ACTA PHYSIOLOGICA

Turkish Society of Physiological Sciences

43rd National Physiology Congress

07 – 10 September 2017

Pamukkale University, Congress Center, Denizli (Turkey)

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Program Overview

07 September, Thursday	**08 September, Friday**	**09 September, Saturday**	**10 September, Sunday**
14.00-16.00 Scientific Program	08.30 – 12.30 Scientific Program	09.00 – 12.30 Scientific Program	09.00 – 12.30 Scientific Program
16.00-17.00 Poster Presentations & Coffee Break	12.30 – 13.30 Lunch Break & Poster Presentations	12.30 – 14.00 Lunch Break & Poster Presentations	12.30 – 13.15 Lunch
17.00-17.15 Opening Ceremony	13.30 – 15.45 Scientific Program	14.00 – 18.30 Scientific Program	13.15 – 14.00 Scientific Program
17.15 – 18.00 Respect to Masters Session	15.45 – 19.30 Excursion (Tripolis + Buldan)	20.00 – 23.30 Gala Dinner	14.00 – 14.30 Awards & Closing Ceremony
18.00 – 19.00 Opening Conference			14.30 – 14.45 Coffee Break
19.30 – 21.00 Reception &Piano Resital (Assoc. Prof. Özgün Gülhan)			14.45-17.30 AGM Turkish Society of Physiological Sciences

Programme

07 September 2017 Thursday

14.00–15.00 Oral Presentations-I

Salon A (OC01-OC04) Chairs: Prof. Dr. Selim Kutlu & Doç. Dr. Atilla Uslu

Salon B (OC05-OC08) Chairs: Prof. Dr. Numan Ermutlu & Doç. Dr. Ercan Özdemir

Salon C (OC09-OC12) Chairs: Prof. Dr. Mehmet Kaya & Prof. Dr. Fahri Bayıroğlu

15.00–16.00 Data Blitz-I

Salon A (PC001-PC011, PC024-PC029) Chairs: Prof. Dr. Nurettin Aydoğdu & Doç. Dr. Nesrin Zeynep Ertan

Salon B (PC036, PC038-PC049, PC095-PC100) Chairs: Prof. Dr. Güler Öztürk & Prof. Dr. İnci Alican

16.00-17.00 Poster Presentations & Coffee Break

Group 1: Cell Physiology (Moderator: Prof. Dr. Nurettin Aydoğdu): PC001-PC014

Group 2: Cardiovascular & Respiratory Physiology (Moderator: Doç. Dr. Nesrin Zeynep Ertan): PC024-PC032, PC035

Group 3: Nervous System Physiology–I (Moderator: Prof. Dr. Güler Öztürk): PC036, PC038-PC049

Group 4: Reproductive Physiology (Moderator: Prof. Dr. İnci Alican): PC095-PC101

17.00-17.15 Opening Ceremony

17.15 – 18.00 Respect to Masters Sessions (Prof. Dr. Nimet Ünay Gündoğan, Prof. Dr. Ruhi Uyar, Prof. Dr. Abdullah Arslan)

Chairs: Prof. Dr. Ümmühan İşoğlu Alkaç & Prof. Dr. Bayram Yılmaz

18.00 – 19.00 **Conference 1:** Prof. Dr. Nuran Yıldırım "The Development of Experimental Physiology in Turkey and Pioneerıing Female Physiologists"

Chair: Prof. Dr. Ümmühan İşoğlu Alkaç

19.30 – 21.00 Reception & Piano Resital (Assoc. Prof. Dr. Özgün Gülhan)

"J.P.Rameau: Gavotte and Variations, F.Liszt: Sonetto 104 del Petrarca, Années de pèlerinage II, S. 161 No.5, W.A.Mozart: Fantasie K 397, F.Chopin: Fantasie Impromtu Op. 66"

08 September 2017 Friday

08.30 – 10.00 Salon A: **Symposium 1:** Zinc and Physiology

Chairs: Prof. Dr. Abdülkerim Kasım Baltacı & Prof. Dr. Sami Aydoğan

Prof. Dr. İsmail Çakmak: Enrichment of Cereals with Zinc by Using Agricultural Strategies (Sabancı University)

Prof. Dr. Rasim Moğulkoç: Zinc Metabolism and Metallothioneins (Selçuk University)

Prof. Dr. Abdülkerim Kasım Baltacı: Zinc Transport Proteins (Selçuk University)

08.30 – 10.00 Salon B: **Symposium 2:** Horse as an Elite Athlete

Chairs: Prof. Dr. Recep Aslan & Prof. Dr. Yaşar Gül Özkaya

Prof. Dr. Recep Aslan: Performance, Physiology and Psychology Interactıon (Afyon Kocatepe University)

Öğr. Gör. Dr. Berjan Demirtaş: Why are the Horse Athletes Superıor to the Human Athletes? (İstanbul University)

Yrd. Doç. Dr. Sinan Kandir: The Genetic Basis of Equine Athletic Performance (Çukurova University)

10.00 – 10.30 Coffee Break

10.30 – 11.30 **Conference 2:** Prof. Dr. Kevin O'Byrne "Role of amygdala kisspeptin in reproduction and behaviour"

Chair: Prof. Dr. Erdal Ağar

11.30 – 12.30 Data Blitz-II

Salon A (PC015-PC020, PC037, PC050-PC056, PC104-PC108, PC114)

Chairs: Prof. Dr. Ertuğrul Kılıç & Prof. Dr. Narin Derin

Salon B (PC102-PC103, PC075-PC084, PC088-PC092, PC154)

Chairs: Prof. Dr. Nuran Ekerbiçer & Prof. Dr. Halil Düzova

12.30 – 13.30 Poster Presentations & Lunch

Group 5: Blood & Immune System (Moderator: Prof. Dr. Ertuğrul Kılıç): PC015-PC023, PC154

Group 6: Nervous System Physiology–II (Moderator: Prof. Dr. Narin Derin): PC037, PC050-PC056, PC071-PC074

Group 7: Gastrointestinal Physiology (Moderator: Prof. Dr. Nuran Ekerbiçer): PC075-PC087

Group 8: Renal Physiology (Moderator: Prof. Dr. Halil Düzova): PC088-PC094

Group 9: Sport & Exercise Physiology (Moderator: Prof. Dr. Lütfiye Kanıt): PC102-PC112, PC114

13.30 - 13.45 **Prof. Dr. Necati Akgün Session:** Prof. Dr. Ersin Koylu

13.45 – 14.45 Oral Presentations–II

Salon A (OC13-OC16) Chairs: Prof. Dr. Ersin Koylu & Prof. Dr. Asuman Gölgeli

Salon B (OC17-OC20) Chairs: Prof. Dr. Melek Bor Küçükatay & Prof. Dr. Mete Özcan

Salon C (OC21-OC24) Chairs: Prof. Dr. Mustafa Ayyıldız & Prof. Dr. Sinan Canpolat

14.45 – 15.45 **Conference 3:** Professor Robert Zorec"The Other Brain: Adrenergic Excitation of Astroglia"

Chair: Prof. Dr. Nimet Ünay Gündoğan

15.45 – 19.30 Excursion (Tripolis Antique City + Buldan)

09 September 2017 Saturday

09.00 – 10.00 Oral Presentations–III

Salon A (OC25-OC28) Chairs: Prof. Dr. Sadettin Çalışkan & Prof. Dr. Ethem Gelir

Salon B (OC29-OC32) Chairs: Prof. Dr. V. Nimet Uysal & Prof. Dr. Erhan Kızıltan

Salon C (OC33-OC36) Chairs: Prof. Dr. Mustafa Gül & Doç. Dr. Hatice Yorulmaz

10.00 – 10.30 Coffee Break

10.30 – 11.25 **Conference 4:** Michael Shattock "'FXY' ing a broken heart: Phospholemman (FXYD1) and Na transport in health and disease"

Chair: Prof. Dr. İnci Alican

11.30 – 12.30 Data Blitz-III

Salon A (PC057-062, PC113, PC115-PC120, PC142-PC144, PC149)

Chairs: Prof. Dr. Ahmet Ayar & Prof. Dr. Bahar Güntekin

Salon B (PC130-PC141, PC150-PC153, PC155)

Chairs: Prof. Dr. Süleyman Sandal &Prof. Dr. Mehmet Kaya

12.30 – 14.00 Poster Presentations & Lunch

Group 10: Nervous System Physiology–III (Moderator: Prof. Dr. Ahmet Ayar): PC057-PC070

Group 11: Electrophysiology (Moderator: Prof. Dr. Bahar Güntekin): PC113, PC115-PC124

Group 12: Endocrine & Metabolism (Moderator: Prof. Dr. Süleyman Sandal): PC125-PC141

Group 13: Physiology Teaching (Moderator: Prof. Dr. Gökhan Metin): PC142-PC148

Group 14: Others (Moderator: Prof. Dr. Mehmet Kaya): PC149-PC153, PC155-PC160

14.00 – 15.00 Oral Presentations–IV

Salon A (OC37-OC40) Chairs: Prof. Dr. Aysel Ağar & Prof. Dr. Rasim Moğulkoç

Salon B (OC41-OC44) Chairs: Prof. Dr. Sedat Yıldız & Doç. Dr. Zübeyir Bayraktaroğlu

Salon C (OC45-OC48) Chairs: Prof. Dr. Lütfiye Kanıt & Doç. Dr. Murat Timur Budak

15.00 – 16.00 **Conference 5:** Prof. Dr. M. Selim Ünlü "Interferometric Microscopy for Detection and Visualization of Biological Nanoparticles"

Chairs: Prof. Dr. Numan Ermutlu

16.00 – 16.30 Coffee Break

16.30 – 18.30 Salon A: **Symposium 3**: Neuromodulation and Neuroimaging in Neurodegenerative Diseases

Chairs: Prof. Dr. Lütfü Hanoğlu & Prof. Dr. Necip Kutlu

Prof. Dr. Lütfü Hanoğlu: Neuromodulation and Neuroimaging in Neurodegenerative Diseases: Clinical Experience (İstanbul Medipol University)

Assoc. Prof. Dr. Burak Yuluğ: The role of neuromodulation in neurodegenerative diseases: In-vivo and In-vitro studies (İstanbul Medipol University)

Assoc. Prof. Dr. Zübeyir Bayraktaroğlu - Functional Connectivity in Neurodegenerati ve Diseases: fMRI Findings (İstanbul Medipol University)

Prof. Dr. Bahar Güntekin-Biomarkers of Event Related EEG Brain Oscillations in Neurodegenerative Diseases (Kültür University)

16.30 – 18.00 Salon B: **Symposium 4:** Metabolic Surgery from the Basic Medical Sciences Perspective

Chairs: Prof. Dr. Vural Küçükatay & Prof. Dr. Gülçin Abban-Mete

Prof. Dr. Gülçin Abban-Mete: Cellular Response to Metabolic Surgery (Pamukkale Üniversitesi)

Prof. Dr. Vural Küçükatay: Physiological Basis of Metabolic Surgery (Pamukkale Üniversitesi)

Prof. Dr. Alper Çelik: Principles of Metabolic Surgery (Yeni Yüzyıl Üniversitesi)

20.00 – 23.30 Gala Dinner (Natural Park, Pamukkale)

10 September 2017 Sunday

09.00 – 10.30 Salon A: **Symposium 5:** Neurotransmitter Measurement on a Second to Second Base in Biological Systems

Chairs: Prof. Dr. Kemal Türker & Prof. Dr. Ahmet Hacımüftüoğlu

Assoc. Prof. Dr. İbrahim Yücel Özbek: Biocompatible Brain Sensor Fabricatıon for Diagnosis and Treatment of Brain Disorders (Atatürk University)

Assoc. Prof. Dr. Bülent Çavuşoğlu: Production of Mobile Wireless Device for Real-Time Neurotransmitter Consantration Measurement in Neural Science Research (Atatürk University)

Prof. Dr. Ahmet Hacımüftüoğlu: Innovative Microsensor Manuplations in in Vivo and in Vitro Biological Systems (Atatürk University)

09.00 – 10.30 Salon B: **Panel 1**: Obesity & Brain

Chairs: Prof. Dr. Haluk Keleştimur & Yrd. Doç. Dr. Deniz Atasoy

Speakers: Prof. Dr. Haluk Keleştimur, Prof. Dr. Sinan Canpolat, Yrd. Doç. Dr. Emine Kaçar & Prof. Dr. Mete Özcan

10.30 – 11.00 Coffee Break

11.00 – 11.45 **Conference 6:** Doç. Dr. Devrim Gözüaçık "Autophagy in Health and Disease''

Chair: Prof. Dr. İlknur Kozanoğlu

11.45 – 12.30 **Conference 7:** Prof. Dr. Gökhan Metin "The Demands of Basketball and Physiology of the Basketball Players''

Chair: Prof. Dr. Neyhan Ergene

12.30 – 13.15 Lunch

13.15 – 14.00 Salon A: **Conference 8:** Prof. Michael Shattock "Dolphins, diving and dysrhythmias: Autonomic conflict as a trigger for sudden death?"

Chair: Prof. Dr. Ahmet Ayar

13.15 – 14.00 Salon B: **Conference 9:** Prof. George Perry "Role of Mitochondria in the Oxidative Stress of Alzheimer's Disease"

Chair: Prof. Dr. Ertuğrul Kılıç

14.00 – 14.30 Awards & Closing Ceremony

14.30 – 14.45 Coffee Break

14.45 – 17.30 Annual General Meeting of the Turkish Society of Physiological Sciences

ACTA PHYSIOLOGICA

All abstracts have been reviewed by the following list of referees.

Prof. Dr. Erdal Ağar

Prof. Dr. İnci Alican

Prof. Dr. Ahmet Ayar

Prof. Dr. Sami Aydoğan

Prof. Dr. Nurettin Aydoğdu

Prof. Dr. Filiz Basralı

Prof. Dr. Metin Baştuğ

Prof. Dr. Melek Bor Küçükatay

Prof. Dr. Walter Boron

Prof. Dr. Sinan Canpolat

Prof. Dr. Nuran Ekerbiçer

Prof. Dr. Deniz Erbaş

Prof. Dr. Şeref Erdoğan

Prof. Dr. Nilüfer Erkasap

Prof. Dr. Numan Ermutlu

Prof. Dr. Ethem Gelir

Prof. Dr. Fatih Mehmet Gökçe

Prof. Dr. Ümmühan İşoğlu Alkaç

Prof. Dr. Nevzat Kahveci

Prof. Dr. Sacit Karamürsel

Prof. Dr. Haluk Keleştimur

Prof. Dr. Naim Khan

Prof. Dr. Ertuğrul Kılıç

Prof. Dr. Ersin Koylu

Prof. Dr. Sadi Kurdak

Prof. Dr. Hızır Kurtel

Prof. Dr. Georges Leftheriotis

Prof. Dr. Kevin O'Byrne

Prof. Dr. Nilsel Okudan

Prof. Dr. Güler Öztürk

Prof. Dr. George Perry

Prof. Dr. Süleyman Sandal

Prof. Dr. Michael Shattock

Prof. Dr. Güldal Süyen

Prof. Dr. Nimet Uysal

Prof. Dr. Arzu Vardar

Prof. Dr. Alex Verkhratsky

Prof. Dr. Berrak Yeğen

Prof. Dr. Bayram Yılmaz

Prof. Dr. Robert Zorec

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CONFERENCES

Conference 1

The Development of Experimental Physiology in Turkey and Pioneerıing Female Physiologists

Nuran Yıldırım
Bezmiâlem Foundation University, Medical Faculty, Istanbul

The way towards experimental physiology was opened by Şânizade Mehmet Ataullah Efendi (1771-1826) in the 19th century. The second of his five-bookvolume series called Hamse-i Şânizade, is a book on physiology, entitled “Vezâif-i A'zâ” (Tasks of the Organs) (Iİstanbul 1820). This book, translated by Şânizade from an Italian source, included chapters on; Chewingmastication, eating and drinking, breathing, blood circulation, sweat, feelingssensations, sleep, sightvision, as well as diseases, their causes and indications. Mustafa Behçet Efendi (1774-1834) translated the Fisiologia written by Leopoldo Marco Antonio Caldani, one of the important physiologists of the 18th century, under the title Tercüme-i Fizyolociya. This is the first work bearing the name of physiology. In Turkey, physiology has developed in parallel to with medical education. Osman Saib Efendi was the physiology teacher instructor of at the Tıphane-i Âmire, the first medical school which was opened in 1827. After the renovation the School went through in 1839, Tıphâne-i Âmire took the name of Mekteb-i Tıbbiye-i Şahane, and French became the language of education language became French. It is assumed that Sigmund Spitzer, Etienne Carathéodory, and Gaspard Sinapian read the books of French physiologists during their lessons, until the curriculum switched to Turkish in 1870.

Experimental physiology in Turkey started in a modest physiology laboratory (1876), which Şakir Pasha, who had specialized in physiology at Claude Bernard''s laboratory in Paris, created with the tools he brought from Europe with using his own means. Şakir Pasha (1849-1909), managed to establish a well-equipped laboratory at the end of long struggles, and concentrated his work on circulation, respiration, digestive physiology, and body heat. With his “"Coefficient respiratoire de Chakir Pacha”", he made himself a name in the corpus of physiology. His student Kemal Cenap Berksoy (1876-1949) established physiology firmly as a field of teaching and research field. Berksoy, who focused on experimental studies on digestive physiology, stated that the most effective secretion was taking place in the deep mucosa layer of the duodenum. The leading women female researchers of physiology in Turkey weare Meliha Terzioğlu, Nuran Gökhan, and Füruzan Emiroğlu, all three of them graduates from Istanbul Medical Faculty. Meliha Terzioğlu, who received her degree of doctor of physiology degree (Ph.D.) from Yale University, is known for her work on respiration and blood physiology.Nuran Gökhan pioneered multidisciplinary neuroscientific studies in our country Turkey, by establishing the Electroneurophysiology Research and Application Center of Istanbul University, with thefunded by donations she made availableobtained through her own efforts.Füruzan Emiroğlu is known for her publications on neurophysiology and cardiac physiology.Many female physiologists who follow in their trackes contribute to education and research in 84 medical faculties in Turkey.

Conference 2

Role of Amygdala Kisspeptin in Reproduction and Behaviour

Kevin T O'Byrne and Xiao Feng Li
King's College London, Faculty of Life Sciences and Medicine, Division of Women's Health, Guy's Campus, SE1 1UL, UK.

The neuropeptide kisspeptin is a potent stimulator of gonadotropin-releasing hormone (GnRH) secretion and essential regulator of reproduction. Mutations in the genes for kisspeptin or its receptor results in hypogonadotropic hypogonadism and failure to enter puberty. In addition to the well-studied hypothalamic kisspeptin neurones located in the hypothalamic arcuate nucleus and preoptic area, depending on species, they are present in several extra-hypothalamic loci, most notably the posterodorsal subnucleus of the medial amygdala (MePD). Although the medial amygdala has a long history of involvement in gonadotropic hormone secretion, puberty and behaviour, we have recently shown using neuropharmacological techniques, and selective optogenetic and chemogenetic activation of MePD kisspeptin, their involvement in the regulation of hypothalamic GnRH pulse generator frequency, pubertal timing and behaviours including social and sexual behaviour, and anxiety.

Conference 3

Adrenergic Excitation of Astroglia in Health and Disease or the Other Brain: Adrenergic Excitation of Astroglia

Robert Zorec
University of Ljubljana, Faculty of Medicine, Institute of Pathophysiology, Laboratory of Neuroendocrinology - Molecular Cell Physiology, Ljubljana, Slovenia

Astrocytes, the most heterogeneous glial cells in the brain, have been scientifically neglected for almost a century. By being merely "nervenkitt", as proposed by Virchow in 1858, they were considered to play only subservient roles to neurons. However, in the last two decades a renewed interest into these cells emerged. Astrocytes get excited when neurotransmitters, such as noradrenaline, bind to their membrane receptors and signal back to neurons by also releasing their own transmitters, and by being morphologically very plastic, a function required in memory formation. As in neurons, astrocytes contain vesicles, which store chemicals, termed gliotransmitters or more generally gliosignaling molecules. While the vesicle-based chemical signal release is similar to that in neurons, however, it is much slower vs. that in neurons. The slow kinetics of this signaling makes them integrators and energy providing cells (astrocytes contain glycogen) to neurons in a similar time-domain, as monitored by measuring cytosolic levels of D-glucose and L-lactate by FRET-based nanosensors. In ageing and diseased states, noradrenaline, released from the disintegrated nucleus locus coeruleus, is diminished, thus leaving astrocytes depleted of stimuli that are essential for their coordinating functions of neural networks. Vesicle dynamics depends on intermediate filaments, which get overexpressed in pathological conditions, leading to reactive astrogliosis. Therefore, altered vesicle dynamics may be associated with the diseases such as amyotrophic lateral sclerosis, multiple sclerosis, autistic disorders, Alzheimer's disease, trauma, edema, and states in which astrocytes contribute to neuroinflammation. In particular, this is associated with a failure in the adrenergic stimulation. In multiple sclerosis, for example, fingolimod, a recently introduced drug, apparently also affects vesicle traffic and gliosignaling molecule release from astrocytes. Moreover, studying the effect of ketamine, an anesthetic that exhibits analgesic, psychotomimetic, and rapid antidepressant effects, inhibits astrocytic vesicle merger with the plasma membrane, indicating that this process may well be used as a new physiologic target for the development of new therapies.

Conference 4

'FXY' ing a Broken Heart: Phospholemman (FXYD1) and Na Transport in Health and Disease

Michael Shattock
King's College London, Medical School, Department of Physiology, UK

All mammalian cells contain the Na/K ATPase. This ubiquitous pump not only controls transmembrane Na and K gradients but is also responsible for a plethora of other coupled transport processes including those for Ca, protons, amino acids and metabolic substrates. As such it is critically important for many cell functions including, in excitable cells, the establishment of the resting membrane potential and the generation of electrical activity. The dynamic control of Na/K pumps in many tissues, in response to cellular signalling pathways, is mediated via a familly of small accessory proteins named after their characteristic FXYD (pronounced 'fix-it') consensus sequence.Phospholemman (FXYD1) is the muscle specific FXYD protein and is expressed in cardiac, skeletal and smooth muscle. It is unique amongst this FXYD family in that it contains a phosphorylatable cytoplasmic tail containing three phosphorylatable residues (Ser 63, Ser 68 and Thr/Ser 69). Unphosphorylated FXYD1 inhibits Na/K transport while phosphorylation (by PKA at Ser 68, or PKC are Sers 63, 68 and 69) relieves this inhibition (see Figure). This talk will describe the regulation of the cardiac Na/K ATPase by phospholemman and how this is modulated by phosphorylation. The role of phospholemman in controling intracellular Na at high heart rates will be described and how defects in this process contribute to the pathology of heart failure, diastolic dysfunction and metabolic remodelling.
Changes in phospholemman phosphorylation also play an important role in the regulation of blood pressure and vascular tone. Studies will be described showing the profound effect of FXYD1 phosphorylation on *in vitro* and *in vivo* vascular smooth muscle function and blood pressure control and the role of hypo-phosphorylation of FXYD1 in ageing-induced essential hypertension.

Conference 5

Interferometric Microscopy for Detection and Visualization of Biological Nanoparticles

M. Selim Ünlü, O. Avci, J. Trueb, F. Ekiz Kanik, and N. Lortlar Ünlü,
Boston University, Boston MA, USA M. Yorulmaz and E. Seymour, Aselsan Research Center, Ankara, Turkey

Nearly four hundred years ago, invention of the microscope offered a glimpse into the previously unknown details of insects and minerals. Advent of optical microscopy has provided detailed visualization and study of biological specimens including parasites, fungi, and bacteria. Today, non-optical microscopes allow us to probe into the once invisible world and it has become possible to visualize the nanoscale biological particles. 2014 Nobel Prize in Chemistry was awarded "for the development of super-resolved fluorescence microscopy" is a testimony to the importance of nanoscale observations in biological world. Biological nanoparticles such as viruses and exosomes are important biomarkers for a range of medical conditions, from infectious disease to cancer. Biological sensors that detect whole viruses and exosomes with high specificity, yet without chemical labeling, are promising because they generally reduce the amount and complexity of sample preparation required by molecular amplification methods and may improve measurement quality by retaining information about nanoscale biological structure. Unlike fluorescence-based super-resolution techniques, conventional light scattering microscopy cannot discern details that are closer than half of the wavelength of light. We developed an optical sensing technology, Interferometric Reflectance Imaging Sensor (IRIS), and the relevant features of this multifunctional platform for quantitative, label-free and dynamic detection [1]. In high-magnification modality Single-Particle IRIS (SP-IRIS) has the ability to detect and characterize individual biological nanoparticles. In SP-IRIS, the interference of light reflected from the sensor surface is modified by the presence of particles producing a distinct signal that reveals the size of the particle that is not otherwise visible under a conventional microscope. Using this simple platform, we have demonstrated label-free identification and visualization of various viruses in multiplexed format in complex samples in a disposable cartridge [2]. Recently, our technology was applied to detection of exosomes [3]. We are currently focusing on various biological applications as well as further improvement of the technique using pupil function engineering [4].

[1] O. Avci, N. Lortlar Ünlü, A. Yalcin, and M. S. Ünlü, "Interferometric Reflectance Imaging Sensor (IRIS)—A Platform Technology for Multiplexed Diagnostics and Digital Detection," Sensors, Vol. 15, (2015).[2] S.M. Scherr, D. S. Freedman, K. N. Agans, A. Rosca, E. Carter, M. Kuroda, H. Fawcett, C. Mire, T. W. Geisbert, M. S. Ünlü, and J. H. Connor, "Disposable cartridge platform for rapid detection of viral hemorrhagic fever viruses," Lab Chip, Vol. 17, (2017).[3] G.G. Daaboul, P. Gagni, L. Benussi, P. Bettotti, M. Ciani, M. Cretich, D. S. Freedman, R. Ghidoni, A. Yalcin, C. Piotto, D. Prosperi, B. Santini, M. S. Ünlü, M. Chiari, "Digital Detection of Exosomes by Interferometric Imaging," Nature Scientific Reports, Vol. 6, 37246, (2016).[4] O. Avci, M. I. Campana, C. Yurdakul, M. S. Ünlü, "Pupil function engineering for enhanced nanoparticle visibility in wide-field interferometric microscopy," Optica, Vol. 4, (2017)

Conference 6

Autophagy in Health and Disease

Devrim Gozuacik
Faculty of Engineering and Biological Sciences, Molecular Biology, Genetics and Bioengineering Program and, EFSUN Nanodiagnostics Center of Excellence, Sabancı University, Istanbul, Turkey

In our lab in Sabanci University, Istanbul, we focus on signaling events regulating mammalian autophagy in health and disease. To discover new autophagy regulators and coordinators, we performed several unbiased functional screens. Our microRNA (miRNA) screens led to the discovery of several miRNAs targeting autophagy at various steps of the pathway. miRNAs are able to affect the expression of a number of proteins at once. Therefore, miRNA networks seem to integrate cellular stress response pathways including autophagy and apoptosis, and coordinate them to shape cell faith. Our published and unpublished results allowed us to have a better picture of the miRNA networks modulating autophagic responses in human health and disease. Protein interaction screens performed in our lab led us to discover novel proteins involved in autophagy regulation. In fact, some of these proteins were directly interacting with the core autophagy machinery components. Unexpected direct links between autophagy and other important cellular pathways were found, allowing us to reveal novel entry points for autophagy regulation and coordination in cells. Interestingly, some of this interactions seemed to be autophagy signal specific, and our work revealed novel dynamics in autophagy regulation. Results from our recently published and unpublished studies will be presented and physiological and pathological implications of our results will be discussed.*This work was supported by The Scientific and Technological Research Council of Turkey (TUBITAK) 1001 Grant number: 114Z982 and Sabanci University.

