the aim of this study was to determine the spectrum of bacterial uropathogens and their drug resistant pattern. This observational study was conducted in Clinical Microbiology Laboratory, Alpha medical s.r.o. between April and June, 2018. Sysmex UF-1000i flow cytometer was used as a screening test for urinary tract infections and to reduce the need for bacterial cultures. Bacterial culture was performed by inoculation (1 µL) on CHROMagar Orientation Medium. Species identification was done by Matrix-Assisted Laser Desorption Ionization-Time of Flight Mass Spectrometry (MALDI-TOF MS). Antimicrobial susceptibility testing was performed by VITEK 2 system. Members of the family *Enterobacteriaceae* were examined with the AST- N199 identification card. AST-N295 card was used for Gram-negative nonfermenting rods. Colony count yielding bacterial growth of  $>10^5$ /mL of urine were regarded as significant bacteria.

Out of 184 clinical samples, 125 showed significant bacterial growth. The most frequent isolates were identified as *E. coli* (32%), *Klebsiella* sp. (*K. pneumoniae*, *K. oxytoca*, *K. varicola*) (28.8%), *Enterobacter* sp. (*E. kobei*, *E. asburiae*, *E. cloacae*) (16%), *Proteus* sp. (*P. mirabilis*, *P. vulgaris*) (8%), *Morganella morganii* (5.6%), *Pseudomonas aeruginosa* (4%), *Acinetobacter baumannii* (4%), and *Citrobacter koseri* (1.6%). Members of the *Enterobacteriaceae* were 94.4% sensitive to meropenem, while at the remaining 7 isolates was confirmed production of carbapenemases. They were found variably sensitive to other tested antibiotics. We found out presence of multidrug-resistant bacteria at more like 34.4% of tested isolates (resistance to three or more antimicrobial classes). Typically, MDR bacteria are associated with nosocomial infections. Observation of many multidrug resistant bacterial species causing UTI in this study warrants, a continuous epidemiological survey of UTI in health institutions across the country.

**Keywords:** Antibiotic resistance, nosocomial infection, urinary tract.

**Total Kolesterol Levels in The Kil Goat Growing in The Aksaray Region**

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This study was conducted to determine the levels of serum total cholesterol in Hair goats in different gender and age ranges. For this purpose, the blood samples from 120 Hair goats, young (6 months) and adult (2-4 years), which were found to be clinically healthy, were taken from the vena jugularis. Triglyceride, cholesterol, HDL and LDL levels were measured by spectrophotometrically in sera of blood samples. Triglyceride levels were found to be higher in male goats than in females. It was found that triglyceride results in adult males were higher than adult female goats and young female goats, and this height was statistically significant ( $P<0.05$ ). It was found that the triglyceride results of young male goats were higher than young female goats and this height was statistically significant ( $P<0.05$ ). The cholesterol level was found to be significantly higher in female goat than male and female kids and adult male, and this value was statistically significant ( $P<0.05$ ). HDL values were higher in adult female goats than male and female goats and adult male goats, and the difference was statistically significant ( $P<0.05$ ). It was observed that the HDL values obtained from male kids were lower than the other ones. The LDL results obtained from the goats were close to each other and statistically insignificant. As a result, the data obtained is considered to contribute to the formation of reference values in the Hair goats.

**Keywords:** Kil Goats, triglyceride, cholesterol, HDL, LDL.

**Effect of 4- Aminopyridine on Paclitaxel Activity on MDA- MB 435 Breast Cancer Cell Line**

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Paclitaxel (PTX) is an antineoplastic agent that induces arrest at G2/ M phase and has been widely used in chemotherapy. However has side effects at therapeutic doses. It has also been shown that block of voltage-gated potassium Kv channels reduces proliferation. 4-aminopyridine (4-AP) is a K<sup>+</sup> channel blocking agent that causes depolarization and calcium influx blocking cell cycle at G1 phase. This study aimed to determine whether 4-AP would enhance the antiproliferative effect of PTX on MDA –MB 435 breast cancer cell line. MDA –MB 435 cells (grown in DMEM, FBS, L-glutamine and antibiotic in 5% CO<sub>2</sub> at 37 °C) were seeded into a 6 well plates. IC 50 values were determined and values lower than IC 50 were chosen. Cells were incubated with 4- AP or PTX or both for 24 hours and counted on hemocytometer. In case of PTX a reduction in cell viability of 20% ±2 by 5 nM, 41%±3 by 7.5 nM and in case of 4-AP a reduction of 35 % ±3 by 4 mM, 45% ± 2 by 5 mM was detected. Application of both agents caused a decrease in viability of about 75% ± 5 indicating the enhancement of paclitaxel activity. The effect of changes in calcium on cell viability measured by Fluo-8 was investigated. Blocking the cell cycle at different stages with PTX and 4-AP caused a significant decrease in viability. The results also show that membrane potential is an important factor that would probably enhance the effectiveness of chemotherapeutic agents.

**Keywords:** 4- Aminopyridine, Paclitaxel, MDA- MB 435 breast cancer cell line.

**BLM Gene (rs2270132) Variant in Patients with Breast Cancer**

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BLM gene is responsible for the resolution of Holliday junction which is encountered during homolog recombination-based DNA repair. BLM(rs2270132) variant may alter the expression of the BLM gene. Based on these, this study was designed whether there was association between BLM(rs2270132) variant and breast cancer risk in a hospital-based women population. A PCR-RFLP method was used for genotyping of DNA samples of breast cancer patients (103) and healthy controls (142). Statistical analysis was performed by SPSS software and genotype, allele frequencies,  $p$ ,  $\chi^2$  and OR (95% confidence intervals) values were calculated. Hardy-Weinberg equilibrium of the patients and controls was determined. There was no statistically significant association between BLM(rs2270132) variant and breast cancer ( $P$ : 0.907). Allele frequencies of BLM(rs2270132) for A allele were 88.0% in cases and 89.0% in controls, for C allele 12.0% in cases and 11.0% in controls. Similarly, there was not statistical difference between genotype and allele frequencies in cases and controls ( $p > 0.05$ ). Genotype distribution of BLM(rs2270132) was within HWE for cases and controls ( $p > 0.05$ ). In present study, BLM(rs2270132) variant was not associated with breast cancer susceptibility. In the presence of clinical data, in order to reveal BLM(rs2270132) variant is a biomarker for breast cancer, it should be studied in a larger population. In further studies, the functional effects of BLM(rs2270132) variant could be verified by expression studies. Moreover, haplotype analysis could be performed to show combined effects of several DSB repair genes on breast cancer risk.

**Keywords:** Breast Cancer, BLM, rs2270132, Turkey.



## The Vitamin D Receptor Gene Rs1544410 Variant in Patients with Essential Tremor

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Essential tremor (ET) is one of the most common neurodegenerative diseases. The involvement of the VDR gene variants in Multiple sclerosis, Alzheimer's and Parkinson's disease has been shown. The hypothesis is that whether this is due to some structural variations within the VDR gene. The aim of the study was to investigate the association of the VDR gene rs1544410 variant with sporadic essential tremor (SET). We genotyped the VDR gene rs1544410 variant in 239 SET patients and 239 healthy controls using a PCR-RFLP method. Odds ratios and 95% confidence intervals were determined using conditional logistic regression analysis. Allele and genotype frequencies were compared using the  $\chi^2$  test. The P value <0.05% was considered statistically significant. There was not an association between the VDR gene rs1544410 variant and SET ( $X^2=1.912$ ,  $P=0.384$ ). Frequencies of the VDR gene rs1544410 variant were GG, 38.9%; GA, 46.0% and AA, 15.1 % in cases and GG, 39.7 %; GA, 49.4 % and AA, 10.9% in controls. Dominant genotype frequencies, GG+GA, were 84.9% in cases and 89.1% in controls. Recessive genotype frequencies, AA+GA, were 61.1% in cases and 60.3 % in controls. The VDR gene rs1544410 variant G allele frequency was 62% in cases and 64% in controls. The VDR gene rs1544410 variant A allele frequency was 38% in cases and 36% in controls. Both controls and cases were in the Hardy-Weinberg equilibrium (0.261; 0.783). Our study indicates that the VDR gene rs1544410 variant was not statistically significantly associated with sporadic essential tremor.