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Conference 7

The Demands of Basketball and Physiology of the Basketball Players

Gökhan Metin
Istanbul University, Cerrahpaşa Medical School, Department of Physiology, Istanbul, Turkey

Basketball competition is played in limited time intervals on a field that can be considered as narrow compared to the number of players on the field. To score points a player should pass the ball through the opponent's basket which is 3.05 m high from the floor and 45 cm in diameter. Therefore, an almost continuous physical activity, physical contact when needed and energy is demanded from the players on the field.As reported in a review providing information about the physical and metabolic characteristics of basketball players 1) The physical characteristics of the players vary according to their playing positions and skills, 2) The VO_{2max} (mL/kg/min) of the players is 44-54 in females and 50-60 in males, 3) More skilled players are more agile and faster and can jump higher, 4) The guards perform more intense movements than forwards and pivots during the game (1).In addition, video (time-motion; TM) analysis, which is used to evaluate player performance during the basketball game, provides important information to the researchers. In a recent study it was reported that elite players perform more intense intermittant physical activities more frequently and maintain these activities throughout the game whereas subelite players perform more sprint, walking and standing activities in the game (2).Depending on such type of analysis we may suggest that energy demands of the movements in a basketball game is obtained from both aerobic and anaerobic metabolic pathways. However it was also suggested that anaerobic power is a more important factor than anaerobic capacity in modern basketball (3). On the other hand, it was also emphasized that the changes in 3 rules of the game brought by FIBA in year 2000 may have contributed to the modification of the the

physiological characteristics of the guards (maximal and submaximal O_2 consumption) (4). Furthermore, these rule changes have a significant effect on not only physiological properties but also anthropometric profiles of the players. Such that; basketball's 5 traditional game positions (point guard, shooting guard, forward, power forward and pivot) functionally turned into guard, forward and pivot positions. In conclusion, the most important determination for modern basketball is that the game is evolved into a faster and more dynamic game. In this context knowing the physiology of the basketball players is a necessity to understand the demands of basketball and to manage the game.

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Conference 8

Dolphins, Diving and Dysrhythmias: Autonomic Conflict as a Trigger for Sudden Death?

Michael Shattock

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The incidence of sudden cardiac death in young athletes remains disproportionately high. Swimming, in particular, has long been identified as a gene-specific trigger for LQT1-induced arrhythmias. Cold-water submersion is known to activate two powerful but conflicting reflexes (i) the cold-shock response (CSR) and (ii) the diving response (DR). Among other physiological responses the CSR activates a sympathetically-driven tachycardia while the DR activates a parasympathetically driven bradycardia. We have termed these antagonistic inputs to the heart 'autonomic conflict' and have hypothesised that this may trigger the minor arrhythmias seen in 60-80% of healthy volunteers immersed suddenly into cold water and, more significantly, may be a unique trigger for the more life-threatening arrhythmias seen in other situations such as LQTS (see Figure).

We have observed a further arrhythmogenic 'substrate' in cold-water submersion. During the DR-induced bradycardia, the QT-interval of the ECG fails to prolong resulting in a short relative refractory period and a long diastolic interval – a situation that may predispose to re-entrant arrhythmias.

We have used two animal models to investigate autonomic conflict. In a study lead by Dr Terrie Williams (University of California Santa Cruz, USA) telemetered dolphins during a dive were shown to experience arrhythmias triggered by a form of autonomic conflict in which the profound diving bradycardia seen in these animals was antagonized by bursts of exercise-induced tachycardia. In an isolated Langendorff-perfused rabbit heart model, with intact autonomic input, vagal stimulation alone was sufficient to induce arrhythmias which, when combined with autonomic conflict (sympathetic stimulation) and QT prolongation, precipitated potentially lethal arrhythmias. So, while there is evidence for autonomic conflict triggering electrical abnormalities, the generation of serious ventricular arrhythmias requires the presence of other predisposing factors such as acquired or heritable LQTS, cardiac hypertrophy, ischemic heart disease etc.We hypothesise that autonomic conflict may provide a unique trigger for SCD when combined with environmental, genetic and pathological factors. While each factor alone may be insufficient to trigger arrhythmias, a combination of these substrates with the trigger of autonomic conflict may create the 'perfect storm' of lethal arrhythmias and sudden cardiac death. This has yet to be definitively tested.

Conference 9

Role of Mitochondia in the Oxidative Stress of Alzheimer's Disease

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Mitochondria may underlie oxidative stress in Alzheimer disease (AD) changes since dysfunction is a prominent and early feature of AD. Recent studies demonstrate that mitochondria are dynamic organelles that undergo continual fission and fusion events which regulate their morphology and distribution. Morphometry showed a small but significant reduction in mitochondria number and enlarged size in AD. Levels of the fission/fusion proteins DLP1, OPA1, Mfn1 and Mfn2C were significantly decreased in AD, yet levels of Fis1 were significantly increased. Interestingly, although all these proteins demonstrate even distribution in the cytoplasm and processes of pyramidal neurons in age-matched control hippocampus, they appeared to accumulate in the soma but not in the processes of pyramidal neurons in AD hippocampus. Given that OPA1, Fis1, and Mfn1/2 are all mitochondrial membrane proteins, the changes in their distribution to soma in AD neurons, suggest changes in mitochondria distribution in these neurons. The expression of fission/fusion proteins was manipulated in M17 cells and primary hippocampal neurons in a way that mimicked their expression changes in AD. These manipulations all reduced mitochondrial density in the cell periphery (M17 cells) or neuronal processes (primary neurons) which correlated with reduced spine numbers (primary neurons).AβPP and Aβ caused reduced expression of DLP1 and OPA1 while increasing expression of Fis1, consistent with our findings in AD brains. Through time lapse study, we were able to demonstrate that mitochondria were able to fuse with each other but at a much slower rate in AβPP overexpressing cells. Overall, we concluded that AβPP, through amyloid-□ production impairs mitochondrial fission/fusion balance through regulation of expression of mitochondria fission and fusion proteins.

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Symposia

Symposium1: Zinc and Physiology

S.1.1: Enrichment of Cereals with Zinc by Using Agricultural Strategies

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Today, about 2 billion people around the world are affected by zinc deficiency, particularly in the rural areas of the developing countries. High consumption of wheat-, maize- or rice-based foods with low zinc represents the major reason of the problem. In many developing countries, cereals contribute up to 70 % of the daily caloric intake. In case of Turkey, wheat alone is responsible for 42% of the daily caloric intake, and this ratio probably exceeds 60% in the rural areas. Turkey is one of the countries where soils contain very low amount of plant available zinc in the world. Growing cereals with inherently low zinc on such potentially zinc-deficient soils reduces grain zinc further. Enrichment of cereals with zinc is, therefore, a growing challenge and research topic. Providing zinc supplements and artificial enrichment of flours with zinc are often suggested as effective solutions to the problem. However, although these solutions are short-term effective; they could be very expensive and not sustainable long term in developing countries. Alternatively, agriculture offers more realistic and cost-effective solutions to improve grain zinc concentrations. Application of zinc-containing fertilizers and plant breeding approach are used as effective strategies against zinc deficiency problem. In this presentation, enrichment of cereals with zinc and improving its biological availability by using agricultural tools, especially fertilizer strategy, will be explained. In addition, the global zinc fertilizer project "HarvestZinc Project" that is on-going in 12 countries over past 8 years, will be introduced together with its available results.

S.1.2: Zinc Metabolism and Metallothioneins

Rasim Moğulkoç
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Zinc one of the trace elements and it is the most commonly used element in biological systems. Zinc is participating to much more than 2700 enzymes including hydrolases, transferases, oxidoreductases, ligases, isomerases and lysases. As a natural consequence, it is found in almost every cell of the body. Zinc has activity on maintaining the stability and integrity of the biological membranes and ion channels, zinc also provides structural support for proteins during molecular interactions, as an intracellular regulator. Zinc has a role as structural element in nucleic acids or other gene regulating proteins. Called as metallothioneins (MT) protein family has small
moleculer weigth, rich in cysteine groups, plays an important role in many physiological and pathological process, especially oxidative stress. A critical role of metallothioneins (MT) bind zincs a high affinity, thereafter it is the intracellular zinc deposit. MT release zinc if it is required intracellular free zinc, mediates the unique physiological roles of zinc. Expression of MT induced by zinc increases thus provided zinc homeostasis. Together with MT's powerful radical-trapping ability, show critical role of MT role in oxidative stress due to mediates the effects of zinc. The aim of this presentation informs zinc metabolism and metallothioneins.

S.1.3: Zinc Transport Proteins

Abdulkerim Kasım Baltacı
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Zinc is most common found metal after in the human body. Zinc has a key role growth, development and reproduction, only metal which find every enzyme class. In biological systems, zinc functions are organized into three categories as catalytic, structural and regulatory. Zinc balance is tightly regulated by bioavailability of zinc and the identification of special zinc carriers in the digestive tract, cell membranes and organs. In biological events, it has been shown that zinc transport proteins have significant roles and evidence in this is increasing.In recenlty understant that zinc proteins have significant for systemic and cellular zinc balance which is two important groups of zinc transport proteins, ZIP proteins and ZnT proteins. Zrt- and Irt-similar proteins (ZIP) and zinc transporter (ZnT) are also involved in zinc transport in cell. ZIP proteins are transport zinc from cytoplasm to vesicles and organs in the cell and outer of cell. ZnT proteins are transport zinc from vesicles, organelles and outer of cell to cytoplasm.After zinc is transported to the cell, it is found in 50% of the cytoplasm, 30-40% in the nucleus and 10% in the cell membrane.Zinc is combined with the metalothionines if it is present in the cell in excess and thus the cell is protected against zinc toxicity. The purpose of this presentation is; Zinc transport proteins with critical prescription in the molecular pathways of zinc.

Symposium 2: Horse as an Elite Athlete

S.2.1: Performance, Physiology and Psychology Interaction

Recep Aslan
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Performance is a product of both emotional state and physiology. Each chemical element in the organism

acts as a messenger which affects both physiology and psychology by the feedback. While the neurophysiological basis of behavior is defined by "physiological psychology", physiological changes in the emotional state is described by "psychological physiology". Appropriate physical activities increase the quality of life and wellbeing. State of feeling good plays as much important role as genetic and physiological factors on athletic performance. The well-being of a horse is directly affected by environment, communication and expectations as well as biochemistry and physiology of the horse. For example, your thoughts, your psychology and your contact with horse are very important in your communication with horses. Your wrong expectation from a dressage horse to show endurance ability affects both physiology and psychology of the horse negatively. We have tangible data on how detergents, food / feed additives, climate, hormones and pheromones affect physiology and behavior. We also know how some of the deficiencies in body, e.g. anemia affect both physiology and psychology. We take endocrine-based physiological and psychological events, e.g. stress and pregnancy as a specific discipline. Actually, stress is a psychophysiological phenomenon. Excessive stress is inversely related to the performance for both human and horse athletes. In an other aspect, stress is related with the perception. Physical activity is not an important stress factor for horses since they are born as an athlete, but sense of competition is an important stressor. Stress factors are substantially perceived by the instincts in horses however, by the education and the intellectual emotions in human athletes. Humans can control the physiological effect of their emotions better with strong frontal lobe and cerebral cortex while horses can not shift their physiological manifestations of emotions as much as humans. Even though this can be repressed in horses by education, punishment and conditioning, it manifests itself in the details of performance. In addition to the physiological basis of behavior, the power of feelings and emotions which control the physiology should be taken into consideration on performance evaluation. No matter how good the care, feeding, stabling and training of the horse, the desired achievement in performance become difficult if the high level of emotional involvement between the horse and owner is not included.

S.2.2: Why are the Horse Athletes Superior to the Human Athletes?

Berjan Demirtaş
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Horse and human athletes are considered as one of the best athlethes among all the terrestrial athlethic species. Different horse breeds have different performance traits such as speed or endurance, overall, horses are more successful in both sprint and endurance (marathon) racing than human athletes. Higher percentages of skeletal muscle weight/ body weight and type II muscle fibres in their skeletal muscle, more tendons and ligaments in lower extremities and higher stride length and frequency make horse athlethes as superb sprinters. The cardiac output of horses during exercise are approximately ten times superior to human marathon athletes while the maximum oxygen consumption (VO2 max) and lactate tolerance are at least twice those of humans. The haemotocrit doubles in horses during exercise by releasing erithrocytes from the spleen while no increase in human athletes. All these factors that enhance aerobic capacity make horses better endurance athletes than humans. However, the improvement rate in human athlethic records are superior to the horses in both sprint and endurance. This might be due to the inbreeding of horses from very small genetic pool for selection and/or fewer scientific research carried out about the effect of enviromental factors such as training and nutrition on horse performance compared to human athlethes.

S.2.3: The Genetic Basis of Equine Athletic Performance

Sinan Kandır
Çukurova University, Ceyhan Faculty of Veterinary Medicine, Department of Physiology, Adana, Turkey

After being domesticated about 6,000 years ago, the horse became the nearest to the mankind since its power, speed, and ability to travel long distances. Today, horse racing and breeding have become a major industry through the world. For this reason, it is important to train horse athletes with the high athletic performance. The most important criterion for choosing the best performing horses is race times, therefore the selection has been carried out predominantly on the basis of this criterion. Following the human genome project, a horse genome project was initiated in 1995 with the participation of 100 scientists and 25 laboratories, and the horse genome was found to generate approximately 2.47 billion bases and 21,000 genes.The main genes that their physiological phenotypic effects are clearly seen on horse performance and used routinely for the selection lineage are myostatin (MSTN) and doublesex and mab-3 related transcription factor 3 (DMRT3) genes. MSTN is responsible for muscle development and encoded by chromosome 18 while DMRT3 is responsible for gaiting type and encoded by chromosome 23. Single nucleotide polymorphisms (SNPs) observed in the MSTN gene also affect the horse running distance. As a matter of fact, horses with cytosine/cytosine (C/ C) homozygote genotypes perform better in short distance (≤1300 m) while thymine/thymine (T/T) homozygote genotypes

perform much better in long distance (> 2114 m) races. Interestingly horses with cytosine/thymine (C/T) heterozygote genotype are more successful at the middle distance (1301-1900 m) races. Furthermore, the SNP in the DMRT3 gene, which is formed between the cytosine (C) and adenine (A) nucleotides, changes the gait type, and this mutation is thought to be related to ambling gait.Recent years of genome-wide associated studies (GWAS) and comparative transcriptomics analysis have shown that some of the target genes can be used as markers, affecting performance through direct or indirect pathways, taking part in general and intermediary metabolic activities. We believe that selection and exercise programs will be reshaped through furher and detailed investigations on genomic and proteomic outputs.

Symposium 3: Neuromodulation and Neuroimaging in Neurodegenerative Diseases

S.3.1: Neuromodulation and Neuroimaging in Neurodegenerative Diseases: Clinical Experience

Lütfü Hanoğlu
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Cognitive, behavioral disorders and dementia are the essentials of various neurodegenerative diseases. These aspects also have a fundamental importance for the life quality of the patients. Nonetheless, unfortunately no effective and appropriate treatments for these aspects haven't been developed yet. Pharmacological treatments for the cognitive and behavioral symptoms are only partly effective and also they cause severe side effects in some cases. That's why developing alternative treatments for this Mather is an urgent need at the moment. Recently some non-invasive neuromodulationary technics, such as Transcranial Magnetic Stimulation (TMS) and Transcranial Direct Currency Stimulation (tDCS), are seemed promising. The essential idea that these techniques are based on is that they can alter the stimulation conditions in cerebral cortex. In addition this alteration is not restricted to the application area. They also cause alterations in distant but functionally connected regions. Because of these, these methods are might be able to cause brain plasticity modulation in a long term with the correct application protocols. Potentially, neuromodulatory techniques might be able to activate brain plasticity and compensatory processes or increase the brain reserves. In other words, using these techniques can provide clinical healing of cognitive and behavioral symptoms also can slow down the ongoing degenerative progress. New studies showed recently a lot of different neurodegenerative diseases are fenomenon in the neural networks pathology that invoke related functions. These networks can be useful in determining the clinical onset of the disease and also might predict the functional lose degrees. We can also observe and detect the changes in the neural networks through the course of disease by using this approach. Aforementioned disorder of the neural networks can be observed by the neuroimaging methods, like EEG and FMRI. As a conclusion, one might propose that the use of neuroimaging techniques in order to determine the functional brain networks and building the neuromodulatory treatment regimes accordingly and considering the outcomes are going to be a trend topic in near future researches of neurodegenerative disorders. In this speech it will be reviewed, the on going researches in the neurodegenerative disorders field about the neuromodulatory treatment methods with the mentioned perspective in Istanbul Medipol University.

S.3.2: The Role of Neuromodulation in Neurodegenerative Diseases: in Vivo and in Vitro Studies

Burak Yulug
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Increasing human data suggest the therapeutic and neurorestorative role of transcranial magnetic stimulation in various neurological and psychiatric disorders in humans. However, there are limited experimental studies in the literature enlighting the possible neuroprotective role of this method. In our presentation, we aimed to summarize the neuroprotective effect of rTMS in various animal studies that can help us to understand the underlying mechanism of the repetitive transcranial magnetic stimulation (rTMS).

S.3.3: Functional Connectivity in Neurodegenerative Diseases: fMRI Findings

Zübeyir Bayraktaroğlu
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Neurodegenerative diseases are brain disorders with progressive degeneration and neuron death and results in dementias and ataxia, such as Alzheimer's and Parkinson's disease. Recent years many groups strive to find out non-invasive markers to diagnose these diseases and to follow up response to treatment. One promising tool for examining brain function is functional magnetic resonance imaging (fMRI) that employs changes in blood oxygen level dependent (BOLD) signal to define brain regions with increased or decreased activity. Even though it's a widely used research tool, translating findings of fMRI into the clinical practice advances slowly. However, observing the brain in resting state and focusing on BOLD signal fluctuations occur spontaneously offers a paradigm shift which can increase its application. Contrary to

neuropsychological experiments with task conditions resting state measurements have no cognitive demands. Analysis of resting state BOLD fluctuations involves the determination of temporal correlations between spatially distributed neuronal groups which generally called as functional connectivity. Functional connectivity reflects the network behavior underlying high level cognitive functions and dynamic changes.Resting state functional connectivity measures are well suited for clinical practice because of good SNR provided and minimal subject compliance required by the method. Clinical applications of functional connectivity include studies about group differences, diagnostic and prognostic information, clustering heterogeneous disease states and following the treatment responses.Although the prospects of resting state functional connectivity as a non-invasive biomarker for improving the clinical practice, several challenges elude its use widely. One of the biggest obstacles is inconsistent results which hamper comparisons across studies. However, reports in Alzhemier's and Parkinson's disease are more consistent and decreased interregional/local connectivity or altered connectivity has been reported.In this talk, several aspects of resting state studies on neurodegenerative diseases, improving consistency across studies and results from our group will be discussed.

S.3.4: Biomarkers of Event Related EEG Brain Oscillations in Neurodegenerative Diseases

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Istanbul Medipol University, REMER, Clinical Electrophysiology, Neuroimaging and Neuromodulation Lab, İstanbul, Turkey

Event Related EEG Brain Oscillations were used in search of electrophysiological biomarkers in different groups of patients with cognitive impairment and especially in Neurodegenerative Diseases. The methodology of Event Related EEG Brain Oscillations include: power spectrum analysis, digital filtering, phase locking factor and coherence analysis between different electrode pairs.In last decade our groups' research showed that Alzheimer' disease (AD) patients had reduced frontal theta phase locking, reduced cognitive delta responses and also reduced delta, theta coherence in different brain regions (See reviews: Başar and Yener 2013, Başar and Güntekin 2013). The researches that we have performed in the recent years showed that patients with Parkinson's disease (PD) had also reduced cognitive delta responses. Furthermore alpha and beta phase locking was reduced in PD patients in comparison to healthy controls. These abnormalities found in PD patients were worse when the PD patients had mild cognitive impairment or dementia. Furthermore we have also found that the difference between PD patients with and without hallucinations were more prominent for alpha and gamma frequency bands. Electrophysiological biomarkers of Neurodegenerative Diseases listed above are important in the understanding of how the electrical activity of the brain is impaired. These electrophysiological biomarkers listed above is going to be used to represent positive effects of Transcranial Magnetic Stimulation (TMS) and Transcranial Direct Currency Stimulation (tDCS) in Neurodegenerative Diseases.

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Symposium 4: Metabolic Surgery from the Basic Medical Sciences Perspective

S.4.1: Cellular Response to Metabolic Surgery

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The metabolic syndrome, which is accompanied by overweight or obesity, type 2 diabetes, hypertension and cholesterol metabolism disorders also can cause cardiovascular diseases is considered as major reasons of death. Metabolic surgery provides long-term resolution in the treatment of metabolic syndrome. By means of metabolic surgery, duodenum and jejunum are bypassed and food is passed to ileum directly. Partially digested food in ileum causes the intestinal secretions to increase and the entero-insular axis to be affected. The results we have obtained so far lead us that after the metabolic surgery operations enteric hormone (incretin) levels increases of glycogen level in blood. The best known of these hormones are GLP-1, GIP, PPY, Ghrelin. GLP-1 and PPY are secreted from L cells in ileum. GIP is secreted from the K cells located in the duodenum, especially due to oral fat ingestion.In the case of fasting, levels are reduced and increased with food intake.Ghrelin becomes secretary from the antrum of the stomach. The fact that metabolic surgery applications are effective in the treatment of type 2, as well as prolonging the life span in obese patients and influencing the incidence of cancer in a positive way, make these applications very attractive. Histopathological findings are important for a complete understanding of the mechanism. In this symposium, the effects of metabolic surgery on cell and tissue level and these effects will be compared to physiological data.

S.4.2: Physiological Basis of Metabolic Surgery

Vural Küçükatay
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In general, metabolic Surgery as the operative manipulation of a normal organ or organ system to achieve a biological result for a potential health gain. According to this definition, with the surgical interventions made in the gastrointestinal system, obvious metabolic effects are obtained as well as weight loss. The term 'metabolic surgery' has therefore been established to emphasize that the primary purpose of a procedure is not weight reduction per se, but rather metabolic improvements. The positive effects of metabolic surgery on carbohydrate metabolism in particular are based on two hypotheses; these are foregut and hindgut hypotheses. The foregut theory suggests that causing food to bypass or accelerate the duodenum and the jejunum prevents secretion of an unidentified "putative signal" that contributes to insulin resistance and type 2 diabetes. Hindgut theory states that glycemic control results from the more rapid delivery of partially digested nutrients to the distal small intestine. The mechanisms underlying the beneficial effects of bariatric surgery are now the focus of a burgeoning field of research, with the aim of developing new therapies for obesity and T2D. Studies have shown that several intestinal hormones such as GLP-1, Peptide YY may play a role in mediating physiological changes produced by bariatric procedures, but the mechanism by which these positive effects occur is not fully understood. In this symposium, we will try to discuss the physiological mechanisms that mediate the positive effects of metabolic surgery.

S.4.3: Principles of Metabolic Surgery

Alper Çelik
Yeni Yüzyıl University, Medical School, Department of Metabolic Surgery, İstanbul

Metabolic Surgery means the treatment of any metabolic disease by surgical means and, it is a broad specialization that covers obesity surgery as well. In clinical practice, metabolic surgery means the surgical treatment of non-obese and overweight diabetic patients. In this respect, metabolic surgery differentiates from obesity surgery as it aims to establish blood sugar control. Because the main goal of obesity surgery is to achieve weight control, and sees blood sugar control merely as a side benefit. In any case and for any disease, it is imperative for the surgical community to harness surgical expertise and art with the accumulated knowledge about disease physiopathology and through this process, act with the consciousness of why and what he/she is doing. This article presentation has been prepared by evaluating the disease we try to treat and the compounds of this disease within causes-results relationship and with the purpose of guiding all healthcare professionals who prepare to embark upon Metabolic Surgery journey.

Symposium 5: Neurotransmitter Measurement on a Second to Second Base in Biological Systems

S.5.1: Biocompatible Brain Sensor Fabrication for Diagnosis and Treatment of Brain Disorders

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This study presents a detailed framework for fabrication of biocompatible brain sensor used in detection neurotransmitters concentrations in the central nervous system (CNS). The proposed sensor can be used in diagnosing and treatment various brain disorders caused by changes in the basal levels of neurotransmitters such as, Parkinson, Epilepsy, and Schizophrenia. The fabrication of our brain sensors consists of three steps. These are fabrication of the microelectrodes by photolithographic methods, packaging and coating with selective chemical barriers respectively. In the fabrication stage, first of all suitable masks have been designed. These masks are used to transfer the image of the microelectrode to the substrate material (silicon or ceramic). In the designed mask, the physical structure and dimensions of the recording areas (the areas that contact with the brain and to be sensed), paths (places providing communication between recording areas and bonding areas) and bonding areas (places used for microelectrode packaging) of the microelectrodes were determined. After the mask design, the fabrication of microelectrode is carried out by applying the photolithographic steps in clear room, and in order to prevent the microelectrodes from being affected by environmental noises, the areas other than the recording and bonding areas are covered with the insulation layer. Microelectrodes, which are collectively fabricated on the substrate, are sliced, and each sliced microelectrode is packed so that it can be connected to the measurement device. In the packaging process, microelectrode is first bonded onto the PCB (electronic print circuit). The PCB is the connection between the microelectrode and the measurement device. The attached microelectrode bonding areas and the paths on the PCB are connected to each other by means of gold wires using a wire-bonding device. Fabricated each sensor is subjected to a calibration test. Sensors with successful in calibration test are covered with chemical barriers, which are the third stage of the fabrication, and are ready for measurement in the brain.