**Keywords:** VDR gene, rs1544410, Essential tremor, Turkey

**Ranolazine and Riluzole Combination in Prostate Cancer Proliferation**

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It is known that the presence and activity of a voltage-gated ion channel play a role in cell proliferation and metastasis in different types of cancer. Inhibition of cancer proliferation and metastasis with drugs, which are also used in the treatment of other diseases and show their pharmacological effects by suppressing VGSCs, emerges as a new treatment option. Ranolazine (RNL), which is used in the treatment of angina pectoris, has a therapeutic effect on heart pain. Riluzole (RIL) is a neuroprotective drug, especially used in the ALS disease. The purpose of the study was to assess the effect of the combined administration of RNL and RIL, of which effects on VGSC and cell motility are known, on the proliferation of strong and weak metastatic rat prostate cancer cells. Dunning rat prostate cancer MAT-LyLu&AT-2 cells were grown in the RPMI-1640 medium. RNL and RIL (2.5µM and 5µM) were administered alone and in combination to the cells. The effect on cell proliferation was measured by the MTT method. According to the results obtained, when both drugs were administered alone, they did not cause a significant change in the proliferation of cells. In contrast, administration of 5µM+5µM drug combination to MAT-LyLu cells for 48 hours reduced cell proliferation by 30% ( $p<0.05$ ). The proliferation of AT-2 cells was not affected by alone and the combined administration. RNL was determined to inhibit invasion and metastasis in breast cancer while it did not affect proliferation at the indicated doses in rat prostate cancer cells. It is known that RIL alone inhibits motility and invasion of both MAT-LyLu and AT-2 cells as well as human prostate cancer proliferation. In our study, in which the combined effect of RNL and RIL was investigated for the first time, the inhibition of highly metastatic prostate cancer cell proliferation suggests that the drugs have a synergistic effect when used in combination.

**Acknowledgements:** This study was supported by Scientific Research Project Coordination Unit of Istanbul University, project number: 27206.

**Keywords:** MAT-LyLu and AT-2 cells, Ranolazine, Riluzole, Drug combination, Cell proliferation

**Biomechanical Investigations of Effects of Pulsed Magnetic Field on Wound Healing in Diabetic and Non-Diabetic Rats**

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There are studies in the literature that indicate that Pulsed Magnetic Field (PMF) has a positive effect on wound healing, as well as studies that indicate it is ineffective or even adversely affected in some ways. Therefore, the effects of PMF on wound healing in diabetic and non-diabetic rats were investigated by biomechanical method. In this study; 28 Wistar-albino (male; 8-10weeks-old) rats were used. Rats divided into 4 groups as Non-diabetic-Sham(NDS), Diabetic-Sham(DS), Non-diabetic-Experiment(NDE) and Diabetic-Experiment(DE) with 7 rats in each group. Single dose of (45mg/kg) streptozotocin(STZ) was administered intraperitoneally to rats of DS and DE groups. 2cm incision wound was created on the dorsal region of the rats of sham and experimental groups. In addition, the experimental groups were exposed to PMF(15Hz, 0.03ms, 0.5mT) for 4 hours a day for 3 weeks. Sham groups were kept in the device in closed state for the same time period. At the end of the third week, the skin samples isolated to include the injured area were subjected to a stretching test. The measured and calculated biomechanical parameters (U:Work to failure, FU:Ultimate force, S:Stiffness, dU:Ultimate displacement, u:Toughness,  $\sigma$ U:Ultimate stress, E:Young's modulus,  $\epsilon$ U:Ultimate strain) were evaluated statistically with multivariate ANOVA(MANOVA) and Tukey's HSD and Bonferroni post-hoc tests. As a result of the statistical evaluation, there was no significant difference between Sham groups(NDS, DS). When the experimental groups(NDE, DE) groups were compared, it was observed that the ultimate strength and maximum stress of the DE group decreased significantly( $p<0,05$ ). Comparison of NDE and NDS showed that the stiffness and Young's modulus were similar, but all other parameters were increased however these increases were not significant. When DE compared with DS, all parameters were decreased insignificantly. These results suggest that PMF affects wound healing positively in non-diabetic rats and adversely in diabetic rats.