S.5.2: Production of Mobile Wireless Device for Real-Time Neurotransmitter Concentration Measurement in Neural Scıence Research

Bülent Çavuşoğlu
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Many brain diseases are thought to be the result of defects in the basal levels of neurotransmitters acting at synaptic intervals or in the removal of synaptic spacing. The ability to measure changes in neurotransmitter concentrations in real time on a second by second basis is crucial for the diagnosis and treatment of brain diseases. In this study, a device to be used in the amperometry technique for the determination of the concentration of neurotransmitters in the central nervous system (CNS) was designed and produced. This device increases the currents from neurotransmitter concentration at nA level by 10^7 times. The device is designed to be small and light enough to be carried on the subjects. The device, together with the battery, weighs a total of 11.8 g and measures 2.9 cm x 2.4 cm. The information from the developed device can be processed during experiment and follow-up and can be reflected both graphically and in real-time analysis results. This information is transmitted via the wireless communication unit. Since currents of 10^{-9} A obtained from the neurotransmitter measurements are raised, opamps with 10^{12} ohm input resistances are used in consideration of the leakage currents generated in the opamps used in the design, and the leakage currents are reduced to the order of pAs. Also, a circuit with 0.7 V output voltage for constant reference voltage required for neurotransmitter activation is integrated with this device. As a result, a mobile neurotransmitter concentration measurement device has been obtained, which can operate alone without the need for other systems. The measured biological signals contain basal level noise, which affects the limit of detection (LOD) of the sensor, which is connected to the basal level noise. In this study, a wavelet filter was used for noise suppression and the selected wavelet family for filtering was the Daubechies wavelets that are the most compatible with biosignals. Thanks to this system, the data about the received neurotransmitter levels are read and integrated into the signal processing software by transferring it to a computer via Bluetooth. Developed in the context of this project, this software is designed in such a way that all necessary calculations can be taken from the measured neurotransmitter levels and displayed on the screen at real time (simultaneously during the experiment).

S.5.3: Innovative Microsensor Manuplations in In Vivo and In Vitro Biological Systems

Ahmet Hacımüftüoğlu
Atatürk University, Medical School, Department of Medical Pharmacology, Erzurum

It is thought that the majority of brain diseases are caused by changes in the basal levels of neurotransmitters which are acting at synaptic space in brain or removal parameters of them from synaptic cleft. Minimally invasive techniques for monitoring brain chemistry in vivo provided better understanding of neuropharmacology of CNS disorders. For monitoring and sampling brain chemistry; voltammetric electrodes, microdialysis and related analytical techniques had been used. Microdialysis, compared to voltammetry, offers lower temporal and spatial resolution.This system we have developed has been experimentally tested in animal models of depression, chronic pain, hepatic encephalopathy, epilepsy and Alzheimer's disease, and measurements of glutamate and other neurotransmitters were performed by in-vivo voltammetry. The drugs were selected according to the type of neurotransmitters in which the change were detected and the differences were tried to be removed. Numerous drug trials were performed. These results show that a large proportion of brain diseases may be associated with neurotransmitter level changes. Treatments focused on the changes in neurotransmitters levels have also been shown to improve the clinical course of the disease. Our studies are supported by Ataturk University BAP #2011271, Tubitak (The Scientific and Technological Research Council of Turkey) projects #107S067 and #113S083

ACTA PHYSIOLOGICA

Panels

Panel 1: Obesity and Brain

Haluk Keleştimur[1], Sinan Canpolat[1], Emine Kaçar[1] and Mete Özcan[2]
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Obesity, which is unavoidable arising from the current lifestyle, is no longer a problem of only the developed world, but begins to become a significant public health problem in the developing world as well. It leads to not only metabolic diseases but also behavioral alterations. Obesity has been also found to be associated with neuronal injury in the human cerebellum and hippocampus in young adults as well. Therefore, it is suggested that obesity should be regarded as a neurobiological disease rather than the consequence of detrimental food intake habits. Obesity has been shown to be involved in the increased prevalence of mood disorders, which not only impairs motivation, quality of life and overall functioning but also increases the risks of obesity complications.Similarly, cognitive disturbances in obesity have been also reported. It has been also experimentally shown that early stage obesity influences cognitive function in the rat. Sexual behavior is also affected by obesity. Sexual dysfunction has been suggested to be projected to rise alongside the increasing obesity rates.

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Oral Communications

OC01

Blood-Brain Barrier Dynamics of Nanotechnological Drug Carriers in Animal Model of Temporal Lobe Epilepsy

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AIM: In addition to pathophysiological mechanisms of epilepsy is still unknown, there has not been an effective cure for drug-resistant epilepsy. One of the major drawbacks in the failure of antiepileptic drugs which are used in resistant epilepsy is the BBB. In this study, temporal lobe epilepsy (TLE) model was induced by using KA, and glucose coated nanocarriers are loaded with lacosamide (GNP-LCD) to transport intothebrainfortreatment.

METHOD: In the study, 56 male young adult Wistar albino rats were used. The amount of GNP-LCD was measured with ICP-MS. EEG was recorded from the hippocampus of animals. Electron microscopic evaluation was performed to show GNP in the brain tissue. For statistical evaluation, ONE-WAY ANOVA followed by Tukey and Kruskal-Wallis tests was applied and accepted as $p<0.05$ significant.

RESULTS: The main amplitude of the EEG records were returned to the basal values right after the GNP-LCD administration to TLE groups. The injection of GNP-LCD to TLE and without TLE groups, made a time related increase in TLE groups. The measurement of GNP-LCD and GNP that passed into the brain tissue of both groups, showed that in the TLE-GNP group had the higher amounts of GNP ($p<0.01$). In ultrastructural evaluation, GNP and GNP-LCD transported through BBB endothelium showed a diffuse pattern in brain parenchyma and had a tendency to be accumulated.

CONCLUSION: The results of this study show that GNP, a nanocarrier, plays an effective role in transferring LCD used in TLE therapy to the brain at the effective dose and it could be a new approach to treatmentofepilepsy.

OC02

The Effects of Curcumin Administration on Hippocampal SIRT2, BCL-2, BAX And BIM Expressions in Young and Aged Rats

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AIM: Curcumin is a natural polyphenol that has anti-apoptotic, anti-oxidant and anti-aging properties. The pharmacological inhibitors of SIRT2 appear to be neuroprotective in the brain. The effect of curcumin on hippocampal SIRT2 expression was not studied and only few studies focused on its relationship with the apoptotic process. We aimed to demonstrate effects of curcumin administration on SIRT2, anti-apoptotic BCL-2 and pro-apoptotic BAX, BIM expressions in the hippocampus of young and aged rats.

METHODS: Twenty four wistar albino male rats (young: 3 months old, aged: 22 months old) were divided into following groups: (1) Young-control, (2) Young-curcumin, (3) Aged-control, (4) Aged-

curcumin. Curcumin was given at the dose of 30 mg/kg/day in dimethylsulfoxide. Intraperitoneal injections of control and curcumin groups were maintained for 21 days. SIRT2, BCL-2, BAX and BIM expressions were tested by Western blotting and SIRT2 protein levels of the hippocampal region was measured by a sandwich ELISA method. ANOVA, LSD, Pearson's r were used for statistical analysis ($p< 0.05$).
RESULTS: Aging increased SIRT2 and BAX expression levels and decreased BCL-2 and BCL-2/BAX ratio, whereas curcumin administration in aged rats significantly reversed this effect ($p < 0.05$). ELISA and Western blot findings were similar for SIRT2 ($p < 0.05$). SIRT2 was positively correlated with BAX, and negatively correlated with BCL-2/BAX ratio ($p < 0.05$). Finally, no significant differences in BIM expressions were found.
CONCLUSION: In aging, curcumin administration may prevent neuronal loss in hippocampus through inhibiting apoptosis, and SIRT2 inhibition may be involved in the neuroprotective effects of curcumin.
Gazi University Scientific Research Project Foundation provided the financial support for this study (project no: 01/2016-05).

OC03

The Effect of P2X7 Receptor Agonist, BzATP on Absence-Like Epileptic Activity in Wag/Rij Rats

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AIM: Absence epilepsy is a type of non-convulsive epilepsy which is usually seen in childhood and has typical 3Hz frequency spike wave discharges (SWDs) in electroencephalography (EEG). ATP-sensitive purinergic P2X7 receptors are non-selective cation channels. It is one of target receptor which is used in the treatment of neuroinflammatory diseases particularly. Although there are studies about effect of BzATP on epileptic activity in various experimental models of epilepsy, there is no record in chronic non-convulsive epilepsy. Therefore, the effect of the P2X7 receptor agonist, BzATP was investigated in the absence-like epileptic activity in genetic model of WAG/Rijrats.
METHODS: Twenty-one male WAG/Rij rats, 6-8 months aged, were used in the study. Tripolar electrodes were placed on the rat's skulls. Animals were allowed to recovery after electrode implantation for a week. Basal electrocorticography (ECoG) recordings were taken for 3 hours starting at 10:00 in the morning. Saline (i.c.v.); BzATP 50 µg/kg (i.c.v.); BzATP 100 µg/kg (i.c.v.) injected and ECoG recording was taken for 3 more hours after injection.
RESULTS: 50 µg/kg(i.c.v.); BzATP; 100 µg/kg(i.c.v.) doses of BzATP did not significantly affect the number and duration of seizures, frequency and amplitude of SWDs in ECoG recording compared to baseline ECoG recordings and solvent group ($p>0.05$).
CONCLUSION: Although BzATP is effective in kainic acid and status epilepticus and penicillin experimental models of epilepsy, it was ineffective in absence epilepsy model. However, It has been shown that P2X7 antagonists were not effective alone in maximal electroshock and pentylenetetrazole-induced epilepsy models but, they were effective in increasing anticonvulsive efficacy when used with other anticonvulsive drugs. Further studies are needed to investigate the role of P2X7 receptors in absence epilepsy seen in WAG/Rij rats.

OC04

Functional and Anatomical Characterisation of Kisspeptin Neurons and Synaptic Connections in KissCre-GFP Mice

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OBJECTIVES: Kisspeptin is a neuropeptide that plays an important role in the central control of gonadotropin releasing hormone (GnRH) and hence luteinizing hormone (LH) secretion. Its receptors have been demonstrated in brain regions in addition to the hypothalamus. However, their functions have not been understood. In this study, understanding of the neuroanatomical projections to the other brain areas by specifically tagging the kisspeptin neurons. Electrophysiological trafficking in these regions was also elucidated following optogenetic activation of kisspeptinneurons.
METHODS: Kiss-CreGFP mouse model was used to specifically mark and manipulate the kisspeptin neurons with viral injections. KissCre-GFP neurons in the arcuate nucleus were labeled using Cre-dependent AAV virüs, and the brain sections were histologically scored under a confocal microscope (n=7). Soma of kisspeptin neurons in the arcuate nucleus were marked and their axonal projections were identified. In the second step of the experiments, the kisspeptin neurons in the arcuate nucleus were infected with cre-dependent AAV-ChR2 (300 nL, n=7). Optogenetic firing of the kisspeptin neurons by laser stimulation

(10, 20, 30Hz) (450 nm, blue) was performed, and the function in these projected regions by electrophysiological recordings by patch clamp method was determined.
RESULTS: Axonal projections of kisspeptin neurons in arcuate nucleus of the hypothalamus to medial amygdala, paraventricular nucleus and habenula were determined. Significant changes were observed when the axons of kisspeptin neurons infected with ChR2 were stimulated with laser (450nm 10ms) at different frequencies (10, 20, 30Hz) compared to the resting membrane potentials ($p<0.05$).
CONCLUSION: Projections of the kisspeptin neurons in the arcuate nucleus to different regions of the brain suggest that this neuropeptide may have additional functions in addition to regulation of GnRH and LH.

OC05

Effects of an Angiotensin Converting Enzyme 2 Activator on Renin-Angiotensin System in an Experimental Endotoxemia Model

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AIM: Renin-angiotensin system (RAS) serves a critical role in the regulation of blood pressure and in the pathogenesis of cardiovascular diseases. This study investigated the effects of a xanthenone (XNT), an angiotensin-converting enzyme (ACE)2 activator, on RAS in animals treated with lipopolysaccharide (LPS).
METHODS: Male Wistar rats were divided into four groups: control, LPS [3 mg/kg, 30-minute infusion, intravenous (iv)], LPS+XNT [0.2 mg/kg, iv, one hour after LPS infusion], and XNT [0.2 mg/kg, iv]. Mean arterial pressure (MAP) of animals was measured from the carotid artery with a pressure transducer. Renin, angiotensin (ANG)I, ANGII, ANG(1-7), ACE, and ACE2 levels were biochemically determined in blood and kidney samples.
RESULTS: MAP decreased in LPS group ($p<0.01$), while not changing in LPS+XNT group compared to LPS group. Plasma levels of renin ($p<0.01$), ANGI ($p<0.05$), ANGII ($p<0.01$), ANG(1-7) ($p<0.01$) and ACE ($p<0.05$) were elevated, but ACE2 ($p<0.001$) was declined in LPS group. Tissue samples showed an increase in renin ($p<0.01$), a decrease in ANGI ($p<0.05$) and ANGII ($p<0.05$), whereas ANG(1-7), ACE, ACE2 remained similar to the control. In LPS+XNT group, renin, ANGI, ANGII, ACE resembled the control, whereas ANG(1-7) and ACE2 were similar to the LPS groups. Renin ($p<0.05$) and ACE2 ($p<0.05$) were higher than the control, but ANGI and ANGII were similar to control, while ANG(1-7) and ACE did not change in tissue samples.
CONCLUSION: The data imply that XNT is not effective on MAP decreased by LPS, but has an active role in RAS pathway.
This study was supported by I.U. Scientific Research Projects Coordination Unit. Project No: 41649.

OC06

Protective Effect of Saxagliptin Against Renal Ischemia/Reperfusion Injury in Male Rats

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AIM: Dipeptidyl peptidase-4 (DPP-4) is widely expressed in human tissues including the brain, lungs, kidneys, adrenals, pancreas, intestine, and lymphocytes. DPP-4 has effects proteolytic action, including T-cell proliferation and antioxidant. In addition, many cytokines, and chemokines have been identified as potential DPP-4 substrates. Saxagliptin is a selective, but reversible inhibitor of DPP-4. In this study, we investigated the protective effects of saxagliptin against kidney ischemia/reperfusion (I/R) damage.
METHODS: This study with the approval (Protocol no: 2017/A-28) received from Animal Experimentation Ethics Committee of Inonu University. Male Sprague-Dawley rats were used in this study. The rats were divided into four groups (n=10). In the I/R group, both kidneys ischemia of 45 min was performed, and then reperfusion was applied for 24 h. In the treatment groups, two different doses of saxagliptin (2 and 10 mg/kg) were orally administered before ischemia unlike the I/R group. After 24h, all rats were sacrificed and kidney tissue levels of glutathione peroxidase (GSH-PX), superoxide dismutase (SOD) and catalase (CAT) enzyme activity, malondialdehyde (MDA), neutrophil gelatinase-associated lipocalin (NGAL), kidney injury molecule-1 (KIM-1), interleukin 18 (IL-18) were measured. Also serum level of blood urea nitrogen (BUN), creatinine (Cre) were measured. Statistical analysis of the data was performed by the Bonferroni correction Mann Whitney U test in IBM SPSS Statistics 24.0 Windows package program.
RESULTS: SOD, CAT and GSH-PX activities were decreased and the levels of MDA, NGAL, KIM-1, IL-18, BUN and Cre were increased in the I/R group compared to controls ($p<0.05$). Saxagliptin administration were increased SOD, CAT and GSH-

PX enzyme activation and decreased the levels of MDA, NGAL, KIM-1, IL-18, BUN and Cre compared to the I/R group ($p<0.05$).
CONCLUSION: In this experimental study, we demonstrated protective effect of saxagliptin against renal I/R damage.
Acknowledgement: ELISA measurements of this study were supported by Inonu University BAP (Project no: 2016/54).

OC07

Investigation of the Effects of Lycopene on Experimentally Hypertension-induced Rats

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AIM: Hypertension is an important public health problem due to the high prevalence of cardiovascular deaths. Lycopene, one of the major carotenoids taken with the tomato and tomato products, has been reported to protect against antioxidants and cardiovascular diseases. We aimed to investigate the role of lycopene treatment in the development of hypertension induced by Nω-Nitro-L-arginine methyl ester hydrochloride (L-NAME) and its effects on renal function in our study.
METHODS: In our study, 32 male Spraque-Dawley rats were divided into 4 groups as Control (C), Control + Lycopene (C + L), Hypertension (HT) and Hypertension + Lycopene (HT + L). HT and HT + L groups were given 15 mg / kg L-NAME intravenously, followed by 150 mg/L L-NAME in the drinking water for 3 weeks to induce experimental hypertension; C and C + L groups were given saline intravenously. Rats in groups 2 and 4 were given lycopene at a dose of 10 mg/kg/day via gavage and groups 1 and 3 were also given 1 ml/kg/day corn oil which was a vehicle for lycopene for 2 weeks. Blood pressure measurements by the tail-cuff plethysmography performed every week. The 24-hour urine, blood and both kidneys of the rats were collected on the 21st day of the experiment.
RESULTS: Comparing to C group, serum sodium, urea, creatinine, copeptin, angiotensin converting enzyme and microalbumin levels and fractional sodium excretion decreased, and creatine clearance increased in C + L group ($p<0.05$). Systolic, diastolic and mean arterial blood pressure values, serum aldosterone, angiotensin 2 levels were increased in hypertension group compared to control group, and lycopene treatment caused a significant decrease in serum kisspeptin and blood pressure ($p<0,05$).
CONCLUSION: Our findings indicate that lycopene might play a potential therapeutic role on blood pressure in L-NAME-induced hypertension model.
This work was supported by TUBAP (2017/36).

OC08

Effects of Erdosteine and Vitamin D in Experimental Rat Kidney Ischemia/Reperfusion Model

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AIM: It is indicated that erdosteine and vitamin D which have antimicrobial, antioxidant and antiinflammatory effects, are protective in many experimental models including renal injury models. In our study we aimed to investigate the histopathological and biochemical effects of erdosteine (Erd) and vitamin D (VitD) on rat renal ischemia / reperfusion (I/R) injury.
METHODS: The study was planned on 5 groups of Wistar albino rats. Group I: Sham (n=7); Group II: Renal I/R (n=9); Group III: Erd+I/R (7 days before I/R, by oral gavage 50 mg/kg/day n=7); GroupIV: VitD+I/R (7 days before I/R, intramuscular 500 I.U/kg/day, n=10); GroupV: Erd+VitD+I/R (7 days before I/R, by oral gavage 50 mg/kg/day and intramuscular 500 I.U/kg/day, n=8). The animals in group II, III, IV, V were subjected to 60 minutes ischemia and 24 hours reperfusion. At the end of applications, blood samples and kidney tissues of animals were taken for histopathological and biochemical evaluations.
RESULTS: In histopathological evaluation, it was found that swelling in tubule epithelial cells, vacuolar degeneration, desquamation and necrosis were significantly increased in groupII as compared with the other groups ($p<0.05$). In comparison to groupI,III,IV,V, a significant increase of urea ($p<0,001$, $p<0,01$, $p<0,001$, $p<0,001$, respectively;), creatinine ($p<0,001$, $p<0,05$, $p<0,01$, $p<0,01$, respectively) and transforming growth factor beta-1 (TGF-β1) ($p<0,001$, $p<0,05$, $p<0,01$, $p<0,001$, respectively) was found in groupII. At the same time, these histopathological and biochemical parameters were significantly decreased in group III, IV,V compared to

group II. A significant increase of erythropoietin (EPO) was found in groupII as compared to group I, III, IV ($p<0,05$, $p<0,001$, $p<0,05$, respectively;). The levels of urotensinII (UII) significantly increased in group II, III, IV, V as compared to group I ($p<0.01$, $p<0.01$, $p<0.05$, $p<0.05$, respectively), while a statistically insignificant decrease was detected in group III, IV, V in comparison to group II.
CONCLUSION: We think that erdosteine, vitamin D and these combination applications before I/R have protective effect for treatment of kidney-related diseases and prevention of I/R injury revealing in conditions (cardiopulmonary bypass, partial nephrectomy, renal transplantation, renal trauma surgery,etc.) that cause renal I/R. Acknowledgement: Granted by M.K.U.BAP (Project:16346).

OC09

Aqueous Extract of Chives (Allium schoenoprasum L.) Plant Attenuates Erythrocyte Deformability in Sickle Cell Anemia Patients

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AIM: Sickle cell disease is a genetic disorder caused by a single mutation in the beta-globin gene and leading to the production of an abnormal hemoglobin (HbS). Under unfavorable conditions such as altered pH and decreased oxygen saturation, HbS polymerization causes sickling of erythrocytes. Sickled erythrocytes have lower deformability, which may cause the origin of the main sickle cell complications; i.e. vaso-occlusive crises. Effect of aqueous extract of Chives (Allium schoenoprasum L.) which causes anemia in some organisms was tested for their effect on sickle cell patients.
METHODS: This study was conducted in Lyon 1 University and Edouard Herriot Hospital. Ethical permission from Lyon HCL hospital was obtained. Blood samples from 6 healthy volunteers and 5 sickle cell patients were collected into heparin coated tubes. Both healthy and sickle cell patient blood samples were incubated with 80µg/mL Chives plant aqueous extract at 37°C for ½ hour and erythrocyte deformability was measured by ektayctometry (3Pa and 30Pa; 37°C) before and after incubation. Data were evaluated with Mann-Whitney U test for unrelated samples and with Wilcoxon test for related samples.
RESULTS: Results of incubation of healthy blood samples with plant extract showed that incubation did not alter percentage change compared to initial measurement in erythrocyte deformability significantly (3Pa: $p>0.674$; 30Pa: $p>0.1$). However for sickle cell blood samples percentage change in erythrocyte deformability compared to initial measurement significantly decreased due to incubation with plant extract at 3Pa ($p<0.05$) and 30Pa ($p<0.05$).
CONCLUSION: These results show that incubation with plant extract significantly attenuates erythrocyte deformability in sickle cell patient blood, but not in healthy blood samples. Since this plant is widely used for culinary purposes these deformability results bring caution for consideration of them as a diet ingredient in patients. Further studies are planned to clarify mechanism which brought this attenuation in erythrocyte deformability.

OC10

How Long-term Intake of Sodium Fluoride (NaF) in Different Doses and 7,12 dimetilbenz(a)antrasen (DMBA) Affect Erythrocyte Fragility and Parameters in Rats?

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AIM: This study was aimed to search the effect of Sodium Fluoride (NaF) and 7,12 dimetilbenz (a) antrasen (DMBA) to erythrocyte fragility (EF) and parameters in rats.
METHODS: The nine groups were formed and each group contained 8 animals. Group 1: Control. Group 2: Sesame oil. Group 3: NaF1. Group 4: NaF15. Group 5: NaF30. Group 6: DMBA.Group 7: NaF1 + DMBA. Group 8: NaF15 + DMBA. Group 9: NaF30 + DMBA. NaF (ppm) was added into the animals' drinking water once a day and DMBA (10 mg/kg) was administered once a week for 12 weeks with gavage. EF was studied by spectrophotometric method. Data were evaluated by Anova and Duncan test.
RESULTS: At 0.4% NaCl concentration, Groups 4, 5, 6, 8, and 9 showed significantly higher EF values than control group ($p<0.05$). At 0.5% NaCl concentration, groups 6, 8 and 9 showed significant increase in EF compared to other groups ($p<0.05$). The erythrocyte and hematocrit values were found significantly high in group 5 ($p<0.001$) and group 4 ($p<0.01$) while it found low all group with DMBA (6, 7, 8, 9) ($p<0.05$) compared to control group. Hemoglobin account in group 5 ($p<0.01$) and group 4 ($p<0.05$) were

significantly higher than other groups. MCV and MCH in group 5 were significantly lower and this values in all groups with DMBA (6, 7, 8, 9) were determined significantly high compared to other groups. RDWC in group 5 ($p<0.001$), group 4 ($p<0.01$) and in all group with DMBA (6, 7, 8, 9) ($p<0.05$) significant increase compared to other groups.
CONCLUSION: As a result, exposure to high doses floride and DMBA may adversely causes to EF, abnormal erythrocytes and anemia. Therefore, urgent measures must be taken to protect the health of all living organisms in area exposed to high levels of fluoride and DMBA.

OC11

Investigation of Hemorheological Parameters in Patients with Sudden Hearing Loss

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AIM: Several publications have reported factors such as reduction in the cochlear blood flow and decreased oxygenation in perilymph for sudden hearing loss syndrome. Therefore, hyperbaric oxygen therapy accompanies drug therapy in these patients. The hearing is usually recovered by the end of this treatment, but sometimes the continuation of the tinnitus suggests that there may be other factors influencing the cochlear blood flow. In this study, the relationship between this syndrome and hemorheological parameters have been investigated in patients with sudden hearing loss.
METHODS: After approval of local ethics committee, fourteen patients with sudden hearing loss (age: 49.3 ± 12.5) from patients whom applied for hyperbaric therapy department and nineteen controls (age: 46.8 ± 11.1) participated in the study. Whole blood and plasma viscosity were measured using a cone/plate viscometer (Wells-Brookfield). Erythrocyte aggregation, erythrocyte deformability and osmotic deformability indices were measured using a laser diffraction ektacytometer (LORRCA). Student-t test and Mann-Whitney U tests were performed for the statistical analysis of the data.
RESULTS: Our findings showed that there were significant differences between patients and controls in terms of aggregation parameters (In plasma: amplitude: 25.49/28.38, $p<0.01$; aggregation index: 72.38/66.36; $p<0.005$ and half time: 1.6/2.08; $p<0.003$. In dextran solution: amplitude: 40.11/46.92; $p<0.002$; as patients/controls). Contrary to some of the previous studies, there were no significant differences in viscosity (blood and plasma) and deformability parameters.
CONCLUSION: Our data suggest that the changes in aggregation indices, which affect microcirculation, may contribute negatively on the physiopathology of sudden hearing loss.

OC12

Paraoxanese and Arylesterase Activities and Platelet Indices in Children Exposed to Pesticide Intoxication*

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AIM: Free oxygen radicals increasing in human exposed to pesticides may damage to balance of oxidants and antioxidants and may increase oxidative damage in the lungs, liver, blood and neuromuscular tissues. This process may cause insufficiency in physiological functions of the platelets and some antioxidant enzymes. The aim of this study is to investigate the enzyme activities of paraoxanase ansd arylesterase and platelet indices in children exposed to pesticide intoxication.
METHODS: Blood samples were taken from the patients in Şanlıurfa Training and Research Hospital. The blood were centrifuged, plasma were removed for biocehemical analysis. By courtesy of ethical committee, the blood were taken from 30 patients (4.76 ± 4.50) and 39 healthy children (5.83 ± 3.80). The activities of paraoxanase, arylesterase and platelet indices such as PLT, MPV and PCT were measured in samples. Data was analyzed using SPSS 11.5.
RESULTS: The values of PCT were significantly increased ($p=0.001$) in children exposed to pesticide intoxication. But, the activities of paraoxanase and arylesterase enzymes, the values of platelet indices such as PLT and MPV were not statistically affected with pesticide intoxication.
CONCLUSION: The values of PLT, MPV and the activities of paraoxanase and arylesterase enzymes were not affected, the values of PCT were significantly increased in patients exposed to pesticide intoxication. Based upon these results, we think that pesticides may play an important role in the increasing of PCT-values. However, there is a need for more detailed studies to assess all molecular mechanisms induced with pesticide intoxication.
This study was founded by the Commission of Scientific Research Projects of Harran University.

OC13

Determination of Substrate Oxidation During 40 Minutes Walking in Male Subjects

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AIM: The aim of this study is to determine heart rate and walking speed where the maximal fat oxidation occurs and to understand the persistance of substrate oxidation in men by using cardiopulmonary exercise test.
METHODS: Ten sedantery men participated in this study. Pyhsical characteristics of subjects were 29.4±1 years, BMI 25.61±0.9kg/m2,height 178.4±2cm and weight 81.9±4kg. Measurements were applied at morning, at least 12 hours of fasting for fatmax determination. Indirect calorimetry (Quark b2) was used and incremental exercise tests performed on the treadmill. The participants walked again for 40 minutes with a 12-hours fasting at heart rate intervals corresponding to individual fatmax. During walking, capillary blood samples were taken from fingertips at every five minutes and lactic acid and blood sugar follow-ups were performed. Data were given as mean ±SE. Repeated measurement ANOVA used to compare mean values.
RESULTS: Fat oxidation rate which determinated during exercise was reduced significantly comparing to the first 10 minutes of the exercise period ($p<0.05$). Contrastly, carbohydrate oxidation rate was induced significantly ($p<0.05$). In this case, we found that fat oxidation wasn't stable among identified range. Blood sugar and blood lactate didn't change significantly.
CONCLUSION: Fat oxidation level at "fatmax" may not provide continuance during steady-state exercise bout. Human body may tend towards carbohydrate oxidation instead of fat oxidation at low intensity exercises. Although there was no significant change in blood sugar and lactic acid levels during 40 minutes of constant-rate exercise. More detailed studies are needed to understand the metabolic processes about this topic.

OC14

Effects of Aging And Exercise Training on Carbon Monoxide Relaxation Response in Skeletal Muscle Feed Artery

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AIM: Endothelium-dependent dilation reduces during aging. Carbon monoxide (CO) is as an important endogenous vasodilator and may show a compensatory effect in nitric oxide deficiency. But, the contribution of CO to vascular tonus of gastrocnemius feed artery during aging and physical activity in rats is not known. The purpose of this project is to observe any aging and swimming exercise associated changes in the rat gastrocnemius feed artery.
METHODS: 4-month and 24-month old female rats were used and divided into four following groups: sedentary young (SY), trained young (TY), sedentary old (SO), and trained old (TO). Swimming exercise was performed for 8 weeks (60 min/day, 5 days/week). Gastrocnemius feed arteries isolated from the rats were mounted on wire myograph. Contraction responses of all vessel rings in presence and absence of HO inhibitor (CrMP) were recorded as an endogenous CO contribution to vascular tonus. The effect of exogenous CO relaxation response were assesed by CO releasing molecule (CORM). Statistical significance between the dose response curves was tested using repeated measure two way ANOVA.
RESULTS: Although phenylephrine dose- response curves and Emax values with or without CrMP were smilar in all groups, endogenous contribution of CO was higher in sedantary groups ($p<0,01$). There was no differences in vasodilator CORM dose response curve and CORM Emax values (SY: % 34,75 ± 5,12, TY: % 41,12 ± 4,278, SO: % 35,22 ± 3,64, TO: % 32,71 ± 2,95) reported for all groups.
CONCLUSION: As a result, the CO relaxation response remains unchanged with aging in the gastrocnemius feed artery of elderly rats and exercise is not an enhancing contributor for CO relaxation response.

OC15

Exercise and Thiol / Disulphide Homeostasis in Obese Individuals

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AIM: Obesity is a serious nutritional problem accompanied by diseases such as diabetes, metabolic syndrome, hypertension and cardiovascular system diseases. Exercise is often recommended for obese individuals to return to normal weight. However, many studies have shown that exercise increases reactive oxygen species (ROS). We aimed to study the thiol/disulphide balance in obese individuals and to investigate the effect of exercise on thiol/disulfide homeostasis.
METHODS: This study included 17 obese-diagnosed individuals and 15 healthy normal-weight individuals without any chronic disease. Obesity group was given a light exercise for 12 weeks (1 hour/day for 5 days a week) in the form of walking and light running. Venous blood was taken from the control group after one night fasting without any training program.
Venous blood was drawn from the obesity group one week before the training program and one week after the training program. Ethics committee approval was obtained for the study (Decision Number: 17/06/01).
In this study, serum thiol/disulfide homeostasis parameters were studied with new and fully automatic colorimetric methods. Data were analyzed by Mann-Whitney U and Wilcoxon methods using the IBM SPSS 23 statistical program.
RESULTS: Native thiol and total thiol levels were lower in the obesity group compared to the control group ($p=0.037$, $p=0.044$, respectively). Disulphide level and the disulphide/native thiol and disulphide/total thiol ratios were higher in the obesity group compared to the control group ($p=0.020$, $p=0.002$, $p=0.002$, respectively). However, no significant difference was observed between before and after exercise in the obese group ($p>0.05$).
CONCLUSION: This is the first study of thiol/disulfide homeostasis parameters in obesity and exercise. Obesity causes thiol/disulfide homeostasis to change in favor of disulfide. However, although exercise is an important factor that increases ROS levels, it is observed that the light exercise we have conducted in our study does not impair thyol/disulfide homeostasis.

OC16

Determination of the Relationships Between Anaerobic Threshold and O2 Pulse During Constant Load and Incremental Exercise Tests

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AIM: The aim of this study was to comparatively examine the relationships between anaerobic threshold (AT) on O2 pulse (O2 uptake to heart rate ratio, VO2 / HR) during an incremental exercise and constant load exercise tests (CLET).
METHODS: Seven male subjects (age: 20.1±1.8 yr; body mass index: 21.3±1.8 kg/m2) performed an incremental exercise test to exhaustion (15 W/min) and then a constant load exercise test (30 min) work load associated with AT on different days. AT estimated non-invasively using V-slope method. Pulmonary gas exchange parameters were measured breath-by-breath using a respiratory gas analyser. The study protocol was approved by the local ethical committee. The Wilcoxon signed-rank test was used to analyze the significance of data.
RESULTS: HR and VO2 at the maximal exercise, AT and CLET were found to be 184±5beat/min and 2.969 ±0.3 L/min; 139±5 beat/min and 1.947±0.2 L/min; 161±8 beat/min and 2.242±0.3 L/min respectively. Despite the differences in HR and VO2 values, O2 pulse was similar for AT (13.96±1.66 mlO2/beat) and CLET (13.84 1.38 mlO2/beat) ($p<0.05$). O2 pulse at the AT occurred 86% of maximal O2 pulse (16.08± 1.56 mlO2/beat). There is close correlation between O2 pulse and fitness status of the subjects as determined peak VO2 for each kg of body weight ($R=0.86165$, $p=0.01$)
CONCLUSION: Exercise O2 pulse corresponded to AT coincides with the optimal cardiac work. Determining O2 pulse, represents the quantity of O2 being consumed by the body for each single cardiac beat, from constant load or incremental exercise may be use an additional value for indicating fitness levels of the subjects.

OC17

The Effect of Oatp1a5 on Drug Accumulation and Injury upon Ischemic Stroke

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AIM: Blood Brain Barrier (BBB) stability is a very important target for central nervous system disease. Although, there are limited number of functionally characterized target molecules. SLCO superfamily are present in BBB and transport its substrates in an ATP-independent manner. In this study, it was aimed to examine the effect of glutathione mediated inhibition of SLCO member Oatp1a5, known to transport synthetic molecules with neuroprotective activities such as rosuvastatin, on the injury mechanisms following brain ischemia.
METHODS: 8-10 week old male Balb/C mice were divided into 6 groups (Saline/DMSO; Saline/Rosuvastatin 2mg; Saline/Rosuvastatin 20mg; Glutathione/DMSO; Glutathione/Rosuvastatin 2mg and Glutathione/Rosuvastatin 20mg) (n=6-7). Proteomic analyses were carried out in serum and striatal tissues. In addition, animals were sacrificed after 30 min middle cerebral artery occlusion followed by 72h reperfusion. Cresyl violet staining and TUNEL assay were performed. Apoptotic Bax, Caspase-1, Caspase-8 and Caspase-9 proteins were evaluated by Western blot. To identify the cell types expressing Oatp1a5, double immunostainings were performed with microglial, astrocyte, endothelial and neuronal markers.
RESULTS: Accumulation of rosuvastatin 2mg/kg and 20mg/kg in striatal tissues was blocked by glutathione. In addition, rosuvastatin improved neuronal survival and decreased apoptotic cell death. Glutathione reversed the favorable effect of rosuvastatin in a dose-dependent manner. Moreover, expression of Oatp1a5 in neuronal cells were demonstrated with double immune stainings.
CONCLUSION: Oatp1a5 carriers are responsible for the transport of synthetic neuroprotective molecules to the brain and inhibition of Oatp1a5 aggravates the ischemic injury. In this study, we report that Oatp1a5 is expressed in endothelial cells as well as in neuronal cells and suggest that further studies targeting Oatp1a5 can be beneficial in brain ischemia treatment.

OC18

The Effect of P2X7 Receptors on Penicillin-induced Epileptiform Activity and the Role of T-type Calcium Channel Inhibitor NNC 55-3069 on This Effect

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AIM: Many receptors are known to play a role in the pathogenesis of epilepsy. Stimulation of P2X7 receptor causes an influx of calcium ions into the cell. The aim of this study was to determine the role of P2X7 receptor on penicillin-induced epileptiform activity and to find out whether this effect is associated with T-type calcium channels.
METHODS: 16-18 weeks of age male Wistar rats (n=35) were anesthetized with urethane and tripolar electrodes were placed on skulls. Then, two more holes were drilled for intracortical (i.c.) and intracerebroventricular (i.c.v.) injections. Epileptic seizure was induced by the injection of Penicillin-G potassium (i.c.) and interictal spikes were recorded through the Powerlab Chart-7 software. The most effective doses of A-438079 (20 µg; i.c.v.) and BzATP (100; i.c.v.) were administered after 30 minutes from beginning of the spike activity. Besides, these substances were given in combination with the selective T-type calcium channel inhibitor NNC 55-3069 (30 µg; i.k.), whichhas an anticonvulsanteffect in our previous study.
RESULTS: While, the selective antagonist of the P2X7 receptor A-438079 reduced the spike frequency ($p<0.05$), the agonist BzATP increased the spike frequency when compared to the control group ($p<0.05$). When, NNC 55-3069 was administered with A-438079, the combination group was not significant compared to A-438079 group ($p>0.05$). On the other hand, as NNC 55-3069 was administered together with BzATP, NNC 55-3069 reversed the effect of BzATP and approach the frequency to the only NNC 55-3069 applied group ($p <0.05$).
CONCLUSION: Releasing of ATP from neurons and neuroglia cells, activates the P2X7 receptor and causes calcium influx into the cells. Our findings suggest that, P2X7 receptor activation not only mediates itself but also induces calcium ion entry into the cell by stimulating T-type calcium channels.
This study is supported by TUBITAK (Project number: 115S361)

OC19

The Comparison of The Effects of Application of Compound 48/80 and Autologous Mast Cell Mediator Suspension on Plasma Substance-P Levels And Dural Mast Cells in Rats: A Methodological Study For Acute Inflammatory Pain

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AIM: Mast cells (MCs) contribute pathogenesis of inflammatory diseases such as arthritis and migraine via numerous mediators in their granules. Existing models of inflammatory pain couldn't simulate accurately real inflammation because of they employ a few and synthetic mediators. New methodological studies need that simulate nearly total inflammatory pain in humans. We aimed to develop a new animal model of acute inflammatory pain by applying autologous peritoneal degranulated mast cell mediators in rats.

METHODS: Male Wistar-rats(10-12 weeks) were divided into five groups with six rats in each group.Intraperitoneally, control, C-48/80 and degranulated mast (DM) groups received saline(0.2 ml), compound-48/80(2 mg/kg) and autologous degranulated mast cell mediator suspension(ADMCS, 0.2 ml) respectively. Cromolyn+C-48/80 and Cromolyn+DM groups received cromolyn (mast-cell stabilizer, 10 mg/kg) 30 min prior to compound 48/80 and ADMCS administrations, respectively. Substance-P content of plasma was measured using enzyme-immunoassays. Duramater were stained with toluidine-blue and evaluated with regards to number and degranulation of MCs. Data were analyzed with one-way ANOVA using SPSS_20.0 software.

RESULTS: While compound-48/80 and ADMCS increased plasma substance-P levels and dural mast-cell degranulation($p<0.05$ ve $p<0.001$) compared to control respectively, ADMCS administration increased these parameters more compared to compound-48/80($p<0.05$) and moreover it raised number of MCs compared to control ($p<0.001$). Cromolyn inhibited increases in the substance-P levels and dural mast-cell degranulation induced by compound-48/80 and ADMCS administrations, and blocked the increase in number of MCs, respectively($p<0.01$ ve $p<0.05$).

CONCLUSIONS: Administration of ADMCS mediate to appear inflammation and pain due to they contain more than 50 different kinds of endogenous mediators such as substance-P, histamine, bradykinin, serotonin and prostaglandin-E2 which have vasoactive, nociceptive and proinflammatory effects. Substance-P and mast-cell degranulation are key markers of inflammation and pain, ADMCS increased these markers more than compound 48/80 showing that this method can be used as a reliable model of acute inflammatory pain.

OC20

The Effects of Different Doses of Ingested Sulfite on The Arachidonic Acid Pathway in the Brain Tissue

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AIM: On daily life, we take sodium metabisulfide through food and drinks. In our previous study, we found that sulfite at a dose of 100 mg/kg/day caused lipid peroxidation and increased sPLA2 enzyme level in rat brain. It is known that the increase of sPLA2 enzyme level and its activity leads to the activation of arachidonic acid (AA) pathway. In this study, we investigated whether the effects of different doses (100 and 260 mg/kg/day) of sulfite on sPLA2, AA, COX-1, COX-2 and PGE2 pathway.

METHODS: Rats were randomly divided into three groups each having 20 animals: control group (C), 100mg/kg sulfite administered group (S1) and, 260 mg/kg sulfite administered group (S2). S1, S2 groups were given sulfite and C group was given distilled water by gavage for 35 days. Animals were sacrificed by exsanguination under anesthesia on day 36th and brain tissues were harvested after being perfused with saline through cardiac perfusion. PLA2 levels were measured by RT-PCR, COX-1and 2 levels by Western Blot analysis, AA levels by mass spectrometry and PGE2 levels by enzyme immunoassay in the extracted brain tissues. Statistical analyses were performed by Kruskal–Wallis 1-way analysis of variance and all pairwise multiple comparisons were performed by Mann-Whitney U test.

RESULTS: sPLA2, COX-2 and PGE2 levels of S1 and S2 groups were elevated when compared to the C group but only increase in S2 group was statistically significant ($p<0.05$). Arachidonic acid levels of both sulfite groups were significantly elevated when compared to the control group ($p<0.01$). There were no significant differences between COX-1 levels among the groups.

CONCLUSION: As a result, sulfite has been shown to exert toxic effects on brain tissue in a dose-dependent manner by PLA2, AA, COX-2, PGE2 signaling pathway. Our study is supported by Akdeniz University Scientific Research Projects Coordination Unit (project number: 2013.01.0103.014).

OC21

Dual Gastroinhibitory Action of Central Exogenous Apelin: The Role of Sympathetic and Parasympathetic Pathways

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AIM: In rodents, central administration of apelin was shown to inhibit gastric emptying (GE), however, the relevant mechanism is incompletely elucidated. Accumulating evidence indicates the expression of APJ receptor in rostral ventrolateral medulla and dorsal motor nucleus of vagus, the sympathetic and parasympathetic visceromotor brainstem regions regulate gastric motor functions. The aim of the present study was to investigate the efferent pathways in central exogenous apelin-induced gastroinhibitory response.
METHODS: Stereotaxic intracerebroventricular (icv) cannulation, bilateral subdiaphragmatic vagotomy (VGX) and/or celiac ganglionectomy (CGX) were performed in adult male Wistar rats 7 days prior to the experiments. Apelin-13 was centrally injected (30 nmol, icv) 90 min before the GE measurements. In separate animals, nitric oxide synthase inhibitor L-NAME (100mg/kg), noradrenergic blocker guanethidine (5mg/kg) and/or muscarinic receptor agonist bethanechol (1 mg/kg) were administrated intraperitoneally 30 min prior to the apelin-13 injection.
RESULTS: GE was detected 62.9%±4.8 in sham group which was significantly inhibited by apelin-13 (29.4%±7.1; $p<0.01$). The apelin-induced delayed GE was partially attenuated in animals underwent CGX (40.3%±6.8; $p<0.05$) or VGX (49.7%±3.2; $p<0.05$), whereas it was completely restored in CGX+VGX animals (54.8%±3.5; $p<0.01$). L-NAME did not change the apelin-induced alterations in GE (31.4%±3.2). In contrast, pre-administration of guanethidine (41.1%±7.8; $p<0.05$) or bethanechol (50.3%±8.9; $p<0.05$) partially restored the apelin-induced gastroinhibition, while it was completely abolished in rats received both agents (59.7%±6.2; $p<0.01$).
CONCLUSION: The present data suggest that (1) both vagal parasympathetic and catecholamine-mediated sympathetic pathways play pivotal role in the apelin-induced response, (2) N.vagus-dependent gastroinhibitory action appears to be elicited by suppressed postganglionic cholinergic signaling rather than activated nonadrenergic-noncholinergic pathway. APJ receptor appears to be a novel therapeutic target for treatment of gastrointestinal motor disorders.

OC22

The Role of Capsaicin-sensitive Sensory Nerves and N. Vagus in Gastroprotective Effect of Apelin

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AIM: Apelin widely expressed in throughout the body, plays an important role in response to stress conditions in gastric tissue. The aim of this study was to investigate the role of capsaicin-sensitive afferent nerves and N. vagus in the protective effect of apelin against ischemia-reperfusion (IR)-induced gastric injury.
METHODS: The study was performed by using 60 male Wistar rats 250-300g weighing. Experimental groups: 1) Control; 2) IR; 3) Apelin+IR; 4) Vagotomy +Apelin+IR and 5) Capsaicin+Apelin+IR. In IR group, gastric injury was induced by clamping celiac artery for 30 min and followed by reperfusion for 3h. In Apelin+IR group, Apelin-13 (2 mg/kg, i.v.) was administered immediately before application of IR. In Vagotomy+Apelin+IR group, bilateral subdiaphragmatic vagotomy was performed. In Capsaicin+Apelin+IR group, capsaicin administered to rats for three days at a dose of 25, 50 and 50 mg/kg to induce functional ablation of afferent sensory nerves. After IR injury, gastric mucosal blood flow (GMBF) and the area of mucosal lesions were evaluated. Gastric specimens were used to measure for PGE2, NO, CGRP, lipid peroxidation (LPO) products and myeloperoxidase (MPO) activity. Immunohistochemically, cfos expression was evaluated in dorsal motor nucleus of vagus (DMV). In the statistical evaluations, Kruskal-Wallis and Mann-Whitney U tests are used.
RESULTS: In IR group, GMBF ($p<0,01$), PGE2 ($p<0,05$) and CGRP ($p<0,05$) were significantly decreased; lesion index ($p<0,001$), MPO ($p<0,05$), LPO ($p<0,01$) and NO ($p<0,05$) increased compared to control. Pretreatment with apelin prevented the effects of IR injury and increased cfos expression in DMV ($p<0,05$). Vagotomy or capsaicin ablated the gastroprotective effects of apelin on IR-injury.
CONCLUSION: Our findings show that, apelin is protective in gastric IR injury by decreasing lesion index, LPO and MPO activity and increasing GMBF and releasing of CGRP, NO and PGE2. The gastroprotective effects of apelin are probably mediated by capsaicin-sensitive afferent nerves and N. vagus.

OC23

Role of Vagal Afferents on High Fat Diet-induced Alterations in Rat Behaviour and Gut Motility

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AIM: High fat diet (HFD) affects emotion and cognitive functions, changes intestinal motility in rats with undetermined pathways. Vagus nerve and relaxin (Rln-3) can be mediators. Aim of the study is to understand If there is any role of vagal afferent nerves on HFD induced alterations and on distrubition of Rln-3 expression.

METHODS: Male Sprague-Dawley rats (n=38) were treated with either perivagal 1% capsaicin (n=19) or vehicle solution (n=19). After 3 weeks of recovery, rats were pair-fed with chow (n=18) or HFD (% 45 fat) (n=20) for 5 weeks. In between 4-5. weeks of HFD rats were subjected to elevated plus maze, open field, novel object recognition, passive avoidance tests. Food and water intake, weight of feces and transit time were measured. Rln-3 expression in brain stem, prefrontal cortex and hypothalamus was assessed with quantitative PCR. Data was analysed with two way ANOVA

RESULTS: VAD increased body weight ($p < 0,05$) irrespective of diet type in between 3-7. weeks. Fat content and VAD had no effect on food intake after deprivation. HFD decreased water intake ($p<0,0075$), VAD blunted this effect ($p<0,05$). Both HFD and VAD decreased faeces weight ($p < 0,0001$, $p<0,05$) but didn't change intestinal transit. HFD($p<0,02$), and VAD($p<0,04$) impaired memory. HFD rats were less anxious ($p < 0,01$). Rln-3 expression in hypothalamus and hippocampus of HFD group was respectively 1.71; 1,54 times more compared with chow group in sham operated rats and respectively 0,73; 0,7 times more in vagal afferent denervated rats.

CONCLUSION: Vagal afferents have no effect on HFD induced alternations, except water intake. However, vagal afferents have effects on memory, weight gain and colon motility unrelated with diet type. Rln-3 may have a role in mechanism of action of Vagal afferents. The modulation of vagal afferent activity can be a treatment of choice for behavioural and metabolic disorders.

OC24

Expression Levels of Micrornas Related to Autophaphy Pathway in Tumor and Adjacent Normal Tissues of Colorectal Cancer Patients

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AIM: Autophagy means self (auto) eating (phagy) and shows tumor suppressor effect during cancer development, while it contributes to survive of cancer cells during cancer progression. Micrornas (mirnas) are endogenous non-protein coding, single stranded rna of 18-24 nucleotide length that negatively modulate gene expression by binding to the 3'-utr of mrna. mirnas act as an oncogenic or tumor suppressor according to their role in the molecular pathways of their's target mrna. Tthe mir-17-5p, mir-30b, mir-30d, mir-216a and mir-216b are mirna that play role on autophagy process. The purpose of the present study was to investigate whether these mirnas play a role as tumor suppressor or oncogenic in colorectal cancer.

METHODS: A total of 47 (20 female/27 male) colorectal cancer patients with an average age of 57.31 ±21.56 were included in this study and the tumor tissue and adjacent normal tissue were collected from these patients during the surgical operation. mir-17- 5p, mir-30b, mir-30d, mir-216a and mir-216b expression levels were detected by quantitative real-time pcr in the tumor and adjacent normal tissues of colorectal cancer patients.

RESULTS: According to the results of our study, it was found that expression levels of mir-17-5p increased 2.78-fold ($p=0.001$), mir-30d increased 4.04-fold ($p=0.001$), and mir-216b increased 1.68-fold in the tumor tissues compared with normal tissues of patients.Furthermore, expression levels of mir-30b and mir-216a in these tumor tissues were found to be decreased 2.94 fold ($p=0.001$) and 4.32 fold ($p=0.001$), respectively.

CONCLUSION:Our results suggested that mir-17-5p, mir-30d and mir-216a may play a role as oncogenic mirnas in colorectal cancer, while mir-30b may play a role as tumor suppressor mirna.

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OC25

The Effect of CDP-Choline on Learning and Memory in Sleep Deprivation

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AIM: The aim of our study was to investigate the effects of various doses of cytidine diphosphocholine (CDP-choline) against the well known negative effects of REM (Rapid Eye Movement) sleep deprivation on learning and memory.
METHODS: The study was approved by Local Ethics Committee on Animal Experiments at Uludag University (No:2014-01/04).Male Wistar rats (n=72; 300-350 g) were randomized to following groups: Sleep deprivation(SD)+Saline (SF), +100µmol/kg CDP-choline(C100), +300µmol/kg CDP-choline(C300), +600µmol/kg CDP-choline(C600), Environmental control (EC)+SF, +C100, +C300, +C600, Control Cage (CC)+SF, +C100, +C300, +C600. Sleep deprivation was induced by leaving rats on 6.5 cm diameter platform and environmental control was induced by leaving rats on 13 cm diameter platform for 4 days according to "Flower Pot" method.Treatments were administered intraperitoneally every day. Learning parameters were tested for 4 consequative days (trial phase) and on the 5th day (probe phase) memory parameters were tested in Morris Water Maze.The groups were compared using one-way analysis of variance (ANOVA), p values <0.05 were considered significant.
RESULTS: During the trial phase, escape latencies were significantly reduced compared with the first day($p<0,001$).Also, SD C100, C300, C600 groups' escape latencies are longer than SD+SF groups on the 1st and 2nd days($p<0,05$).During the probe phase; the latency of first occurrence to platform is longer, the time spent in the target quadrant and the number of platform crossings are less at SD groups compared with EC and CC groups($p<0,05$).The latency of first occurrence to platform is longer in SD+SF group compared with CDP-choline treated SD groups.
CONCLUSION: In the trail phase CDP-choline treated SD groups' escapelatenciesare longer then SD +SF group, this data shows that CDP-choline may have positive effects on stress.During the probe phase SD groups show less performace compared with EC and CC group, these datas show that REM-SD impairs memory paramaters.Also we determined that CDP-choline can reduce the impairment in memory parameters.