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**Keywords:** Pulsed Magnetic Field, Diabetes Mellitus, Biomechanics, Wound Healing.

**PMF Regulate Fibrocartilage Activity in Microfractures**

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Knee joint chondral injuries are the one of the most common clinical complaints among orthopedic problems. Many treatments defined according to the age of the person and the extent of the resulting injury. The microfracture technique (MT), with arthroscopic or openly (artrotomy), is presented as a proven treatment option. According to MT, damaged chondral tissue excised and microfractures are formed on the subchondral bone and bone marrow stimulation is provided. Mesenchymal stem cells migrate to the damaged area from these broken lines, and proliferate and differentiate into chondrocytes and fibroblasts, which provide fibrocartilage with different mechanical and histological features from hyaline cartilage.

There are many studies about the clinical and histological results of MT. Therefore, we compared the viability and apoptosis between formed fibrocartilage and hyaline cartilage tissue. Furthermore, we searched the effect of Pulsed Magnetic Field (PMF) on the viability and apoptosis of the newly formed primitive fibrocartilage. Thus, 2 basic groups with wistar rats formed: PMF applied and no PMF treated. Besides left leg of the each animal in both groups operated with MT. Their right leg left as control. After the operation, PMF (1,5 mT, 40 Hz, 45 day, 1 hour/day) applied to the assigned group. Cartilages from the both groups enzymatically (collagenase) digested for chondrocyte isolation and viability (MTT) and apoptosis (colorimetric Caspase-3) investigated.

Our results show, viability and caspase-3 activity in the postoperated chondrocytes significantly reduced compared to control in the presence of H<sub>2</sub>O<sub>2</sub>. However, with PMF the responses of the cells approached control values.

**Keywords:** Microfracture technique, chondrocytes, pulsed magnetic field, apoptosis.

**The Beneficial Effect of Turkish Classical Music on Spasticity in Hemiplegic Patient**

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Motor disorders after stroke occur because of damage to the upper motor neurons leading to hemiplegia the upper limb will show some residual sequelae like spasticity in hemiplegia. Spasticity changes with posture (dynamic tone), ambient temperature, pain, emotional states, time of day (temporal fluctuation), and breathing. The purpose of this study; the classical Turkish music was to investigate whether it was effective on spasticity developing in hemiplegic patient. Forty spastic hemiplegic patients, who Brunnstrom stage of motor recovery of three more, were admitted to in this study. Patients were randomly divided. The study group listened to thirty minutes The Hüseyini mode Turkish classical music during pre-treatment period. All patients were evaluated two times before and after treatment Modified Ashworth Scale (MAS) and Tardieu Scale (TS) were used to assess the spasticity severity of the patients. A goniometer was used to detect spasticity angle. In the study group, the spasticity angle of elbow flexor, hip extensor and ankle hip adductor muscles groups were found to be lower after goniometric measurements according to Tardieu scale. Listen to music can be beneficial on spasticity reducing emotional stress.

**Keywords:** music, music therapy, spasticity

**Determination of Concentration of Water Extract of Turkish Propolis against Oxidative Damage Induced by Tert-butyl Hydroperoxide on Erythrocytes Cells**