OC26

The Effect of Leptin on Epileptic Activity in WAG/Rij Rats

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AIM: Absence epilepsy is a type of non-convulsive epilepsy and is characteristic of spike wave discharges (SWDs) seen in electroencephalogram (EEG) synchronized with pauses in behavior. Leptin is an adipose tissue-derived peptide hormone, which acts as a satiety factor to reduce appetite by interactions with hypothalamic neurons. Leptin shows different effects (anticonvulsant or proconvulsant) on various epilepsy models. The effcet of leptin on absence epilepsy is not known so far. Therefore the effect of leptin in WAG/Rij rats, genetically model of absence epilepsy, was studied in the present study.
METHODS: A total of 6 WAG/Rij type 6-8 months aged male rats were used in this study. Tripolar electrodes were placed on the rats skulls. Basal electrocorticogram (ECoG) were recorded for three hours starting at 10:00 in the morning and ECoG recording was taken for 3 more hours after leptin injection. Basal ECoG recordings and postinjection recordings were compared with each others statistically.
RESULTS: Leptin, at dose of 1 µg/kg (i.c.v), significantly decreased the total number of seizures, SWDs and duration ($p<0.05$) compared to baseline ECOG recordings. Leptin did not significantly change the amplitude of SWDs ($p>0.05$).
CONCLUSION: The results of present study show that the leptin has anticonvulsant activity in absence epilepsy model of WAG/Rij rats. The certain mechanisms of these effects needs to be determined by further analising methods.

OC27

The Neurotrophic Effect of Thymoquinone in Pentilentetrazole-induced Epilepsy Model

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AIM: Epilepsy is a disorder by repeated spontaneous seizures due to neuronal hyperactivity in the brain. MicroRNAs (miRNAs) regulate post-transcriptional expression of mRNAs. MiRNAs have key roles in the neurolological disorders. In this study, we aim to

evaluate the neurotrophic effect of thymoquinone (tq) expression profiles of miRNA in the pentilentetrazole (PTZ)-induced epilepsy model.
METHODS: Male adult wistar albino rats (200-230g, n=24) were used. The rats were randomly assigned into three groups: PTZ group (n=9): was 35 mg/kg (i.p.) PTZ applied. Thymoquinone (20 mg/kg)+ PTZ group (n=9): Tq was given (p.o.) two hours after 35 mg/kg PTZ injection was performed. Control group (n=6): was injected saline 0.5 ml, (i.p.). Racine's scale was assessmented the seizures of intensity. Under anesthetized from rats hippocampus was removed. miRNAs analysis was performed by miRNA microarray and confirmed by real-time PCR. The target genes and the signaling pathways involved in miRNAs were performed according to the bioinformatic analysis. Pearson correlation analysis was used. $p<0,05$ were accepted as statiscally significant.
RESULTS: Compared to PTZ group, in tq group was seen that miR-182 was upregulated and the target gene of miR-182, Brain-Derived Neurotrophic Factor (BDNF), was downregulated.
CONCLUSION: Our results shown that miR-182 may regulate neurotrophic receptor tyrosine kinase 2 (NTRK2) pathway activity.
The present work was supported by the Research Fund of Bezmialem Vakif University, Project No. 12.2014/15

OC28

Examining Color Discrimination Ability and Depth Perception Relationship with Farnsworth Munsell 100 Hue Test, TNO Test and Titmus Test

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AIM: The effect of colors on depth-perception is still being discussed, and different opinions reported. It is aimed to investigate the effect of color-discrimination-ability (CDA) on depth-perception by examining individuals with congenital color vision defects.
METHODS: This study was carried out at University of Health Sciences Antalya Education and Research Hospital upon approval of Clinical Researchs Ethical Committee (2017-019). Patients and control groups were formed according to ophthalmologic examination and exclusion criteria in the study. The congenital color vision detected in the patient group by Ishıhara color-blindness-test. In all subjects, CDA error scores calculated with Farnsworth-Munsell 100 Hue Test (FM100HT) and stereopsis grades determined as arcsn with TNO and Titmus tests. Tests were run at standard temperature (22 °C) and illumination (600 Lux). SPSS 20 software used for statistical comparisons. Data expressed as mean SD. $p<0.05$ was considered significant.
RESULTS: The patient group consisted of 2 females and 19 males; the control group consisted of 2 females and 16 males. The mean age was 36.52±9.68 in the patient-group and 36.06±8.40 in the control-group. In the patient group; FM100HT total-error-score (TES) was 139,38±70,87, the blue/yellow local error-score (b/y-LES) was 43,76±19,52, the red/green local error-score (r/g-LHS) was 92,19±56,45, and the depth-perception was 137,14±132,33 arcsn according to TNO test and 48,1±15,37 regarding Titmus test results. In the control group; FM100HT -TES was 36 ±18,91, b/y-LES 18,83±11,24, r/g-LES 16,39±12,54, and the depth-perception was 47,5±38,24 arcsn according to TNO test and 40±0 arcsn regarding Titmus test results. There was a statistically significant difference between patient and control group regarding TES, b/y-LES and r/g-LES, TNO and Titmus variables.
CONCLUSION: It was observed that the depth-perception decreased in both tests regarding the individuals with a congenital color-vision defect. Binocular pairing is thought to be effective on neurons that use colors and adjust for binocular-differentiation.

OC29

Effects of Noopept on Pubertal Process in Streptozosin-induced Diabetic Prepubertal Rats

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AIM: Because of increased insulin resistance in adolescent T1 diabetes mellitus (T1DM) patients, high dose insulin is used in treatment (1). High-dose insulin therapy leads to hypothalamopituitarygonadal (HPG) deterioration and complications (2). New approaches to T1DM treatment are needed (3). Noopept is a nootropic dipeptide (4). Studies with noopept suggested it to have anti-diabetic properties (5).

We tried to determine the effect of noopept on HPG axis in prepubertal DM rats.
METHODS:In this study 60 prepubertal, 28 day-old, male, Sprague Dawley rats were divided into 6 groups randomly. i)control, ii)DM control, iii)noopept control, iv)DM+noopept, v)DM+insulin, vi)DM+insulin+noopept. Diabetes model was formed by administering 50 mg/kg Streptozosin on 28th day. Intraperitoneal 0,5 mg/kg noopept and 1 unit insulin was administered for 14 days. Hippocampus, hypothalamus and testis were stained with hematoxylin- eosine for general histological evaluation, also immunohistochemical researches were done for GnRH, Kisspeptin in hypothalamus and Caspase-3 in hippocampus, testis. For evaluation of LH and FSH, ELISA tests were performed.
RESULTS: It was determined that duration of pubertal entry time, which was prolonged due to the diabetes, decreased in all Noopept applied groups ($p < 0.05$). Histological evaluation revealed that the number of degenerated cells in diabetes group was significantly increased ($p < 0.05$) and this was higher than diabetes +noopept group ($p<0.05$). Testicular pathologies seen in diabetics have decreased in all treatment groups. Immunohistochemical studies showed GnRH immunoreactivity to be different between diabetes +noopept and diabetes+noopept+insulin groups ($p < 0.05$), but there was no significant difference in kisspeptin immunoreactivity.There was no statistical difference between LH and FSH values.
CONCLUSION: On T1DM prepubertal rats, noopept has normalising effect on pubertal retardation. Noopept has been shown to have reducing effects on, diabetes-related changes of hippocampal degenerative cell count, testicular pathology and GnRH immunoreactivity.Detailed researches should be done about Noopept usage in DM.

OC30

Effect of Melatonin on Nociceptive Response and β-endorphin Concentration in Hypertonic Saline-Induced Myalgia in Rats: An In Vivo Microdialysis Study

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AIM: The purpose of the present study was to investigate the effects of endogenous and exogenous melatonin on nociceptive response and contribution of β-endorphin released from the anterior cingulate cortex (ACC) in hypertonic saline induced myalgia in rats.
METHODS: Male Wistar rats were assigned to two groups as control or functional pinealectomized groups. While control group accommodated in normal light/dark cycle (12:12-h light/dark cycle), the pinealectomized group exposed to continuous light for eight weeks. Myalgia model was applied by hypertonic saline injection into the right gastrocnemius muscle with a dose of 8%. Melatonin was injected intraperitoneally with a dose of 60 mg/kg. In order to evaluate the nociceptive response, all rats were placed onto a hot plate device and hind paw withdrawal latencies were recorded. β-endorphin concentration was measured in microdialysate samples collected at 30-min intervals for two hours from the ACC of freely moving animals.
RESULTS: Experimental myalgia, functional pinealectomy or exogenous melatonin did not alter nociceptive response in rats. Mean β-endorphin concentration in the first microdialysate samples of the control group was 2,38 pg.ml-1, this value was increased to 14,4 pg.ml-1 following hypertonic saline ($p<0.05$). Baseline and hypertonic saline induced β-endorphin concentrations in the pinealectomized group were found to be 4,08, and 2,42 pg.ml-1, respectively ($p>0.05$). β-endorphin concentration following melatonin administration was found to be 14,1 in control group and 7,51 in pinealectomized group ($p<0.05$).
CONCLUSION: Hypertonic saline resulted in a prominent increase in β-endorphin levels in control group, whereas unaltered in the pinealectomized group. Although exogenous melatonin did not affect the β-endorphin concentration in control group, a restored β-endorphin levels were found in the pinealectomized group. Our results showed that although the unaltered nociceptive response was found, endogenous or exogenous melatonin play a role in the β-endorphin release from ACC in rats under hypertonic saline-induced myalgia model.

OC31

Hemorheological Alterations in Acromegaly Patients

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AIM: Acromegaly is a disease characterized by increased growth hormone synthesis with unknown pathogenesis. Although acromegaly has been defined as a possible risk factor for cardiovascular diseases, the role of atherosclerosis in this clinical entity has not been clearly demonstrated. A large number of studies have shown hemorheological alterations in cardiovascular pathologies. The aim of this study was to determine the possible changes in hemorheological parameters (red blood cell aggregation and deformability) in acromegalic patients and to

investigate the potential roles of these alterations in increased cardiovascular risk in acromegaly.
METHODS: Study protocol was approved by Medical Ethics Committee of Pamukkale University (registry number60116787-020/16709). 34 acromegaly patients who are treated in Department of Endocrinology and Metabolic Diseases (16 F,18 M) (mean age 48.85±1.69 years) and age and gender-matched 29 healthy controls (15F, 14 M) (mean age 52.83±1.37 years) were included in the study between April 2016 and May 2017. Red blood cell aggregation and deformability was determined by an ektacytometer. Statisticalcomparisonswere analyzed by ındependent samples t test and p ≤0.05 values were accepted as significant.
RESULTS: Erythrocyte deformability of acromegaly patients measured at shear stresses of 16.87 ve 30.00 Pa were decreased compared to healthy controls (p=0.013, 0.0001, respectively). Red blood cell aggregation index (AI) of the patients was higher, whereas eryhrocyte aggregation half time (t½) was lower than control (p=0.05, 0.01, respectively). Decrement of t1/2 is in line with increment of AI and indicate elevation of red blood cell aggregation.
CONCLUSION: Decreased erythrocyte deformability and increased red blood cell aggregation demonstrated in acromegaly patients, indicate hemoreheological impairments in this disease. It can be speculated that, although hemorheological alterations may play role in the pathogenesis of cardiovascular disorders observed in acromegaly, they may also be the result of these pathologies. Further research is needed to clarify this issue.

OC32

The Effects of the Rat Luteal Cells on Islet Cells Revascularization and Immune Response

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AIM: During islet transplantation, islet cells are commonly lost due to hypoxia and immune attack. This study aimed to evaluate the effect of luteal cell secretions on islet revascularization and immune response by co-culturing islets with luteal cells.
METHODS: Luteal cells and islets were cultured both separately and together. Progesterone, vascular endothelial growth factor (VEGF), basal fibroblast growth factor (bFGF), and interleukin 10 (IL-10) levels were measured in culture media at the 0th, 48th and 96th h of incubation. Also, CD 31 levels were determined in the islets. Data were assessed by one-way analysis of variance with repeated measures and Tukey's post hoctest.
RESULTS: Progesterone secreted by luteal cells increased at the 48th and 96th h (p<0.05). In the same incubation periods, VEGF levels in the co-culture groups were significantly increased compared to the islet groups (P <0.001). In the co-culture group, bFGF levels increased at the 96th h (P <0.001) and CD 31 levels increased at the 48th h, compared to the islet group; these differences were statistically significant (P <0.05). IL-10 levels were higher in the co-culture group, compared to the islet group, at the 96th hour (p <0.05).
CONCLUSION: It was observed that progesterone released from luteal cells may have increased the vascularization in islets by increasing VEGF levels at both the 48th and 96th h, increasing bFGF at the 96th h, and increasingCD31at the 48th h. Also, it's probable that progesterone increases the immunosuppressive effect of islets in co-culture by the 96th h. As a result, it's thought that coculturing islets with luteal cells may increase the success of islet transplantation by increasing vascularization and immunosuppressive properties.
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OC33

Effect of Usnic Acid/Paclitaxel Co-Administration on Mouse (4T1) Breast Cancer Cell Lines

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AIM: Usnic acid (UA) is known to exert anti-proliferative and apoptosis inducing effect. Paclitaxel (PTX) is one of the most effective drugs used in the treatment of breast cancer. Our aim is to evaluate the efficacy of co-administration of PTX and UA on cell viability as PTX being a microtubule-targeted drug while UA is not effective on microtubules.
METHODS: In mouse (4T1) breast cancer cell lines, cell viability was measured by MTT assay; dead cell ratio was monitored by flow cytometry after 24,48 and 72 hours. Different UA (1.56,3.125,6.25,12.5,25µM) and PTX (1,10,100,1000nM) concentrations were used in MTT assays. UA concentrations above mentioned and 100nM PTX were used in UA/PTX co-administration. For flow cytometry, groups were formed as UA (25µM), PTX (100nM) and UA/PTX (25µM+100nM). ANOVAand Student's t-test was used for statistical analysis.
RESULTS: According to MTT assay results, UA reduced cell viability at all concentrations after 24, 48 and 72hours but that was not found significant. Cell viability was decreased by PTX at the concentration of 100nM after 72hours, and 1000nM after 24, 48 and 72 hours (P<0.05). In UA/PTX co-administration, there

was a significant decrease in 12.5 and 25μM concentrations of UA at 24 and 48 hours and in all concentrations at 72 hours ($P<0.05$). The flow cytometric data showed that there was an increase in dead cell ratio after 24,48 and 72 hours in PTX and UA/PTX co-administration but was not significant. CONCLUSION: Co-administration of UA and PTX increased PTX's reducing effect on cell viability. UA/ PTX combination will be more effective in breast cancer treatment. Partially supported by the Faculty Member Training Program (OYP).

OC34

miR-124 Expression Levels in Human Renal Cell Carcinoma

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AIM: Renal cell carcinoma is the urological cancer type with the highest mortality rates over 40%. It has been shown that the inhibition of the Wnt pathway, one of the pathways that are effective in renal cell carcinoma, may kill or prevent the growth of renal cancer cells. The tumor-suppressor mir-124 associated with the Wnt pathway is involved in the regulation of gene expression. We aimed to reveal the relation between miR-124 expression and renal cell carcinoma.
METHODS: 24 tumor and 24 surrounding healthy kidney tissues from the same subjects were included in the study. RNA was isolated from the tissues by "QIAGEN lysis agent". cDNAwas generated by reverse transcriptase (RT) enzyme and the PCR product was measured by real-time polymerase chain reaction (RT-PCR). The expression of mir-124 was determined by the ΔΔCT(Delta Delta Threshold Cycle) method. SPSS 20 (Spearman's rho and Wilcoxon rank sum test) program was used for statistical analysis.
RESULTS: The fold change of miR-124 was found 0.29 ($Z=-3.971$, $p<0.001$). miR-124 was found lower expression levels in 22 tumor tissues than controls and decreased expression levels correlated with body mass index ($p=0.028$, $r=-0.447$), tumor stage ($p=0.009$, $r=-0.522$), tumor diameter ($p=0.002$, $r=-0.595$) and neutrophil values ($p=0.011$, $r=-0.509$).
CONCLUSION: In our study, we found that miR-124 expression in renal cell carcinoma decreased with tumor size and stage. We consider the tumor suppressor miR-124 may be used as a biomarker in renal cell carcinoma if supported by further studies.

OC35

Investigation of Effects of Rheum Ribes Extract on Human Dermal Fibroblast Cell Line

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AIM: Parietin, rhein, emodin and aleo emodin which are extraced from Işkın (Rheum Ribes L.) are anthraquinone derivatives. Anthraquinones have various pharmacological activities such as antimicrobial, antiinflammatory and hepatoprotective effect. In addition, Anthraquinones induce apoptosis and also shows anticancer properties. In this study, it was aimed to investigate the effects of parietin, rhein, emodin and aleo emodin extracted from Rheum ribes species (Rheum ribes extract) on healthy human dermal fibroblast cell line.
METHOD: Human dermal fibroblast cells were cultured in the appropriate culture medium were subjected to Rheum ribes extract at a concentration between 5 μM-750 μM and incubatedfor 24 and 72 hours. The cell viability was determined by using MTT assay. In order to evaluate production of reactive oxygen species, Total Antioxidant Status (TAS) and Total Oxidant Status (TOS) analysis were used. The data were analyzed statistically by using the One-Way ANOVA test.
RESULT: In this study, proliferation inducing effect of Rheum ribes extract at dose range of 5-750 μM on human dermal fibroblast cell line was investigated. According to the results of MTT analysis, it was determined that the Rheum ribes extract applied at a dose range of 25 to 100 μM had significant proliferation-inducing effect on cell viability ($p<0.05$). Similarly, TAS-TOS analysis results showed that antioxidant level was significantly increased at 25-100 μM dose range ($p<0.05$).
CONCLUSION: In this study, it was shown that Rheum ribes extract significantly induced cell proliferation in a dose-dependent manner, and it was concluded that in cases of dermal fibroblast loss, it can be used as a broad therapeutic index agent.

OC36

The Effects of Melatonin on Blood Pressure, Oxidative Stress and Expression Levels of Placental Tnfα, IL-6, VEGF and Sflt-1 Genes in RUPP Rat Model of Preeclampsia

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AIM: Preeclampsia causes maternal mortality, prenatal death and intrauterine growth restriction characterized by hypertension, proteinuria and maternal endothelial dysfunction. Melatonin (MLT) is known to have antihypertensive, antioxidant and pregnancy related effects. The purpose of the study is potential protective effects of melatonin on experimental RUPP (reduced uterine perfusion pressure) in pinealectomized rats.
METHODS: The pregnant rats were grouped as SHAM, pinealectomy (PINX), PINX+RUPP, PINX+RUPP+MLT1 (melatonin from day 1), PINX +RUPP+MLT14 (melatonin from day 14) and PINX +MLT1. Melatonin was administered subcutaneously as 5 mg/kg/day. The urine protein/creatinine ratio was measured from urine samples collected at the 12th and 19th days and the blood pressure was recorded on day 20th of pregnancy. Fetal and plesental weight, blood TNF-α,IL-6, VEGF, sFlt-1, MDA, TAS and TOS levels were determined. In addition, the gene expression levels of TNF-α,IL-6, VEGF and sFlt-1 were measured.
RESULTS: Melatonin administrated RUPP groups have statistically significant lower blood pressure levels ($p<0.05$). Melatonin increased TAS level and decreased urine protein/creatinine ratio ($p<0.05$). The decreasing effect of melatonin on plasental VEGF and sFlt-1 and the increasing effect on TNF-αexpression levels were observed.
CONCLUSION: The beneficial effets of melatonin on experimental model of preeclampsia may potantially contribute to the treatment of preeclampsia. Its thought that the role of melatonin deficiency should be considered together with melatonin administration in preeclampsia pathogenesis.
This study was supported by TUBITAK (114S576).

OC37

Effects of Nitric Oxide Synthase (NOS) Inhibitors on Analgesia Induced by Extremely Low Frequency Magnetic Field in Rats

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AIM: It is known that the electromagnetic field (EMF) reduces the different types of pain. However, the mechanism of magnetic field analgesia is not fully understood. Our aim of this study is to investigate the effects of nitric oxide synthase (NOS) inhibitors on analgesia induced by extremely low frequency EMF in rats.
METHODS: In this study were used 72 adult male Wistar albino rats (approximately 230 ± 12 g). The rats were divided into 12 different groups (n = 6) and provided environment where is at 22 ± 2 °C room temperature, 12-hour light/dark cycle and insulated from sound. The application of electromagnetic field (50 Hz), the same times for 30 minutes each day for 15 days, and a total of four times every 15 minute intervals. The analgesic effect measurement was performed by tail-flick and hot-plate tests. Prior to analgesia test, nitric oxide donor SNAP (30 mg/kg) and NOS inhibitors L-NAME (40 mg/kg) and 7-NI (25 mg/kg) were injected intraperitoneally in rats. In the statistical analyzes of the data, analysis of variance (two-way ANOVA) was used and the multiple comparison determined by Tukey tests. The level of statistically significant was expressed $p<0.05$.
RESULTS: Analgesia test results indicated that the maximum analgesic effect of elektromagnetic field produces in 5 mT and on day 7. Administration of L-NAME and 7-NI in rats exposed to a magnetic field the analgesic effects were significantly higher than EMF group rats ($p<0.05$). On the contrary, administration of SNAP in rats exposed to a magnetic field the analgesic effects significantly reduced compared to the EMF group ($p<0.05$).
CONCLUSION: Obtained data suggested that the administration of L-NAME and 7-NI increased analgesic efficacy subjected to electromagnetic field in rats, whereas the administration of SNAP reduced the analgesic activity.

OC38

The Effect of Nesfatin-1 on Penicillin-Induced Epileptiform Activity

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AIM: Nesfatin-1 is a neuropeptide which was discovered in 2006. There are limited studies regarding the level of nesfatin-1, which was changed in epilepsy. In the present study, the effect of Nesfatin-1 was investigated on penicillin-induced epileptiform activity in rat.

METHODS: A total of 32 adult male Wistar rats were used in the study. Rats were anesthetized with urethane (1.25g / kg) and tripolar electrodes were placed on skulls. Epileptic seizure was created with the injection of penicillin-G (500 IU, i.c.) and interictal spike activities were observed through the Powerlab Chart-7 software. Nesfatin-1, at doses of 25, 50 and 100 pmol, was administered intracerebroventricularly (i.c.v.) 30 minutes after penicillin injection. The mean frequency and amplitude of epileptiform activity were analysed off-line.

RESULTS: Nesfatine-1, at doses of 25 and 50 pmol, significantly reduced the mean frequency of epileptiform activity in 80 minutes 20 minutes from nesfatin-1 injections ($p<0.05$), respectively without changing the mean amplitude of spike activity. Nesfatin-1, at a dose of 100 pmol, did not alter either the mean of frequency or amplitude of spike activity. Therefore, nesfatin-1, at a dose of 50 pmol, was found the most effective since it showed earlier and more anticonvulsant activity during experiments.

CONCLUSION: Nesfatin-1, at doses of 25 and 50 pmol, showed anticonvulsant activity in penicillin-induced epileptic activity. Even the most effective dose of nesfatin-1 (50 pmol) showed partial suppression against epileptic activity. Further biochemical and immunohistochemical studies are required to determine the exact molecular mechanism of these effects.

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OC39

The Role of Hemopressin on Penicillin-Induced Epileptiform Activity in Rats

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AIM: Hemopressin, which had been known to originate from the alpha chain of haemoglobin, shows its effects through cannabinoid CB1 receptors. Although, hemopressin binds to the CB1 receptors, it has not been understood that hemopressin was a typically CB1 receptor agonist or antagonist yet. In some cases, hemopressin behaves like a CB1 receptor antagonist due to its effect on appetite and pain pathways, ın some other cases,it actsas a CB1receptor agonist gastrointestinal system. However, there is no evidence that is available to show the effect of hemopressin on epilepsy. The aim of this study was investigated the epileptic effect of hemopressin by electrophysiological recording (ECoG).

METHODS: Male Wistar rats (n=35) were anesthetized with urethane (1.25g/kg), epileptiform activity was recorded by using the electrophysiologic data acquisition system. Animals were randomly divided into 5 groups. Subsequently, saline (Group I (control):1µl saline, i.c.v)and hemopressin (Group II: 0.3 µg, i.c.v;Group III: 0.6 µg, i.c.v;Group IV:1.2 µg, i.c.v; Group V:2.4 µg, i.c.v)were administered. The various doses of hemopressin were injected intracerebroventricularly (i.c.v) 30 minutes after penicillin (intracortical, 500IU, 2.5µl) injection. After injection, ECoGs were recorded for another 3 hours.

RESULT: All dose of hemopressin increased the mean frequency of epileptiform activity in penicillin-induced epileptic rats and the effective dose of hemopressin was determined as 0,6 µg ($p<0.05$). All doses of hemopressin did not cause any significance change on amplitudes in all groups ($p >0.05$).

CONCLUSION: Our data have showed that hemopressin, a peptide ligand for CB1 cannabinoid receptors, has also proconvulsant effect on epilepsy. These findings are likely to have a profound impact on the development of new therapeutics targeting to epilepsy.

OC40

Calcineurin and Reelin Gene Promoter Region Methylation Changes Due to Fear Conditioned Long-Term Memory Formation in Hippocampal And Dorsomedial Prefrontal Cortex Tissues of Young or Aged Rats

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AIM: Although it has been thought that DNA methylation may play a role in epigenetic regulation for the formation of long-term memory, it is not fully explained how the memory is induced and maintained. DNA methylation in the promotor region of the Calcineurin and Reelin genes that inhibits and activetes learning; respectively, in hippocampus and dorsomedial prefrontal cortex (DMPF) tissues of young (3-4 month old) and aged (19-20 month old) rats was compared by age-dependently or by age matched naive control groups.
METHODS: Spraque Dawley rats were exposed to the contextual fear conditioning paradigm to generate long-term fear-conditioned memory. Real-time polymerase chain reaction and methylation-dependent immunoprecipitation were used to determine DNA methylation. The fold change of methylation was calculated as 2^-(ΔΔct).The results were analyzed by Student's t-test.
RESULTS: The percentage of freezing behavior in young and old rats on the 21st day after contextual fear conditioning was higher than the control ($p = 0.03$, $p = 0.02$; respectively). At the same time point, the methylation ratio of Calcineurin and Reelin DMPF cortex was decreased in young rats ($p = 0.01$ and $p = 0.01$; respectively). That decrease was observed for only Reelin in hippocampus ($p = 0.03$). Meanwhile, Calcineurin methylation ratio in DMPF cortex was increased in aged rats ($P = 0.02$). No further methylation changes were detected.
CONCLUSION: Our findings show that a memory dysfunction does not develop due to aging with the fear conditioning paradigm in rats, and that Calcineurin and Reelin methylation ratio changes in hippocampus and DMPF cortex may not have similar patterns in young and aged rats.
Supported by TÜBİTAK (Project No: 115S810).

OC41

Does Phosphodiesterase Inhibiting Agent-Milrinone Prevent Negative Inotropic Effects of Sertraline on Postoperative Human Heart Muscle Contractility? An In Vitro Experimental Study

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AIM: Patients who underwent cardiac surgery may have depression in the early postoperative period and they may need anti-depressant drug treatment. We used Sertraline which is a selective serotonine re-uptake inhibitor (SSRI) in human atrium but it caused negative inotropic effects on human atrium muscle contractions. This negative effect was markedly seen when sertraline doses were augmented, because of this reason we used Milrinone, a phosphodiesterase inhibitor, positive inotropic agent for prophylaxis to strengthen heart muscle contractions and prevent negative inotropic effects when treating postoperative depression with SSRI agents.
METHODS: Human atrium tissues (n=27) were taken from cardiac surgery performed cases for coronary bypass surgery during venous cannulation through right atrium appendage before initiation of cardiopulmonary bypass. Ages of patients were between 47 to 72. All atrium tissues were placed into isolated organ bath and washed for 3 hours in order to diminish the effects of anaesthetic agents. Adrenaline (10^{-1} M) was administered in tissue cabs for producing isometric contractions. Before cumulative Sertraline doses, 10^{-6} M Milrinone was added for prophylaxis. Cumulative sertraline (10^{-9} ve 10^{-4}M) doses were added to organ baths. The contractions were recorded accordingly. Friedman and Kruskal Wallis tests were used for statistical evaluation. Contraction width measurements were used as contraction parameters.
RESULTS: Before prophylaxis dose of Milrinone, inhibition of contractions was statistically significant at 10^{-9}, 10^{-8}, 10^{-7}, 10^{-6}, 10^{-5}, 10^{-4} M doses of sertraline following the initial administration of adrenaline. But after prophylaxis dose of Milrinone, we noticed decreased in inhibition of contractions.
CONCLUSION: Selective serotonine reuptake inhibitor Sertraline may cause negative inotropic effects on human atrium muscle. Therefore, sertraline may be used carefully in cardiac surgery performed patients, especially in early postoperative period. So it must be supported with a positive inotropic agent such as Milrinone to prevent inhibition of contractions.

OC42

Preliminary Results of *GPX-1* Gene C.C599T/P.Pro198Leu Variation in Turkish Patients with Coronary Artery Disease

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AIM: Free radicals affect the formation of

atherosclerosis, glutathione peroxidase (GPX-1) is one of the defense mechanisms, protecting the vascular system against oxidative stress. This process is supported by the GPX-1 expression in the blood vessels. It has been stated that low GPX-1 activity results in a higher incidence of cardiovascular anomalies, and that increased GPX activity could have potential therapeutic effects. In association with GPX activity, the c.C599T polymorphism leading to a change from proline to leucine at protein position 198 (p.Pro198Leu), is suggested to be an early diagnostic parameter for coronary artery diseases (CAD). The purpose of this study was to investigate the c.C599T polymorphism in Turkish patients with CAD.
METHODS: We have investigated 113 volunteers, composed of CAD patients and healthy control volunteers. The CAD samples were collected at the Marmara University, Department of Cardiovascular Surgery. Peripheral blood samples (10 ml) were collected from subjects with no clinical evidence of type 2-diabetes. Genomic DNA was isolated with the salt precipitation method, polymerase chain reaction, restriction fragment length polymorphism and agarose gel electrophoresis techniques were utilized. This study was approved by the Ethical Review Board of Istanbul Medical Faculty, Istanbul University.
RESULTS: The CC, TT, CT, genotypes of the control and CAD groups were, 23.8%, 54.8%, 21.4% and 15.5%, 12.7%, 71.8%, respectively. A significantly increased risk for developing CAD was found for the group bearing the heterozygous CT genotype ($p<0.001$).
CONCLUSION: These preliminary results, provide new evidence that Turkish patients with CAD have a tendency to be heterozygous for c.C599T/p.Pro198Leu. Suggesting that heterozygosity could be an early diagnostic parameter, in contrast to other populations where the C allele is predictive for CAD. Further research is required to determine therapeutic effects of increased GPX activity in the Turkish population. This project was supported by IU BAP (Project no: 21596).

OC43

The Effect of Resvaratrol on Oxidative Stress in Diabetic Rat Heart Tissue

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AIM: Resveratrol (RSV), a vegetable flavonoid, is known to have vasodilator, antihyperlipidemic, antiinflammatory, antiaggregant and cardioprotective effects. RSV reduces the risk of myocardial infarction by reducing Low Density Lipoprotein (LDL) oxidation by the action of free radical scavengers. Its vasodilator effect decreases the risk of atherosclerosis by blocking the increase in platelet aggregation induced by a hypercholesterolemic diet. In our study, we aimed to investigate the effects of resveratrol on oxidant and antioxidant systems in heart tissue in rats with streptozotocin (STZ) diabetic rats.
METHODS: After approval of the ethics committee 30 adult male Wistar albino rats were divided into 4 groups as follows:1.Control, 2.Resveratrol, 3.Diabetes, 4.Diabetes+Resveratrol. Streptozotocin STZ(65 mg/kg 0,1M in citrate buffer) were administered to diabetes groups,citrate buffer were administered to control groups intraperitoneally as a single dose. Application of RSV(10/mg/kg/day dose (dissolved in 0.1M ethanol) through 8 weeks by using oral gavage. At the end of experiments rats were anaesthetized with Rompun+ketamine(50+60- 100mg/kg),and sacrificed by cardiac puncture. Heart tissue oxidant (Malondialdehit/MDA) and antioxidants (glutathione/GSH) parameters were studied. Results, One Way Anova and Fisher LSD tests were compared using, $p<0.05$ was considered significant.
RESULTS and CONCLUSIONS: Diabetes-related GSH leves were decreased while MDA levels were increased in the heart tissues. The administered RSV caused a significant decrease in tissue MDA levels ($p<0.05$). Despite the increase in tissue GSH levels due to RSV, but was not significant. So RSV has reduced oxidative damage in diabetic heart tissue and has caused a slight increase in antioxidant levels. We believe that RSV may be useful in preventing complications of diabetes by the contribution of new studies.
Our study was supported by Gazi University Scientific Research Projects Unit (code: 01/2011-75) and the studies were carried out at Gazi University Faculty of Medicine Physiology Laboratory.

OC44

Efect of Levosimendan and Nigella Sativa on Erythrocyte Deformability During Myocardial Ischaemia-Reperfusion Injury in Rats

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AIM: Ischemia-reperfusion (IR) injury is a cascade of events initiated by tissue ischemia. The cellular damage caused by reperfusion leads to an active inflammatory response. Erythrocytedeformability and plasma viscosity are of crucial importance for the

perfusion of tissues and organs. The aim of this study was to evaluate the effect of levosimendan and nigella sativa on erythrocyte deformability during IR myocardial injury in rats.
METHODS: Twenty-four Wistar albino rats were included in the study. The animals were randomly assigned to one of four experimental groups. In Group C (control group), the coronary artery was not occluded or reperfused in the control rats. Myocardial IR was induced by ligation of the left anterior descending coronary artery for 30 min, followed by 2 h of reperfusion in the IR (IR), IR-levosimendan (24µg/kg) (IRL) group and IR-nigella sativa (0.2 mL/kg) (IRNS) group. Deformability measurements were performed in erythrocyte suspensions containing Htc 5% in a phosphate-buffered saline (PBS) buffer.
RESULTS: The results of the study indicated that IR significantly increased the relative resistance, a marker of erythrocyte deformability when compared to control group ($p<0.05$). There were significant differences between the groups according to the comparisons with ANOVA test ($p<0.0001$). The results obtained after corrections with Bonferroni test were as follows: Comparisons of the IRL and IRNS groups revealed similar results ($p=0.764$). The values of the IR group were significantly higher than those of the control, IRNS and IRL groups ($p<0.0001$, $p=0.001$, $p=0.003$, respectively).
CONCLUSION: Erythrocyte deformability was decreased in rats with IR injury. This injury might lead to further problems in microcirculation. Levosimendan and nigella sativa may be useful in reducing the adverse effects of this type of injury.

OC45

Determining the Opinions of Başkent University Health Sciences Faculty Students on the Course and Education of Physiology

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AIM: Physiology is scientific discipline examining the characteristics that make up the liveliness in organism and it's included in curriculum of the health sciences faculty. In study, it was aimed to determine the level of understanding, opinions and problems of students who take Physiology course in Baskent University Faculty of Health Sciences in the Nutrition-Dietetics (ND), Physiotherapy-Rehabilitation (PTR) and Nursing (N) departments related to physiology course.
METHODS: The second-year students in ND, PTR, N departments joined in study (nND=54, nPTR=19,nN=60). With the permission of the author of "Anatomy and Physiology Lesson Student Opinion Questionnaire Form" developed by Kunt, the part of this questionnaire that was relevant to physiology course (45 questions) was administered to the students. In statistical assessments, "Pearson Chi-Square Test" and "Freeman-Halton Test" were used.
RESULTS: Outstanding results of study were as following; the majority of students considered the course of physiology as necessary course for their profession (ND=%57,4; PTR=%78,9; N=% 5,0, $p<0.001$), subjects learned best were digestive system in ND (27.8%), introduction to physiology in PTR and N (36.8%, 43.3%, respectively), the subjects learned worst were found to be nervous system in ND (25.9%), neuroendocrine system in PTR (42.2%) and musculoskeletal system in N (26.7%). Among the problems in the teaching-learning process related to the physiology course, the answer percentages of the following questions striking; "Not being able to reach the lecture notes, books/documents related to the subjects to be taught in advance" (ND=74.1%,PTR=64.3%,N=46.7%) and "Removal of some subjects from the program in use" (ND=64.8%, PTR=36.9%, N=46.7%).
CONCLUSION: In this study, it was determined that the students did not get enough efficiency from some subjects, and among reasons of this notion, they had the opinion that there was not appropriate resource. They could not reach those in advance and they had loaded curriculum. It is considered these results may be guiding physiology course educators while preparing curriculum/course contents.

OC46

Vestibular Evoked Myogenic Potentials and Electroencephalography in the Presence of Musical Versus Non-Musical Verbal Stimuli

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AIM: This study was undertaken to investigate the efficacy of electrophysiological recording methods in differentiating musical from non-musical verbal stimuli perceived by hearing. It has been hypothesized that electrophysiological recordings [vestibular evoked myogenic potential (VEMP) and electroencephalography (EEG)] show different characteristics in case of music compared to non-music.
METHODS: After obtaining ethical approval, eight healthy volunteers (F/M, 7/1; mean age, without complaints of hearing or vestibular system (K/E, 7/1; Mean age, 20.8±3.6 year) were assessed twice by one

week interval. In a sound-proof chamber, VEMP and EEG recordings were obtained in the presence of either e-book or music as verbal stimulus. EEG recordings were obtained during listening, whereas VEMP were obtained after listening. Each listening session lasted 10 minutes. As VEMP parameters, latencies of the first positive wave P1 and the first negative wave N1, VEMP amplitudes between the two peaks were taken. A portable four-channel EEG device was used to record EEG (F7, Fp1, Fp2, F8). Percent change in frequency of alpha, beta, delta, theta and gamma waves were analysed.
RESULTS: VEMP recordings showed similar characteristics in the presence musical versus non-musical verbal stimulus. In EEG recordings, there were significant changes in F7_delta, Fp1_gamma ve Fp2_delta wave frequencies between silence period and e-book listening as non-musical stimulus ($p<0.05$).
CONCLUSION: We suggest that vestibular evoked potentials show similar responses to musical or non-musical verbal stimulus. These findings may provide evidence for cortical appreciation of a sound stimulus as music.

OC47

Effects of Sleep Pattern on Cortisol Awakening Response and Heart-Rate Variability in Young Adults

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AIM: Stress axis of the body, including the hypothalamic-pituitary-adrenal axis and the autonomic nervous system, might be affected by changes in sleep patterns. Therefore, the aim of the current study was to examine the effect of change in sleep pattern (early sleep early wake up and late sleep late wake up) on cortisol awakening response (CAR) as an indicator of HPA axis and the heart rate variability as an indicator of ANS activity.
METHODS: Medical students were divided into two subgroups who slept early and woke up early (Sleeping at 11:00 p.m. and waking up at 05:00 a.m., n=22, 20-27 year old) and who slept late and woke up late (Sleeping at 02:00 a.m. and waking up at 08:00 a.m., n=24, 20-26 year old). The groups slept for 6,3 ±1,5 and 5,9±0,8 h, respectively. Salivary samples were taken at 0, 15, 30 and 60 min post-awakening for measurement of CAR and analyzed for cortisol by an enzyme immunoassay. Electrocardiogram was recorded for 5 min for the determination of HRV. Information about sleep was obtained by Karolinska Sleep Diary and Questionnaire. Level of anxiety was obtained by using State and Trait Anxiety Inventories (STAI-I and STAI-II). The data were not distributed normally and Mann-Whitney U test was used to determine the statistical differences between the groups.
RESULTS: Cortisol concentrations were higher at 60 min post-awakening in late sleepers ($p<0.05$). However, sleep pattern did not affect time- and frequency- domain parameters of HRV ($p>0.05$). Early sleepers had higher daily anxiety levels ($p<0.05$) while late sleepers had lower sleep quality.
CONCLUSION: Sleep pattern appeared to affect hypothalamo-pituitary-adrenal axis but not the autonomic nervous system activity. Additionally, early sleeping was associated with higher anxiety levels while late sleeping was associated with reduced sleep quality.
Supported by İnönü University, BAP (Project # 2015/96)

OC48

L-Thyroxine Supresses the Mitogen-Activated Protein Kinase Activation by Depotentiating Stimulus in the Hippocampus In Vivo

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AIM: We have previously shown that T4 can play a role in modulation of bidirectional synaptic plasticity and that it can promote long-term depression (LTD) over long-term potentiation(LTP) via integrin αvβ3 receptor. These receptors are coupled with the mitogen-activated protein kinases (MAPK) cascade. In this study, we investigated whether L-thyroxine alters the expression of up-regulated ERK1/2 and p38-MAPK by the depotantiation of LTP.
METHODS: Wistar albino rats were used in the study (T4-infused group (100pm and 100nm) and SF-infused group,n=8).Field potentials, field-excitatory postsynaptic potential (fEPSP) and population-spike (PS), were recorded from granule cell of dentate gyrus. After 5-min intrahippocampal infusion of L-thyroxine in concentration of 100-pM and 100-nM, or saline, depotentiation was induced by a low-frequency stimulus (1Hz,900pulse,15min,LFS) short after high frequency stimulation (100Hz,1sec,4 times). Total and phosphorylated levels of MAPK proteins (ERK1/2 and p38-MAPK), were evaluated by Western blot in hippocampus.
RESULTS: No effect of depotentiating stimulus was observed on expression levels of total ERK1/2 and p38-MAPK, whereas up-regulated expression of p-ERK1/2 and p-p38-MAPK in the hippocampus in which depotentiation was induced in all groups. Depotentiation in the saline group had a larger effect upon p-ERK1 and p-ERK2 with an average upregulated fold change of 20.9±9.2 and 12.4±5.2 compared to that of p-p38-MAPK(1.73±0.41-fold). L-thyroxine infusion apparently reduced the upregulated expression of p-ERK1 and p-ERK2 by a mechanism

dependent of its concentration: Phosphorylated ERK1 and phosphorylated ERK2 increased by 14.5 ±4.7% and 9.0±2.7–fold in the 100-pM L-thyroxine group, and by 11.0±3.0% and 7.4±0.8–fold in the 100-nM L-thyroxine group, respectively. We also observed a small but dose-dependent reduce in increased phosphorylation of p38-MAPK (100-pM T4:1.50±0.43;100-nMT4:1.25±0.38-fold).

CONCLUSION: Present results suggest that Raf-MEK-ERK1/2 (MAPKs signaling) could be activated by depotentiation, as reported by a recent study showing ERK1/2 activation during LTD xpression L-thyroxine dependent suppression of ERK1/2 activation could tilt the balance between ERK1/2 and p38 MAPK toward a relatively increased activation of P38-MAPK signaling, resulting in weakening of amplified synaptic strength.

Poster Communications

PC001
Rottlerin and Genistein Suppress Cell Proliferation, Invasion, Cell Cycle and Induce Apoptosis in Neuroblastoma Cells

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AIM: Neuroblastoma is one of the most common solid tumours in children less than 1 year of age. Rottlerin, a naturally occurring polyphenolic compound derived from Mallotus philipinensis, appears to have great potential in cancer therapy because of its effects on several cellular processes. Genistein have been found to inhibit the uncontrolled cell growth of cancer, most likely by inhibiting cell division and survival in several cancers. We aimed to investigate the effects of rottlerin and genistein on cell proliferation, invasion and cell cycle/apoptosis in neuroblastoma cells.
METHODS: In this study, the human neuroblastoma cancer cell lines (SH-SY5Y, Kelly) were used. Rottlerin and Genistein were also employed for therapy. As in vitro experiments, cell proliferation (MTS assay), colony formation, invasion, wound-healing tests, western blot, cell cycle and apoptosis analysis by flow cytometry were performed. The wound-healing assay used to study cell migration. A "wound" was created in a cell monolayer and images were captured at the beginning and at regular intervals during cell migration. The images were compared to quantify the migration rate of the cells. One-way ANOVA with post-hoc Tukey test was performed for statistical analysis ($p<0.05$).
RESULTS: Our results showed that rottlerin and genistein treatments caused a significant reduction in cell proliferation, colony formation, invasion/wound-healing capacity in neuroblastoma cells at concentrations of 5 µM and 30 µM, respectively ($p<0,0001$). The combination of these doses also empowered the level of inhibition in these analysis ($p<0,0001$). Additionally, these drugs also increased the level of apoptosis and caused cell cycle arrest in these cells ($p<0,0001$). Our western blot data suggested that these treatments markedly inhibit several pro-tumorigenic, metastatic and increased some apoptotic proteins in neuroblastoma.
CONCLUSION: In conclusion, it was revealed with all these results that rottlerin and genistein have important effects on cell proliferation, metastasis, and cell survival in neuroblastoma.

PC002
The Effect of Ric-8B Protein on Golgi Organelle Functions in Human Embryonic Kidney Cells

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AIM: In signal signal transduction systems, G-protein coupled receptors (GPCR) regulate specifity, location and efficiency of cellular signaling patways in eukaryotic cells and have a key role in sensing a very diverse set of signals ranging from visiual to olfactory. In addition, there are also accessory proteins called guanine nucleotide exchange factors (GEFs), that induce the nucleotide exchange at Gα subunits, thus promoting G-protein activation. Ric-8B (Resistance to Cholinesterase Inhibitor) is newly identified protein which interact with the GDP-bound form of Gα subunits and stimulate their nucleotide activity, acting as receptor-independent GEFs. In this project, we aimed to know G-proteins and their uncharted mechanistic effect on Golgi organelle and their interaction with accesory proteins.
METHODS: We used HEK-293 cells with treatment BFA (at 5-10 µg/mL in 5 to 10 min) which is a fungal metabolite that seriously cripple protein secretion in eukaryotic cells by disrupting the Golgi complex. We created four groups: Control group, BFA treatment group, ST-GFP+BFA group and ST-GFP+RİC-8B group. We performed immunocytochemistry experiments within HEK-293, followed the location of fluorescein tagged marker protein of Golgi complex (ST-GFP) in the presence of Ric-8B, with high-resolution fluorescence microscopy.
RESULTS: Treatment of HEK-293 cells with BFA seriously disrupted the Golgi complex (at 5-10 µg/mL in 5 to 10 min.) disassembled the complex including the collapse of the Golgi stacks. In ST-GFP+RİC- 8B +BFA group, Golgi complex was much more intact.
CONCLUSION: In the presence of Ric-8B with the treatment BFA, attenuated disassembling and callopsing of Golgi compex relatively (%40).
Our study was supported by İstanbul Medeniyet University scientific Research Coordination Unit.

PC003

Effects of Different Concentrations of Hydrogen Peroxide, Alpha-Tocopherol and Crithmum Maritimum L. on Periodontal Ligament Fibroblast Cells

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AIM: Hydrogen peroxide (HP) released from tooth bleaching agents may diffuse through mineralized dental tissues and reach pulp space and periodontal ligament. Periodontal ligament (PDL) is non-mineralized connective tissue located between cementum and alveolar bone.*Crithmum maritimum L.* (CM) is a halophyte and antimicrobial, antioxidant and regenerative properties of CM have been demonstrated in studies conducted. The proliferative effect of α-Tocopherol (α-T) and CM as antioxidants and HP as oxidant; on human periodontal ligament fibroblast cells (PdLF) was evaluated in this in vitro study.
METHODS: PdLF cells were seeded in 96-well plates. The study groups were exposed to various concentrations of CM, as 4, 5, 6, 7, 8, 10, 20, 50, 100 µg/mL, α-T as 50, 75, 100, 125, 150, 200 µM, HP as 1, 1.5, 2, 4, 6, 8, 10 µg/mL for 24, 48 and 72 hours. After treatments, the XTT assay was performed to evaluate cell proliferation. Mann-Whitney-U test was used in comparison between control and other groups ($p < 0.05$).
RESULTS: After 24 hours, cell proliferation of groups treated with 20 and 50 µg/mL CM concentrations were increased by 80% and 82% ($p=0.024$) and after 48 hours 5, 6, 10 and 20 µg/mL CM concentrations were increased by 39%, 33%, 70% and 60%, respectively statistically significant compared to the control ($p=0.03$, $p=0.045$, $p=0.004$, $p=0.024$). After 24, 48 and 72 hours, cell proliferation of groups treated with 100 µM α-T concentration were increased by 63%, 65% and 58% respectively statistically significant compared to the control ($p=0.009$, 0.017, 0.036). After 48 hours, cell proliferation of the groups treated with 1.5, 4, 8 and 10 µg/mL HP concentrations were reduced by 39%, 49%, 53% and 60%, statistically compared to the control respectively ($p=0.029$).
CONCLUSION: Overall, while α-T and CM increased the proliferation of PdLF cells, HP decreased.

PC004

Investigation of The Anticarcinogenic Effects of *Portulaca oleracea* Extracts on Different Human Cancer Cell Lines

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AIM: *Portulaca oleracea* (purslane) is a perennial herbaceous plant, and it consumes as vegetables. This plant is used as a drug in the traditional medicine. It has been reported that different alkaloids of *Portulaca oleracea* have cytotoxic activity. This study was conducted to determine the effects of *Portulaca oleracea* on the viability of human over (A2780), colon (HCT-116), breast (MCF-7) and prostate (PC-3) cancer cells.
METHODS: In this study, extracts of *Portulaca oleracea* in water, ethanol and methanol were added to the culture media PC-3, HCT-116, A2780 and MCF-7 and incubated for 24 hours. The changes in the viability of A2780, HCT-116 and PC-3 cells caused by *Portulaca oleracea* extracts were determined by 3-(4,5-dimethylthiazol-2-yl) -2,5-diphenyltetrazolium bromide (MTT) assay method. Statistical analysis of the data was performed using the Bonferroni-corrected Mann-Whitney U test in IBM SPSS Statistics 24.0 Windows package program. Inhibitiory concentration 50 (IC50) values were calculated in Graphpad prism 6 program according to MTT assay results.
RESULTS: The study results showed that *Portulaca oleracea* extracts in water, ethanol and methanol caused significant decrease in viability of A2780, HCT-116, MCF-7 and PC-3 cells ($p < 0.05$).
CONCLUSION: All three extracts of *Portulaca oleracea* (in water, ethanol and methanol) were found that have strong antitumor properties on these cancer cells.
This study was supported by TUBİTAK (Project no:115Z056).

PC005

Investigation of Cytotoxicity Properties of Novel Phthalocyanine Complexes Containing Chalcones Groups on Different Cancer Cell Lines

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AIM: Phthalocyanines complexes, which are derivatives of tetrapyrrole, constitute an important class of compounds both in basic researches and in applied sciences. The addition of desired functional groups to the periphery of phthalocyanine rings changes its biological and physical properties and enables them to be used in different areas. The chalcone derivatives are an important class of biologically active compounds which can be obtained by the Claisen–Schmidt condensation reaction. This study was designed to determine the anticarcinogenic properties of new phthalocyanine complexes containing chalcone groups on different cancer cell lines.
METHODS: In this study, chalocone groups were attached to the phthalocyanine rings and metallophthalocyanines were synthesized by incorporating different metal ions. A new mono substituted phthalonitrile derivative 4-((4'-oxyphenyl)-3-(3-pyridine)-2-propen-1-one)phthalonitrile compound (2) was prepared by a nucleophilic reaction of 4-nitrophthalonitrile with 1-(4'-oxyphenyl)-3-(3-pyridine)-2-propen-1-one (this compound was obtained from the interaction of 4-hydroxyacetophenone with pyridine-3-carbaldehyde) in dry DMF in the presence of K_2CO_3. Periferal tetrasubstituted metallo-phthalocyanine complexes (3-6) were synthesized by 'heating of solid phase' method. By using this technique, the cyclotetramerization of 1-(4'-oxyphenyll)-3-(3-pyridine)-2-propen-1-one (chalcone) substitue phthalonitrile compound (2) with corresponding metal salts (Co(II), Zn(II), Ni(II) and Cu(II) acetates) under nitrogen atmosphere resulted with the formation of novel metallo-phthalocyanines (3-6). New Copper(3), cobalt(4), nickel(5) and zinc(6) phthalocyanines complexes and phthalonitrile compound (Fig1;2) containing chalcones as side groups were investigated cytotoxicity properties by using MTT assay against human ovarian (A2780), prostate (PC-3) and breast (MCF-7) cancer cell lines. In the comparison of quantitative variables among groups, Kruskal Wallis H test was used. The value $p<0.05$ was accepted as statistically significant.
RESULTS: Compound 2 and phthalocyanines complexes (3-6) significantly reduced percentage of cell viability compared to the control ($p<0.05$). CONCLUSION: New phthalocyanine complexes containing chalcone groups were found that they have strong anticancerogenic effects on all tested cancer cells.

PC006

Investigation of the Effects of Sitagliptin on Cancer; In Vitro Study

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AIM: Sitagliptin is a dipeptidyl peptidase-4 (DPP 4) inhibitor. Sitagliptin is used as an oral antidiabetic agent in the treatment of Type 2 diabetes. In in vitro studies, sitagliptin has been shown to increase the number of pancreatic beta cells and protect beta cell function. In another study, Sitagliptin was reported to reduce breast cancer risk in women with Type 2 diabetes. This study was conducted to determine the effects of different concentrations of sitagliptin on human breast (MCF-7), over (A2780) and prostate (PC-3) cancer cell viability.
METHODS: A2780, PC-3 and MCF-7 cell lines were used in the study. All cells were fed with 25 cm2 culture flasks in RPMI-1640 medium (supplemented with 10% FCS, 100 U / mL penicillin and 0.1 mg / mL streptomycin). Cells were placed in 96-well plates with 15 x 103 cells per well and left to incubate for 24 hours. Concentrations of sitagliptin 1, 5, 25, 50 and 100 µg post-incubation were added to the culture medium and incubated for 24 hours. The effects of sitagliptin on cancer cell viability were determined by 3- (4,5-dimethylthiazol-2-yl) -2,5-diphenyltetrazolium bromide (MTT) assay method. Statistical analysis of the data was performed by the Bonferroni correction Mann Whitney U test in IBM SPSS Statistics 24.0 Windows package program. The inhibitory concentration 50 (IC50) was calculated in the Graphpad prism 6 program according to MTT assay results.
RESULTS: It was found that sitagliptin added to A2780, MCF-7 and PC-3 cell lines caused significant decreases in cell viability ($p <0.05$). It was determined that this decrease in cells was dose-dependent and the dose-dependent effect was similar in all cell types (PC-3, MCF-7 and A2780).
CONCLUSION: Sitagliptin was found to have cytotoxic activity. With more extensive studies, a new approach to cancer therapy can be introduced if the cytotoxic mechanism is elucidated.