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Propolis is collected various trees and plant by bees, due to rich containing flavonoids and phenolic it has antibacterial, antiviral, antitumor effect is a natural resinous with bee products. In this study, to determine the optimum protective concentration of water extract of turkish propolis (WETP) at various concentrations against oxidative damage caused by tert-butyl hydroperoxide (t-bhp) induction in human erythrocytes cell (RBC). After approval of the ethics committee, erythrocyte cells were isolated from the blood taken from healthy individuals and erythrocyte package was prepared. The erythrocyte package obtained was divided into three groups as control, water extract of Turkish propolis (20,50,100,200,400 and 600 µg/mL) and negative control (t-BHP) group. For the water extract of Turkish Propolis group, firstly extracts were added to packets and incubated at various concentrations and then treated with 750 µg/mL of t-BHP together with the negative control group. Determination of the optimum concentration of the WETP having a protective activity was assayed by malondialdehyde (MDA, final product lipid peroxidation). WETP group (200 µg/mL) MDA measurement was significantly lower than that in the negative control group (p <0.05). In addition, there was no significant difference between with the control group (p> 0.05). The protective efficacy of WETP at various concentrations against the oxidative damage induced by t-bhp in human erythrocytes was examined and the concentration with optimal protective activity was determined.

**Keywords:** Antioxidants, Erythrocyte, Oxidative stress, Propolis, t-BHP

**Investigation of Protective Effect of Water Extract of Turkish Pollen against Oxidative Damage Induced by Tert-Butyl Hydroperoxide on the Erythrocyte Cells**

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Pollen, collected by bees from flowering plants by mixing with nectar and bee secretions is a natural bee product which rich in phytochemicals. The aim of this study is to evaluate the protective effect of water extract of Turkish pollen against tert-butyl hydroperoxide (t-BHP) induced oxidative damage on the erythrocyte cells (RBCs). The erythrocyte cells were isolated from the blood obtained by the ethical committee approval from healthy individuals. The erythrocyte package obtained was divided into four groups as control, water extract of Turkish pollen, positive control (quercetin) and negative control (t-BHP) group. Red blood cells package as experimental model was treated firstly with pollen extract. Then t-BHP was added to the cells packages. Protective effects of water extract of Turkish pollen were investigated by malondialdehyde (MDA, final product of lipid peroxidation), total oxidant capacity (TOC), total antioxidant capacity (TAC) and antioxidant enzyme activities of superoxide dismutase (SOD) and catalase (CAT) methods. One-way ANOVA and post-hoc Tukey or Kruskal-Wallis and Mann Whitney-U tests were applied. In the water extract of Turkish pollen group, MDA, CAT, SOD, TOC measurements were found to be significantly lower than those in the negative control group ( $p < 0.05$ ); whereas TAC measurements were found to be significantly higher than those in the negative control group ( $p < 0.05$ ). The protective effect of water extract of Turkish pollen against oxidative damage induced by t-BHP on erythrocytes was revealed. Decreased SOD and CAT activities may be explained by the fact that water extract of Turkish pollen extract have antioxidant compounds that they removes free radicals from the cells. In addition, findings obtained may lead to further *in vivo* and *in vitro* studies on cells.

**Keywords:** Antioxidants, Erythrocyte, Oxidative Stress, Pollen, t-BHP

## Apoptotic Effect of Etodolac and Its Derivative on Breast Cancer Cell Line

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Nonsteroidal anti-inflammatory drugs (NSAID) are new molecular targets for cancer therapy. They show their inhibitory effects via COX-2 pathway. Etodolac ((R,S) 2-[1,8-diethyl-1,3,4-tetrahydropyrano(3,4-b)indole-1-yl] acetic acid), is a nonsteroidal anti-inflammatory drug (NSAID) with analgesic and antipyretic properties. It shows anti-tumorigenic effects on cancer cells through inhibition of proliferation and induction of apoptosis. The aim of this study is to investigate anti-proliferative and apoptotic effects of etodolac and thiazolidinone derivative of etodolac (SGK 217) on MCF-7 cell line. Breast cancer cell line, MCF-7 was maintained in DMEM (10% FBS, 1% glutamine and pen/strep). We applied MTT to test proliferation and mitochondrial membrane potential assay to detect apoptosis. Our results indicate that application of low concentrations (0 to 100 µM) of etodolac didn't show any measurable response. Anti-proliferative and apoptotic effects of etodolac were only observable after  $\geq 0.5$  mM. On the other hand, derivative of etodolac has cytotoxic effect in much lower doses at the end of 24 hour incubation. IC<sub>50</sub> value of SGK 217 was determined as 15 µM. Similar to proliferation, SGK 217 showed apoptotic effect in much lower doses ( $\geq 25$  µM). Apoptosis was 15 % at 25 µM concentration. Anti-proliferative and apoptotic effects of etodolac were detectable only at high-concentrations ( $\geq 0.5$  mM). Our studies showed that SGK 217, a thiazolidinone derivative of etodolac was more effective in the inhibition of proliferation and induction of apoptosis on MCF-7 cell line compared to etodolac. Therefore it could be a therapeutic target in cancer treatments.