PC007

Determination of Anticancer Activities of Organophosphazene Compounds Bearing Ether Groups on Human Cancer Cell Lines

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AIM: Cancer is a group of diseases involving abnormal cells divide in an uncontrolled way and with the potential to invade or spread to other tissues. Cancers such as breast, prostate and ovarian cancers are a potentially life-threatening and among the most common types of cancer worldwide. In recent years, the effects of synthesized organic and inorganic compounds on human cancer cell lines have been investigated and are being investigated in a significant way. In the present study, we aimed that was to determine the anticancer activities of oxime-ether substituted organophosphazene compounds.
METHODS: The oxime and oxime-ether substitution organophosphazene compounds have previously been obtained in our own research laboratories [1]. The concentrations of the obtained oxime and oxime-ether substituted organophosphazene (2,3,5 and 6) compounds (1, 10 and 100 µM) were measured in human prostate (PC-3 and LNCaP), over (A2780) and (MCF-7) changes in cancer cell viability were determined using the 3-(4,5-dimetiltiazol-2-il)-2,5-difeniltetrazolyum bromide (MTT) assay method. Statistical analysis of the data was performed by the Bonferroni correction Mann Whitney U test in IBM SPSS Statistics 24.0 Windows package program. LogIC50 values were calculated in the Graphpad prism 6 program on all cell lines of the compounds.
RESULTS: The oxime and oxime-ether substituted organophosphazene derivatives significantly decreased % cell viability comparative to the control groups ($p<0.05$). All the compounds have anticancer activity against on A2780, MCF-7, LNCaP and PC-3 cell lines (especially A2780 and PC-3 cells).
CONCLUSION: In this study, it was aimed to determine anticancer activities of oxime ether organophosphazene compounds.
Reference:

1) Koran, K.; Özen, F.; Biryan, F.; Görgülü, A.O., (2016) "Synthesis, structural characterization and dielectric behavior of new oxime-cyclotriphosphazene derivatives" Journal of Molecular Structure, 1105, 135-141.

PC008

Investigation of Antiproliferative Properties of Malva neglecta Extracts

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AIM: Malva neglecta belongs to Malvaceae family, and it is perennial herbaceous plant. It grows in all the kind of lands, roads, fields, forests, and water's edge, sun-exposed areas in Turkey. It has been reported that this plant was used in the treatment of urinary problems, asthma, ulcers, colds, abdominal pain, digestive problems, diarrhea, stomach pain and sore throat. This study was designed to determine the effects of Malva neglecta extracts on different types of human cancer cell viability.
METHODS: In the present study, antiproliferative properties of M. neglecta water, ethanol and methanol extracts were investigated on the human prostate (PC-3), human colon (HCT-116), human ovarian (A2780) and human breast (MCF-7) cancer cell lines as in vitro. Antiproliferative activities of M. neglecta extracts were determined on four cancer cell lines at different concentrations by method of 3-(4,5-dimethylthiazol)-2-yl]-2,5-diphenyl-2H-tetrazolium bromide (MTT) assay. Statistical analysis of the data was performed by the Bonferroni correction Mann Whitney U test in IBM SPSS Statistics 22.0 Windows package program. The value $p<0.05$ was accepted as statistically significant.
RESULTS: According to our study results, it has been observed that M. neglecta water, ethanol and methanol extracts were caused significantly reductions of cell viability of these cancer types when comparison to the control values.
CONCLUSION: Eventually, it may be said that this plant extracts can be used as a strongly antiproliferative agent for treatment of human prostate (PC-3), human colon (HCT-116), human ovarian (A2780) and human breast (MCF-7) cancer types.
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PC009

Determination of Cytotoxicity Properties of Oxime-Cyclotriphosphazene Derivatives Against PC-3 Cancer Cell Lines

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AIM: Cyclophosphazenes containing phosphorus and nitrogen atoms in their non-delocalized cyclic skeletons are an important family of inorganic ring systems. The oxime esters are the group of organic compounds synthesized by condensation of aldoximes or ketoximes with carboxylic acids. Both oxime and phosphazene compounds are biologically active compounds. Therefore, we aimed to examine the anticancer properties of the oxime ester-substituted cylophosphazene compounds resulting from the reaction of these biologically active compounds.In this study, oxime-ester cyclotriphosphazene derivatives (the code in this article of compounds 7, 8, 9 and 10) were synthesized according to literature protocol [1]. Cytotoxicity activity of cyclotriphoshpazene compounds 7-10 bearing ester groups were tested against human prostate cancer cell line (PC-3) using 3-[4,5-dimethylthiazol-2-yl]-2,5-diphenyl tetrazolium bromide (MTT) dye reduction assay [2-3].
METHODS: These cell lines were treated with varying doses (1, 5, 25, 50 and 100 μM) of cyclotriphoshpazene bearing ester groups 7-10 for 24 h. Cytotoxic activities of these compounds (7-10) were evaluated by 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. LogIC50 values of these compounds (7-10) were calculated that exhibit activation effect against PC-3 cells.Statistical analysis of the data was performed by Bonferroni correction Mann Whitney U test in IBM SPSS package program.
RESULTS: Compounds 7-10 significantly reduced % cell viability comparative to the control ($p<0.05$). The results indicated that these compounds showed the highest cytotoxic activity against on human prostate cancer cell lines.
CONCLUSION: As a result, human prostate (PC-3), cyclotriphosphazene derivatives containing oxime ester and dioxybiphenyl groups on cancer cells can be used as a potent antiproliferative agent.
References:
1) Koran, K.; Özen, F.; Biryan, F.; Görgülü, A.O., Journal of Molecular Structure, 2016, 1105, 135-141.
2) Görgülü, A.O.; Koran, K.; Özen, F.; Tekin, S.; Sandal, S., Journal of Molecular Structure, 2015, 1087, 1-10.
3)Singh, N.K.; Singh, S.B., Synth. React. Inorganic and Metal-Org. Chem. 2002, 32, 25–47.

PC010

Cytotoxicity Properties of Full Subsituted Organocyclophosphazene Derivatives Containing chalcone-groups against A2780 and MCF-7 Cancer Cell Lines

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AIM: The addition of desired functional groups to the periphery of organocyclophosphazene rings changes its biological and physical properties and enables them to be used in different areas. Both chalcone and phosphazene derivatives are biologically active compounds. Therefore, we aimed to examine the anticancer properties of full substituted chalcone-cylophosphazene compounds resulting from the reaction of these biologically active compounds.
METHODS: In the present study, full substituted organocyclotriphosphazene compounds bearing chalcone groups (the code in this article of compounds 3,7, 8, 9 and 11) were synthesized as defined by Koran et al [1]. And then In vitro cytotoxic activities of these chalcone-phosphazene derivatives were determined by 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. Cytotoxic activity of full substituted chalcone-cyclotriphosphazene analogues against on human ovarian (A2780) and breast (MCF-7) cancer cell lines was investigated.. Statistical analysis of the data was performed by the Bonferroni correction Mann Whitney U test in IBM SPSS Statistics 24.0 Windows package program. The value $p<0.05$ was accepted as statistically significant.
RESULTS: Different doses (1, 5, 25, 50 and 100 μM) of all the compound (3,7, 8, 9 and 11) was treated with A2780 and MCF-7 for 24 h. All doses of compound reduced cell viability of A2780 cells ($p <0.05$).
CONCLUSION: These compounds (1, 2 and 3) displayed potential cytotoxic activity towards on MCF-7 and A2780 cancer cells.
References:
1) Koran, K.; Özen, F.; Torğut, G.; Pıhtılı, G.; Çil, E.; Görgülü, A.O., Arslan, M., Polyhedron, 2014, 79, 213-220.
2) Görgülü, A.O.; Koran, K.; Özen, F.; Tekin, S.; Sandal, S., Journal of Molecular Structure, 2015, 1087, 1-10.
3) Singh, N.K.; Singh, S.B., Synth. React. Inorganic and Metal-Org. Chem. 2002, 32, 25–47.

PC011

The Effects of Essential Oils of Nigella sativa L. on p53 Gene Expression and Cell Apoptosis in HT-29 Colon Carcinoma Cells

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AIM: Nigella sativa, also known as black cumin, is a common spice used for medicinal purposes. This study was aimed to investigate the effect of Nigella sativa-derived essential oils on HT-29 colon carcinoma cells.
METHODS: Nigella sativa seeds were obtained from a local spice merchant. The neo-clevenger was used to extract essential oils. The cytotoxicity of essential oils on cells was determined by MTT (3- (4,5-Dimethylthiazol-2-yl) -2,5-diphenyltetrazolium bromide) method. The effects of different concentrations of essential oils on p53 gene expression in HT-29 cells were investigated. After incubation of cells which were treated with essential oils, cDNA synthesis was performed from RNA. The expression analysis was carried out with real time-PCR. Cell apoptosis was determined morphologically by Acridine Orange/Ethidium Bromide (AO/EB) staining method. The apoptotic indices of essential oils were evaluated at 8th and 24th hours of incubation.
RESULTS: The cellular morphological changes were more prominent and apoptotic indices were more elevated as the incubation prolonged. The apoptotic indices varied between 3 and 32. The effects of essential oils on p53 expression were evaluated at 24th, 48th and 72nd hours of the incubation. The p53 gene concentration was found to be the lowest in 24-hour incubation whereas it reached the highest level at 72nd hour of incubation. The affection of p53 gene expression was 158 IU/ml for methotrexate and 158 IU/ml for Nigella sativa whereas it was 48 IU/ml in the control cell line. The effect the essential oils of Nigella sativa L. on HT-29 cell line in terms of p53 gene expression was found to be statistically significant higher than of the control group ($p<0.05$).
CONCLUSION: The essential oils of Nigella sativa L. were found to be highly effective on HT-29 colon carcinoma cells.

PC012

Effect of 2100 MHz Radio Frequency Radiation on Hypertensive and Normal Rats on Oxidant Stress in Testicular Tissue

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AIM: With the advancement of technology, Radio Frequency Radiation (RFR) exposure is increasing in all areas of our lives. Although studies in the literature have focused on the number and quality of sperm of RFR exposure, there are limited publications in relation to oxidant stress in the testes. We aimed to investigate the effects of exposure to RFR on oxidant stress and antioxidant levels of hypertensive and non-hypertensive rats on testicular tissue.
METHODS: Twenty-four male Wistar Albino rats were used in the study. The rats were divided into 4 groups;1)Control(K),2)Hypertension(H),3)Radiation(R),4)Radiation+Hypertension(R+H).The rats were given oral gavage at a dose of 60 mg / kg L-NAME dissolved in 1 ml of tap water for 1 month(1). At the end of 1 month, systolic blood pressure of 140 mmHg and diastolic blood pressure of 90 mmHg were considered hypertensive(2). The rats were exposed to 2100 MHz RFR for 60minutes/5days/8weeks per day. At the end of the treatment, the rats were decapitated under anesthesia and oxidant stress indicator malondialdehyde (MDA)(3), nitrite+nitrate (NOx)(4) and antioxidant glutathione (GSH)(5) levels were studied in testicular tissues. The results were compared with the one-way Anova Tukey test between groups and the in-group Paired Sample t-Test. Those with $p<0.05$ were considered significant.
RESULTS: There was a significant increase in MDA and NOX levels and a decrease in GSH levels in testis tissue according to K group in R and R+H group ($p<0.05$).
CONCLUSION: Although we do not have a study on parameters directly indicating impairment of testicular function in our study, this study supports our thinking in the studies conducted directly on testicular functions. In our study, radiation application significantly increased oxidant stress in testicular tissue, resulting in decreased antioxidant levels. However, there was no difference between the R + H group and the R group.
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PC013

Anti-proliferative Effects of Trigonella foeniculum and Eucalyptus camaldulensis on Human Melanoma Cells

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AIM: Various medicinal components have been shown to be anticarcinogenic in a variety of studies. In this study, we aimed to invesigate the antiproliferative activity of Trigonella foeniculum-graecum L. and Eucalyptus camaldulensis L. Dehnh. on human melanoma cells.
METHODS: Non-cytotoxic concentrations of essential oils were determined in Vero cell line. Antiproliferative efficacy of these plants was carried out on A2058, SkMell, A 375, and B16 B0 cell lines. The MTT (3-(4,5-Dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide) method was used to determine cytotoxic effects. Methotrexate was selected as a standard drug. The seeds of Trigonella foenicum-graecum L. and leaves of Eucalyptus camadulensis L. Dehnh. harvested in June 2016 from the botanical gardens, Field Crops Department of Mustafa Kemal University were used.
RESULTS: The essential oils of Trigonella foeniculum-graecum L. and Eucalyptus camaldulensis L. Dehnh. displayed significant antiproliferative effects on cancer cells when compared with control cells. The IC50 values of Eucalyptus camaldulensis L.'s essential oils on A2058, SkMell, A375 and B16 B0 cell lines were determined as 1.56, 3.12 and 6.25, 3.12, respectively. The IC50 values of Trigonella foeniculum-graecum L. on A 2058, SkMell, A 375 and B16 B0 cell lines were 6.25, 3.12 and 6.25, 6.25, respectively. There was no statistically significant difference for the antiproliferative effects of Eucalyptus camaldulensisL.'s essential oils comparedto standard drug (methotraxate) on A 2058 cell line ($p>0.05$). Especially, while the more significant effect was found in cells treated with the essential oils of Eucalyptus camaldulensis L. Dehnh. This effect was also found to be lower in Trigonella foeniculum-graecum.
CONCLUSION: We assume that the investigated compounds may have beneficial effects against melanoma. The essential oils of these plants may be new hope for the treatment of melanoma cells. We recommended that further studies are needed for the detection of anticarcinogenic activities of these medicinal plants.

PC014

Investigation of The Effect of Ziziphus Jujuba Extract on Ethanol-Applied Rat Carbonic Anhydrase Enzyme

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AIM: Ziziphus jujuba has been used as a medicinal plant in China since ancient times. Polysaccharides are found to be important bioactive compounds in the Zizyphus jujuba. Carbonic anhydrases(CAs) are involved in many physiological and pathological processes, such as gluconeogenesis, lipogenesis, ureogenesis and tumorigenesis, which catalyze the recycling reactions of carbon dioxide and water. CA inhibitors also play an important role in the medical field with various pharmacological activities such as diuretic, antiglaucoma, anticancer. The aim of this study is to investigate the effect of Zizyphus jujuba extract on rat blood carbonic anhydrase(CA) enzyme in 99% ethanol-applied rats.
METHODS: In the study, 32 male Wistar albino rats weighing 250-300 grams were used. Group1: Control(n=8), Group2: Alcohol(n=8), Group3: 4ml/kg Ziziphus jujuba extract and Group4: 8ml/kg Ziziphus jujuba extract(Ziziphus jujuba extract was administered to rats by oral gavage for 10 days). In 11th day, ethanol was applied to the rats in group 2, 3 and 4 by oral gavage to form gastric ulcer. 90 minutes after the ethanol was applied, the rats were sacrificed. The esterase method based on the conversion of 4-nitrophenyl acetate to 4-nitrophene at 348 nm was used as substrate to determine CA activity for 10 days.
RESULTS: Specific activity values for CA enzyme were determined at four different experimental groups. Groups were determined as follows: The control group was 0.686±0.023 EU/mg protein, the ethanol group 0.631±0.024 EU/mg protein, the third group 0.588±0.019 EU/mg protein and the fourth group was 0.496±0.018 EU/mg protein. As a result, it was determined that activity of CA enzyme activity decreased in the 4th group by in vivo applications.
CONCLUSION: The results of the study provide evidence that Ziziphus jujuba extract may be an inhibitor of CA. In addition, this suggests that Ziziphus Jujuba extract has therapy potential for diuretic, antiglaucoma, anticancer drugs.

PC015

The Effect of Cinnamaldehyde on The Activity of Glucose-6-Phosphate Dehydrogenase, Some Biochemical And Hematological Parameters in Diabetic Rats

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AIM: It was aimed to investigate the effect of cinnamaldehyde, an important ingredients of cinnamon on the liver glucose-6-phosphate dehidrogenase (G6PD) activity, some biochemical and hematological parameter in diabetic rats.
METHODS: Rats used for this research were divided 4 group each of containing 10 as control group, diabetic group (45 mg/kg single dose streptozotocin), cinnamaldehyde group (20 mg/kg cinnamaldehyde, 30 days, gavage) and diabetic+cinnamaldehyde group (45 mg/kg single dose streptozotocin+20 mg/kg cinnamaldehyde, 30 days, gavage). The live weight and fasting blood glucose level, taken from tail vein were recorded. End of the trail the blood samples were taken from rats. Biochemical parameters (trygliseride, total cholesterol, VLDL, LDL, HDL, total protein, albumin, globulin, urea) and hematological parameters (HbA1c, hemoglobin, hematocrite, erythrocyte count, mean corpuscular volume, mean corpuscular hemoglobin, mean corpuscular hemoglobin concentration, red cell distribution width) were determined. The activity of G6PD and glutathione amounts were measured in the liver tissues by ELISA kits. The results were evaluated by Kuruskal Wallis Test.
RESULTS: In the group of diabetic+cinnamaldehyde group it was determined that the level of fasting blood glucose ($p\leq0.05$), trygliseride ($p\leq0.05$), total cholesterol ($p\leq0.05$), VLDL ($p\leq0.01$), LDL ($p\leq0.01$), urea ($p\leq0.001$) statistically decreased, but the live weights ($p\leq0.05$), total protein ($p\leq0.05$) and mean corpuscular volume ($p\leq0.05$) increased compared to diabetic group at the 30th days.
CONCLUSION: Given cinnamaldehyde to diabetic rats had positive effect on the fasting blood glucose, live weight, total protein, urea, mean corpuscular volume and specially on the lipid prophile. Decrease of the HbA1c and increase of the activity of liver G6PD were found but these changes were not found statistically difference. As a conclusion, the hypolipidemic effects of cinnamaldehyde were outshined rather than it's antidiabetic effects. It will be needed some research for proving the effectness of cinnamaldehyde in future.

PC016

Comparison of The Effect of Vinpocetine and Carnosine on Impaired Eryhrocyte Deformability with Ethion

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AIM: The organophosphate group compounds cause oxidative stress by creating toxic effects on the body. One of the cells in which caused oxidative stress of organophosphates is erythrocytes.Increased oxidative susceptibility of erythrocytes causes changes in the ability of erythrocyte deformability. Our aim is to investigate the effects of ethion on eritrosit deformability and on these impairment is to compare possible protective effects of vinpocetine and carnosine, antioxidant.
METHODS: This study was carried out on 4-5-month-old Sprague Dawley rats.The 4 experimental groups were established with 10 rats in each group. Ethion (0.2 mg/kg) was daily administered via gavage, while carnosine (10mg/kg), vinpocetine (0.6 mg/kg) and 0.9% serum physiologic were administered intraperitoneally for 10 days.After 10 days, erythrocyte deformability and hemolysis percentage values were measured in blood samples. Statistical analyzes were evaluated by using OnewayAnova test.
RESULTS: Erythrocyte deformability was impaired in the group that toxicity was induced with ethion, however, in ethion+vinpocetine and ethion+carnosine treated groups, these parameters were close to the control group's values. While the hemolysis percentage rate was significantly increased in the ethion treated group compared to control group, it was observed that this rise was partially inhibited in ethion +vinpocetine and ethion+carnosine treated groups.
CONCLUSION: It is known that several toxic agents cause impairment the some erythrocytes properties.The ethion, widely used as organophosphate compound has also been shown to cause the impairment of erythrocyte deformability and increased % hemolysis. It has been determined that carnosine and vinpocetine, which are well-known with their antioxidant activities, can partially prevent these impairments, carnosine is more effective in this direction. In conclusion, carnosine can be used in ethion toxicity and it can be beneficial for both human and animal health.This study was supported by ERU Scientific Research Programme TSY-11-3817
Reference: Kuypers FA. Red cell membrane damage. J Heart Valve Dis. 1998;7:387-395.

PC017

Half- and Whole-Night Shift-Works May Differently Perturb Blood Parameters in Women

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AIM: Shift works continuing whole night or until midnight may differently affect body's immune system compared to the day-time work. Whole blood counts provide valuable information about the level of immune system activation. The aim of this study was to compare whole blood count parameters in nurses who had whole-night, half-night or day-time work patterns.
METHODS: Blood samples were taken from the nurses who had whole-night (16:00-08:00 h), half-night (16:00-24:00 h) or day-time (08:00-16:00 h) work patterns (three groups, each consisting of 20 nurses who worked in these patterns in the last 5-years) at the beginning and at the end of their working hours. Blood samples were collected into vacutainer tubes with EDTA as anticoagulant. As soon as taking the blood samples, they were analyzed by automated whole blood counter. The data was analyzed by GLM models of MINITAB statistical package.
RESULTS: Red blood cell counts, sedimentation rate, hemoglobin concentration and hematocrite values did not differ between the groups (P>0.05). However, white blood cell counts were lowest in nurses having whole night-shift works than the other group (P=0.044). Neutrophil differential counts were higher but lymphocyte counts were lower in group who had normal day-time work pattern (P<0.001). Additionally, even though within normal range, rate of nucleated red blood cells were lower in the group who had whole-night work pattern (P=0.020).
CONCLUSION: The results suggest that immune system is differently modulated in each of the work patterns. It appears that night-shifts changes the balance between neutrophils and lymphocytes. Decreased nucleated red blood cells in group who had whole-night work pattern suggest that there might be problems associated with cell regenaration. The long-term health effects of these work pattern needs further evaluation.

PC018

The Effects of I-131 Ablation/Metastasis Treatment on Hemorheological Parameters and Oxidative Stress in Patients with Differentiated Thyroid Cancer

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AIM: Radioactive I-131 therapy (RAIT) is used for ablation of residual thyroid tissue, metastases after thyroidectomy in diffuse thyroid carcinoma (DTC). Oxidative stress is associated with hemorheology. Although there are limited number of studies investigating effects of RAIT on oxidative stress in DTC, its role on hemorheology is unknown. The aim of the current study was to determine effects of RAIT on hemorheology, oxidative stress (total oxidant/antioxidant status [TOS/TAS], oxidative stress index [OSI]) in DTC patients.
METHODS:. The study protocol was approved by the Medical Ethics Committee of Pamukkale University (the registry number 60116787-020/74536). The study comprised 15 acromegaly patients (mean age 44.93±3.05 years). 30-150 mCi doses of RAIT was administered. Venous blood samples were collected before RAIT, 7-10 days, 1 month after RAIT. Erythrocyte deformability, aggregation were measured by an ektacytometer, TOS/TAS were determined by using a kit, OSI was calculated. Repeated measures ANOVA, Friedman test were used for statistcis, p<0.05 were accepted as significant.
RESULTS: Erythrocyte deformability of the patients measured at 1 week following RAIT (0.53, 0.95 Pa) were decreased compared to basal values. Deformability determined after 1 month at 1.69 ve 3.00 Pa was significantly increased compared to 1 week (p=0.024, p=0.017, p=0.009, p=0.046, respectively) Erythrocyte aggregation, TOS, TAS, OSI of the patients were unaltered.
CONCLUSION: Our results suggest that the decrease in erythrocyte deformability observed after 1 week of RAIT following thyroidectomy in DTC patients may lead to adverse effects on circulation, but after 1 month, deformability values approach to basal values, thus improve. Close follow-up of DTC patients in terms of cardiovascular risks may be suggested especially for 1 week following RAIT.

PC019

Effect of Ozone Therapy on Serum Oxidant / Antioxidant Balance In Vitro

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AIM: Ozone (O3) is a colorless, heavy gas, composed of three oxygen atoms. In our study, we aimed to

investigate the possible changes in oxidant/antioxidant parameters in response to ozone exposure for 20 minutes at doses of 10 and 50 µg / ml.
METHODS: The study protocol was conducted with the approval of Pamukkale University medical ethics committee. 10 and 50 µg/ml doses ozone were applied for 20 minute to 15ml venous blood samples obtained from 10 healthy male volunteers. After application, the blood was centrifuged to obtain sera and total oxidant status (TOS), total antioxidant status (TAS) were measured with commercial kits. The oxidative stress index (OSI) was calculated using TOS and TAS levels. The results were given as mean ± standard error. Variance Analysis and Friedman test were used for repetitive statistical measures, $p < 0.05$ was accepted as statistically significant.
RESULTS: Compared with the control value, there was a statistically significant increase in TOS and TAS values for the ozone doses of both 10 and 50 µg/ ml. The increase in TAS was found to be more significant at 10 µg / ml dose. In accordance with this finding, the most obvious increase in OSI value was observed in the group administered at a dose of 50 µg/ ml.
CONCLUSION: It is known that ozone therapy increases oxidant stress and increases antioxidant capacity. It was suggested that this increased antioxidant activity is responsible for the positive effects of ozone therapy. Although our study concluded that the antioxidant activity was increased in vitro in a similar manner, OSI values in both experimental groups was significantly higher than the control, suggesting possible harmful in vitro effects.

PC020

Oxidative Stress and Erythrocyte Indices in Children Exposed to Pesticide Intoxication

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AIM: Free oxygen radicals increasing in human exposed to pesticides may damage to balance of oxidants and antioxidants and may cause insufficiency in erythrocyte membrane and antioxidant defense mechanism. The aim of this study is to investigate the values of oxidative stress index (OSI), total oxidant (TOS) and antioxidant (TAS) status and erythrocyte indices in children exposed to pesticide intoxication.
METHODS: Blood samples were taken from the patients in Sanliurfa Training and Research Hospital. The blood were centrifuged and plasma were removed for biocehemical analysis. By courtesy of ethical committee, the blood samples were taken from 30 patients (4.76 ± 4.50) and 30 healthy children (5.83 ± 3.80). The values of TAS, TOS, OSI in plasma, and erythrocyte indices such as MCV, MHC, MCHC ve RDW in whole blood were measured. Data was analyzed using SPSS 11.5.
RESULTS: While the values of TOS ($p=0.001$), OSİ ($p=0.030$) were significantly increased, the values of MCH ($p=0.044$) and MCHC ($p=0.010$) were significantly decreased in children exposed to pesticide intoxication than control. But, the values of TAS, MCV and RDW were not statistically different ($p>0.05$).
CONCLUSION: Based upon these results, while the levels of OSI, TOS were significantly increased, the values of MCH and MCHC were significantly decreased in the patients exposed to pesticide. Therefore, we think that pesticide intoxication induce the oxidative stress and affect the erythrocyte hemoglobin concentration. However, there is a need for more detailed studies to assess all molecular mechanisms induced with pesticide intoxication. This study was founded by the Commission of Scientific Research Projects of Harran University.