**Keywords:** MCF-7, etodolac, cancer, apoptosis.



## The Association of Vaspin Gene Polymorphisms with Coronary Artery Disease in A Turkish Population.

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Vaspin was a recently identified adipokine, playing a protective role in many metabolic and cardiovascular diseases. The aim of this study was to investigate the relationship of *vaspin gene* polymorphism and plasma vaspin levels with the risk of Coronary artery disease (CAD) in the Turkish population. This study included 158 patients with CAD and 118 healthy controls, respectively. Genotyping of *vaspin gene* polymorphism was evaluated by gel electrophoresis after polymerase chain reaction (PCR). The results of analyses were evaluated for statistical significance. There was statistically significant difference between the genotypes of CAD patients (TT 42.4%, TA 56.3%, and AA 1.3%) and controls (TT 63.6%, TA 35.6%, AA 0.8%) ( $\chi^2= 12.1$ ;  $df = 2$ ;  $p= 0.002$ ), although their allelic distribution was similar ( $\chi^2= 0.110$ ;  $df = 1$ ;  $p = 0.740$ ). The plasma vaspin concentrations of the patients with TT, TA and AA genotypes were  $34.1 \pm 2.54$ ,  $29.8 \pm 2.31$  and  $36.4 \pm 6.38$  pg/mL, respectively, and there was no significant difference between the vaspin genotypes. Our results show that the variants of *vaspin gene* are associated with plasma vaspin levels and risk for CAD in Turkish population. We suggest that *vaspin gene* polymorphism may play a role for the development of CAD.

**Keyword:** vaspin, coronary artery disease, polymorphism

## Isometric Contractile and Biochemical Performance Computational Theory Using Artificial Neural Network

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The aim of this study is to forecast with Artificial Neural Network method the isometric contractile performance of skeletal muscles using weight and biochemical parameters of the rats applied magnetic field with diabetes mellitus (DM+MF) and as a control group only induced-DM instead of sacrificing animals. The multilayer back-propagation algorithm in neural network toolbox compatible with Matlab 2013Rb was used in this study. %70 (N=28) and %30 (N=12) of the 40 rats were used respectively for training and testing. The Levenberg–Maquardth algorithm also known as trainLM learning function was used for training. As inputs to the artificial neural network was used weight, glucose, high-density lipoprotein (HDL), low-density protein (LDL) and triglyceride values of the rats. As outputs to the artificial neural network was used the isometric contractile performance of skeletal muscles. The relationship between inputs and outputs values was taught to the artificial neural network. Then this network has been tested with data that was not previously defined. According to the training and testing data, the relationship between actual and predicted values of the neural network was calculated such as the mean absolute error (MAE), mean square error (MSE) and correlation coefficient (R). Mean Absolute Error was measured 0.99 and 1.07, respectively for training and testing. Mean Squared Error was measured 1.47 and 1.91, respectively for training and testing. Correlation coefficient was measured 0.92 and 0.98, respectively for training and testing. It was not found significant difference in terms of statistically between the actual values and estimated values of isometric contraction performance in rat skeletal muscles ( $p < 0.05$ ). According to the aim of experiment carried out by entering descriptive data in a limited number to the neural network system previously, the results desired to obtain may be approximated close to actual values. Thus workload and cost would be enhanced and represent the population of results obtained will be easier without more animals to be sacrificed.

**Keywords:** PCA, J48, Diabetes Mellitus, Magnetic Field.

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