PC021

An Examination of the Relationship Between ABO Blood Groups and Hematological Parameters

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AIM: Comprehending the physiopathological role of blood group antigens on cardiovascular disease (CVD) is an important issue in terms of new prognostic indicators and for achieving new measures to be taken and reduce the global burden of CVD. In this study, it is aimed to investigate the relationship between blood groups and hematologic parameters in healthy individuals and to evaluate the hematological factors related to CVD and the possible risk position of the blood group antigens.
METHODS: Healthy donors who applied to Transfusion Center between 2012 and 2016 were included in the study according to the exclusion criteria. Among ABO and Rhesus (Rh) blood groups, the differences were examined regarding hematological parameters (leukocyte count (WBC), erythrocytes count (RBC), hemoglobin (HGB), hematocrit (HCT), mean erythrocyte volume (MCV), mean erythrocyte hemoglobin (MCH), mean erythrocyte hemoglobin concentration (MCHC), RDW(erythrocytel distribution width), platelet count (PLT), mean platelet volüme (MPV), PDW(platelet distribution width). $p<0.05$ was considered significant.
RESULTS: 1393 men (mean±SD:34.48±9.26) and 75 women (mean±SD:33.20±9.68) between 18 and 62 years age range included in the study. While ABO and Rh blood group distributions in males were as follows O:462 (33.16%), A:618 (44.36%), B:227 (16.29%), AB:86 (6.17%), Rh(+):1247 (89.51%), Rh(-):146 (10.48%); for females it was determined as O:27(36.00%), A:25(33.33%), B:19(25.33%), AB:4(5.33%), Rh(+):64(85.33%), Rh(-) :11(14.66%). There was no significant difference in hematologic variables among the blood groups in women, whereas in males in B blood group there was a statistically significant highness between A and B; as well as O and B blood groups in terms of RBC, HGB, HCT variables ($p<0.05$, $p<0.01$).
CONCLUSION: The differences in the RBC, HGB and HCT values affecting male viscosities between A and B and as well as O and B blood groups suggest that in male patients the B blood group may pose a risk by CDV's getting more common. Our results were consistent with studies conducted with patient groups.

PC022

Young Doctors Having Thirty-two Hours Shifts Have Better Blood Parameters Than the Day-time Workers

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AIMS: In Turkiye, the young doctors in their first years of residency normally have very long shifts lasting thirty-two hours. The health consequences of these shifts might include changes in whole blood parameters, as the simple yet the most important indicators. Therefore, we studied these parameters in young doctors having long shifts with another group of health professionals, namely the nurses, who had day-time working hours.
METHODS: Young female doctors (n=10) in 1-2 years of their residency were compared to age-matched female nurses (n=10) in terms of whole blood parameters. On Day 1 of the experiment, the doctors started to have their shift starting from 08:00 until 19:00 h on Day 2. On the morning of Day 3, they gave blood samples together with day-time working (08:00-16:00) nurses. The blood samples were analyzed by an automated cell counter and the data were analyzed by t-test.
RESULTS: RBC, WBC, platelets and sedimentation rate were similar between the groups ($P>0.05$) but hemoglobin concentration (13.3 vs. 12.1) and hematocrite (40.7 vs. 37.6) was higher in the doctors having long shifts than the day-time workers ($P<0.05$ for both parameters). Additionally, eosinophil counts and ratios were also higher in the doctors.
CONCLUSION: The doctors had longer shifts but had similar or better blood parameters than the nurses. Cause of this is not known but may include better homeostatic capacity in the doctors due to greater allostatic load. However, as the data also imply that hematocrite and hemoglobin levels are lower than the general population, some health measures need to be introduced for these professionals.

PC023

Effect of Kefir Consumptıon on Erythrocyte Osmotic Fragılıty and Some Haemetologıcal Parameters in Smokers and Non-Smokers

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AIM:We aimed to investigate the effect of kefir on some blood parameters in human exposed to cigarrette smoke which is an important source of oxidative stress.
METHODS: This self controlled, prospective study enrolled 30 healthy male volunteers aged between 25-55 years with smoking regularly 30 cigarattes per day for at least five years and smoking no cigarettes. Ethical approval was obtained from ethic committee of Medicine Faculty of Dicle University. 10ml of venous blood samples were collected after overnight fasting from smoking and non-smoking subjects. Thereafter, subjects were provided to drink 200ml of kefir at lunch for 6 weeks. Blood samples were collected and analysed for haematological parameters with autoanalyser while osmatic fragility was measured manually in Main Laboratory of Dicle University. Parameters were analysed by Kolmogorov-Simirnov test followed by paired-student t-test using SPSS 15.0. P <0.05 was set for statistical significance. Values were presented as a mean value ± SD.
RESULTS: In smokers, comparing the parameters before and after kefir consumption (BK, AK, respectively), kefir did not affect the osmotic fragility, erytrocyte indices, number of erythrocytes, leukocytes, trombocytes, hemoglobin, hematocrit, sedimentation, percentage of leukocytes, total protein and fasting blood glucose. In non-smokers, kefir consumption increased the number of lymphocytes (BK:27.2% ± 10.0, AK: %30.8 ± 5.0, p<0.05) but decreased those of neutrophils (BK: %64.8 ± 10.3,AK: %60.5 ± 5.5, p<0.05) and eosinophils (BK: 3.2% ± 1.6, AK: % 2.1 ± 1.2, p<0.05).
CONCLUSION: Blood components are affected adversely by cigarete smoke. Kefir is used as supportive treatment for many illnesses. Having limeted studies, few support our findings. According to our results, kefir didnot have any affect on most parameters however, significantly increased the number of lymphocytes but decreased those of neutrophils and eosonophils in non-smokers. Further investigations should be carried out to accept kefir as a functional food.

PC024

Effect of Irisin on Erythrocyte Deformability in Mice with Lower Limb Ischemia Reperfusion Injury

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AIMS: Acute ischemia-reperfusion(I/R) injury can be seen in the lower extremities during aortic surgery when a temporary cross-clamp is placed in the abdominal aorta. In 2012,Boström et al. discovered a protein that protects a person from metabolic diseases. This so called protein, Irisin, is a thermogenic protein that converts white fat tissue into brown fat tissue to consume energy. It is released from the skeletal muscle after exercise when systemically exercised. However, the role of irisin in thermogenesis,blood pressure,diabetes mellitus and obesity is still under investigation. In the present study, we aimed to investigate the effects of irisin on reperfusion in mice with lower-limb I/R model.
METHODS: 24mice weighing between 35-45g were used in the study. Mice were divided into 4 group; Control,Irisin,I/RandI/R+Irisin. Irisin was administered intraperitoneally(0.5µg/g) 30min before the procedure. An atraumatic microvascular clamp was placed across the infrarenal abdominal aorta in the IRgroups. Following 120min of ischemia, the clamp was removed and reperfusion was continued for 120min. Mice were sacrificed by taking blood samples from the abdominal aorta at the end of reperfusion. Erythrocytes were seperated from heparinized whole blood samples. Deformability measurements were made in erythrocyte suspensions in phosphate buffered saline. A constant flow filtrometer system was usedto measure erythrocyte deformability and relative resistance was calculated. Results were analyzed with Kruskal-Wallis and Mann-WhitneyUtest.
RESULTS: Erythrocyte deformability index results were similar in control and I/R+irisin groups(p:0.053). The erythrocyte deformability index in I/Rgroup were significantly higher than those of the control,irisinandI/R+irisingroups(p<0.0001,p:0.001,p:

0.011,respectively).
CONCLUSION: In our study erythrocyte deformability was deteriorated in I/R injured mice. This injury might lead to further problems in microcirculation. It was shown that irisin may be useful in reducing the adverse effects of this type of injury. However, these findings should be supported by clinical and experimental studies carried out in more detailed and broader series.

PC025

Determination of Serum Visfatin and Apeline Levels in Acute Coronary Syndrome Patients and Detection of Association with Coronary Artery Disease

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AIM: Acute coronary syndrome (ACS) which displays a complex phenotype is an major cause of morbidity and mortality in developed countries. Adipokines secreted from adipose tissue are involved in different stages of atherosclerosis as well as endothelial dysfunction, plaque destabilization and rupture. Visfatin is proinflammatory, whereas apelin is antiinflammatory adipokines. In this study, it was aimed to determine of the serum levels of visfatin and apelin levels before and after percutaneous coronary intervention (PCI) in patients with ST segment elevation (STEMI) and non-ST segment elevation (NSTEMI) ACS and its relationship with ACS.
METHODS: Eighty patients with the diagnosis of ACS (40 STEMI and 40 NSTEMI) between the ages of 45-75 who were admitted to the Cardiology Clinic of Faculty of Medicine of Atatürk University and 30 healthy controls were included in the study. Blood samples were obtained before and after PCI in the patient group at the time of admission to the hospital in the control group. Visfatin and apelin levels by ELISA in serum samples of the patient and control group were determined. In addition this, routine hemogram and biochemical parameters were also measured.
RESULTS: There was no significant difference in apelin levels ($P>0.05$) while visfatin levels of the patient groups were significantly higher than the control group ($P<0.01$). There was a significant decrease ($P <0.05$) in the visfatin levels and a significant increase ($P <0.05$) in the apelin levels after PCI compared to before PCI in the patients group. C-reaktive protein (CRP) and white blood cell (WBC) values were found significantly higher in the patient group compared with control group and also correlated with apelin and visfatin levels.
CONCLUSION: In this study; determination of serum visfatin and apelin levels in patients with ACS can be used by clinicians as new parameters in the diagnosis and treatment of ACS.

PC026

The Effects of Irisin on Experimental Hypertension in Rats

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AIM: Contraction of the vessels, endothelial damage, oxidative stress and decrease in nitric oxide (NO) levels have essential roles in the physiopathology of hypertension. It's revealed that irisin released by the skeletal muscle cells have protective capacity against endothelial damage and mesenteric artery relaxation. We aimed to investigate the effects of the irisin on experimental hypertension model induced by L-NAME.
METHODS: 32 Sprague-Dawley male rats were divided into 4 groups. Control (C) and control+irisin (C+I) groups received intravenous saline injection, hypertension (HT) and hypertension+irisin (HT+I) groups received 1.5 mg/100 g L-NAME. L-NAME (150 mg/L) was added to the drinking water of the rats in groups HT and HT+I for 3 weeks. In the second week of the experiment, irisin (50 nmol/day) was given to the rats in groups C+I and HT+I and saline were administered to the C and HT groups rats for two weeks through subcutaneously placed osmotic minipumps. Blood pressure was measured by *tail-cuff* plethysmography method. The 24-hour urine, blood and both kidneys of the rats were collected on the 21st day of the experiment.
RESULTS: Systolic, diastolic, mean arterial blood pressure values, serum oxidized glutathione levels and urine irisin levels were increased, heart rate, tissue and serum reduced glutathione levels were decreased in HT group compared to C group ($p<0.05$). However, histopathologically tubular damage, cast formation, glomerular sclerosis and peritubular fibrosis levels were increased in HT group ($p<0.05$). Irisin treatment has no significant role on blood pressure values, renal function and damage, on the other hand, its significantly increased the renal NO level and decreased eNOS immunoreactivity ($p<0.05$).

CONCLUSION: We suggest that the effects of irisin on hypertension treatment should be studied in detail with respect to dosing, administration time and route regulations.This work was supported by TUBAP (2015/126).

PC027

Thermodynamic Analysis of Work, Exergy and Entropy in Human Right and Left Ventricle Muscles

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AIM: Heart is an open dissipative system. During each cardiac cycle, heart operates like a thermal machine (pump) where energy utilized is converted to work by heart muscles. In this restless process, the randomness of the tissue increases due to entropy accumulation, which eventually may lead to damage in cardiac muscle. Aim of the study is to determine the work done, exergy destruction and entropy generation in the heart muscle by using thermodynamic analysis. METHODS: A human heart was modeled as the left and the right ventricle muscle subsystems in the present study. Then, the first and second laws of thermodynamics were utilized to analyze these systems. Mass, energy, exergy and entropy balances are performed around the muscles to calculate the glucose consumption, exergy destruction and entropy generation. Heartbeat works of the left and right ventricles were calculated by utilizing the Wiggers diagram during a cardiac cycle.
RESULTS: The work done by the left and right ventricles were calculated as 0.9607 and 0.1969 J/beat for the healthy heart and as 0.2812 and 0.0723 J/beat for the enlarged heart, respectively. The left and the right ventricles of the healthy heart do approximately 3.5 and 2.7 times more work, respectively, than their counterparts in the enlarged heart. Behavior of the ventricles are described for both the healthy and the enlarged hearts. Entropy generation increases with the substrate utilization; therefore, the right ventricles with healthy heart generated more than 2.5 times of the entropy and exergy is destroyed than those with enlarged heart. This ratio was 3.4 when the entropy and exergy was discussed for the left ventricle.
CONCLUSION: In this study, exergy destruction and entropy generation in heart muscles are studied in association with the blood circulation. Thermodynamic analysis of the cardiac muscles may provide additional information in case of cardiac problems.

PC028

Cardioprotective Effect of Aqueous Viscum Album Extract on Isoproterenol-induced Myocardial Infarction in Rats

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AIM: Viscum album (Va) has a variety of cardiovascular effects such as an increased NO synthesis and antioxidant, but little is known about its effects on chemical myocardial injury. This study was designed to investigate the cardioprotective effect of Va aqueous extract (AVa) against Isoproterenol (ISO) induced acute myocardial injury (AMI) in male rats by demonstrating the changes in hemodynamics, bichemical parameters and histopatological architecture. METHODS: Rats were randomly divided into 6 groups (n=8); control, ISO, Sham, AVa 0.1mg/kg,AVa1mg/kg,AVa 10 mg/kg. AVa was administered intraperitonally for 10 days. AMI was induced by subcutaneous injection of 150 mg/kg-1 of ISO an interval of 24 h to the groups on 9 th and 10th day. Blood and tissue samples were taken. RESULTS: ISO caused cardiac dysfunction evidenced by ST segment elevation (0.348 ± 0.03 mV compared control $P < 0.01$) on ECG and increase heart rate 351 ±11.6 bmp compared control $P < 0.01$). Tissue MDA significantly decreased in all pretreated groups with AVa compared ISO group (7.69±1.25, $p <0.01$). AVa significantly increased in endogenous antioxidant level by alone (1.23±0.4, $p < 0.05$), compared to the other groups but any significance increment didnt find between ISO and pretreatment with AVa groups. Plasma nitrate level significantly increased in the highest dose of AVa (10mg/kg) group compared ISO and control groups (126.1±42.2, $p < 0.05$). Pretreatment with AVa (0.1 and 10 mg/kg) significantly eliminated ($p < 0.01$) ISO induced histopatological changes and decreased the myocardial necrosis to a greater extent.
CONCLUSION: This study provides the first scientific evidence on the protective effect of AVa given intraperitonally against ISO induced myocardial damage in rats.Reference:Tenorio FA, Del Valle L, Gonzalez A, Pastelin G (2005). Vasodilator activity of the aqueous extract of Viscum album. Fitoterapia, 76: 204-209.

PC029

Sympatic Activity Increases in The Premenstrual Phase of Menstrual Cycle in Women with Premenstrual Syndrome

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AIM: Premenstrual syndrome is typically characterized by depression, anxiety and nervousness. These symptoms might be associated with heart rate variability (HRV) as it's provides information about autonomous activity / balance (Malik et al., 1996). HRV, calculated from beat-to-beat variation, obtained by 5 min electrocardiogram (EKG) recording (Malik et al., 1996). The current study aimed determination of autonomy nerves system activity by HRV analysis to the individuals in their menstrual and premenstrual phases in women with premenstrual syndrome.
METHODS: ECG was performed in one day for both of menstrual and premenstrual phases in participants (n=54; age= 18-30). individuals' HRV measurements were assessed in one day of the menstrual (1-3 days at the start of menstrual bleeding) and premenstrual phases (in the previous 5 days before menstrual bleeding). Two arm and leg derivations were inserted and HRV analysis was performed conducting 5-minute ECG. Neurosoft ECG device and Poly-spectrum software program were used for HRV analysis.
RESULTS: According to the findings, LF (low frequency) indicating that the sympathetic and parasympathetic activity have been found to be higher in the premenstrual phase compared to menstrual phase ($p<0.05$). Besides, HF (high frequency) ve %HF expressing parasympathetic activity have been found to be higher in the menstrual phase compared to premenstrual phase ($p<0.05$).
CONCLUSION: In the menstrual phase, sympathetic activity seems to reduce compared to premenstrual phase. This study indicates that sympathetic activity increases from the follicular phase to the luteal phase while parasympathetic activity decreases. The present findings indicate that the reason HRV differences may be premenstrual stress.
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Reference:
Malik et al (1996). Heart rate variability. Standards of measurement, physiological interpretation and clinical use. European Heart Journal 17, 354-381.

PC030

The Effects of Epilepsy on Ischemia-induced Ventricular Arrhytmias And Myocardial Injury in Anesthetized Rats

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AIM: Epileptic seizure leads to unexpected sudden death (SUDEP) in epilepsy patients. Although the causes of SUDEP are still unclear, the main suspected causes are the increment in sympathetic activity, cardiac arrhythmias and hypoxia (1). The aim of this study is to research the effect of epilepsy on myocardial injury and arrhythmias during the ischemia.
METHODS: 40 Wistar albino rats were divided into 4 groups: 1. Group; sham, 2. Group; pentylentetrazole (PTZ), 3. Group; ischemia, 4. Group; PTZ+ischemia. PTZ (65 mg/kg, ip) was given 2 hours before the ischemia. In Group 2 and Group 4, seizure scoring was made by evaluating the PTZ-induced behavioural changes in rats. The left main coronary artery was ligated in rats of Group 3 and Group 4 for 30 minutes. The Fisher exact test was used for the analyses of arrhythmia incidence. The Kruskall-wallis test was used for histopathological score analyses.
RESULTS: Epilepsy seizure scores were not different among the groups (PTZ: 4.5±0.2, PTZ+ischemia: 4.1 ±0.1, $P=0.1445$). The incidence and the number of ventricular tacycardia (VT) was significantly higher in the PTZ+ischemia group in comparison to the ischemia group (the number of VT: PTZ+ ischemia group; 48±30, ischemia; 0±0, $P<0.05$). More prominent myocardial damage was observed in the epilepsy+ischemia group when compared to the other groups (epilepsy+Ischemia; 2.5±0.5, epilepsy: 1.2±0.4; ischemia; 1.2±0.4; sham; 0.1±0.4, $P<0.05$).
CONCLUSION: PTZ induced-epileptic seizure in rats increased the myocardial injury and the incidence and number of ventricular tachycardia. These results revealed that seizure in epilepsy patients may increase ventricular arrhythmia and myocardial injury during heart attack.
Reference:
1) Tavares JG et al. (2015). Epilepsy-induced electrocardiographic alterations following cardiac ischemia and reperfusion in rats. Braz J Med Biol Res, 48:140-5.

PC031

Sympathetic Activity is Higher in Young Women But Lower in Aged Women

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AIM: Autonomic nervous system (ANS) activity might be perturbed through aging. Aim of the current study was to investigate the ANS activity non-invasively by means of heart rate variability (HRV) in women at different age classes.
METHODS: A total of 63 women participated to the study was divided into three groups: Group 1 (19-30 year-old; n=24), Group 2 (31-45 year-old; n=18) and Group 3 (>45 year-old; n=21). As HRV is associated with disease progression, no exclusion criteria were implemented. A 5-min electrocardiogram recordings were obtained from the participants (Polyspectrum, Russia) and HRV analyzes were carried out (Neurosoft, Russia). Time domain (Standard deviation of NN interval-SDNN, the square root of the mean squared differences of successive NN intervals-RMSSD, the percentage of interval differences of successive NN intervals greater than 50 ms-pNN50) and frequency domain (low frequency-LF, high frequency-HF, LF/HF) parameters were determined. ANOVA was carried out for statistical analyses and differences between the groups were determined Tukey's t-test. Data are presented as mean ± SEM.
RESULTS: Heart rate was 86.6±2.18, 82.4±1.7 and 78.2±2.2, respectively for Groups 1, 2 and 3 (P=0.016). SDNN, RMSSD and pNN50 values were indifferent between the groups (P>0.05) but LF values (milisaniye2) were higher in Group 1 than the other groups (762±152, 353±74, 284±69 respectively for Groups 1, 2, 3; P=0.006). Body weight and systolic blood pressure were higher in Group 3 than the other groups (P<0.006) but not the diastolic blood pressure (body weight 57.5±2.2, 64.4±3.6 and 75.6±2.3 kg; systolic blood pressure 11.4±0.3, 11.4±0.4 and 13.3±0.6 mmHg; diastolic blood pressure 7.5±0.3, 7.3 ±0.2, 7.6±0.3 mmHg, respectively for Groups 1, 2, 3).
CONCLUSION: Increased systolic blood pressure and body weight in older women were coincident with decreased sympathetic activity (low LF), and this suggests that heart rate variability may provide data regarding general health status and ageing.

PC032

Sympathovagal Balance is Higher in Young Men Than the Young Women

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AIM: Sympathetic and parasympathetic (vagal) balance is quite important in vegetative control. This balance shows variation under various physiological conditions. There is limited information about the sympathovagal balance in young men and women. Aim of the current study is to determine, by non-invasive heart rate variation method means, the indirect marker of sympathovagal balance in young men and women.
METHODS: Men (n=61) and women (n=64) at the age of 18-22 were investigated in the current study. A 5 min electrocardiogram was recorded in the volunteered participants (Polyspectrum, Russia) and time domain (Standard deviation of NN interval-SDNN, the square root ofthe mean squared differences of successive NN intervals-RMSSD, the percentage of interval differences of successiveNN intervals greater than 50 ms-pNN50) and frequency domain (low frequency-LF, high frequency-HF, LF/HF) parameters of heart rate variability were computed (Neurosoft, Russia). Data obtained were analysed by ANOVA and P<0.05 was denoted as statistically significant. Data was presented as mean±SEM.
RESULTS: Heart rate was not different (P>0.05) between the men (90.5±1.7 bpm) and women (95.1±1.8 bpm). Time domain parameters (SDNN; RMSSD, pNN50) was not different between the groups (P>0.05). Of the frequency domain parameters, LF and HF did not differ between the groups (P>0.05) but LF/HF ratio was higher (P=0.037) in men (4.6±0.3) than women (3.6±0.3).
CONCLUSION: As LF/HF is a recognized sympathovagal balance parameter, higher ratio in men suggests that sympathetic relative to vagal stimulations are more active in men than women.

PC033

Assessment of Oxidative System Parameters in OSAS Patients

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AIM: Obstructive sleep apnea syndrome is characterized by decreased airflow or complete interruption and is characterized by airway narrowing, decreased oxyhemoglobin saturation, hypercapnia and hyperventilation associated therewith. These metabolic changes trigger oxidative stress and systemic inflammation, which cause the release of inflammatory agents, antioxidant enzymes and reactive oxygen species. In our study, we aimed to evaluate oxidative stress parameters such asTAS-TOS,serum paraoxonase, arylesterase, total thiol in OSAS patients.
METHODS: This study was performed on 12 OSAS and 11 healthy individuals. Peripheral blood samples were collected in tubes without EDTA from all subjects. After centrifugation, serum of each individual was stored at - 80ºC until ELISA analysis. Serum concentrations of TAS-TOS, serum paraoxonase, arylesterase, total thiol were measured by human enzyme-linked immunosorbent assay (ELISA) kits.Serum levels of interested parameters were given as mean ± standard deviation. Statistical significances between two groups were analyzed by Mann-Whitney U tests. Differences were considered significant at $p< 0.05$.
RESULTS: Serum TAS, TOS, paraoxonase, arylesterase, total thiol levels in control group; 0.84 ±0.34, 86.34±20.07, 145.42 ±97.16, 535.67±151.44 and 1105.75±427.60, respectively. In the OSAS group, these parameters were determined as follows; 1.01±0.38, 101.49±14.47, 295.00±159.78, 636.27±149.01, 2037.73±1372.07. There was a statistically significant difference in terms of TOS, PON1 and THIOL variables, which were not statistically significant in terms of TAS and ARES variables among the groups.
CONCLUSION: It was determined that the TOS parameter, which is the indicator of oxidative damage, was increased in the OSAS patient group according to the control group. We have demonstrated the development of oxidant damage in OSAS patients as the literature. We interpret the increase of antioxidant parameters in OSAS as the necessity of physiological processes and the way we expect. We believe that the oxidative system parameters may give meaningful results in terms of explaining the development of OSAS disease and shaping treatment methods.

PC034

Evaluation of Antioxidant Capacity of Asthmatic Patients: Does Oxidative Damage Suppress The Antioxidant Capacity or Does The Suppressed Antioxidant Capacity Cause Oxidative Damage?

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AIM: It is known that airway inflammation is associated with impaired oxidative stress in asthmatic patients.The imbalance in the oxidative state is one of the main causes of chronic inflammation in asthma.Oxidative stress suppresses antioxidant mechanisms, and the reactive oxygen agents that form are triggering airway inflammation.In our study, we tried to explain the disease pathogenesis from the oxidative stress window by measuring the serum levels of the major oxidative status markers in asthmatic patients.Besides, we aimed to obtain wounded tips for diagnosis and treatment of asthma.
METHODS: This study was performed on57OSAS and36healthy individuals. Thediagnosis of asthma wasestablished onthe basis of criteria proposed by 2014 Global Initiative for Asthma (GINA) Guideline.Controlgroup isconsisting of 36healthy agematched subjects.The study protocol conforms to the ethical guidelines ofDeclaration ofHelsinki, and was approved by the Ethics CommitteeofAfyon Kocatepe University.Serum concentrations were measured by ELISA.Statistical significances between two groups were analyzed by Mann-WhitneyU tests.
RESULTS: PON-1and ARESin the asthma group were significantly reduced compared to the control group.
CONCLUSION: In our study, significant antioxidant system parameters were observed inasthmatic patients as expected. In our another study we emphasized that oxidative stress inasthmatic patients may be important in the pathogenesis of the disease by increasing oxidant damage.In order to explain the pathogenesis of asthma, we have evaluated the antioxidant elements of oxidative mechanisms alltogether in this study. We do not know whether oxidative stress causes suppressed antioxidant mechanisms or suppressed antioxidant mechanisms which can be occured due to multifactorial reasons other than oxidative stress play a dominant role in disease development. But we believe that the parameters of interest are capable of supporting the diagnosis of asthma.Besides, when we consider that our patient group is controlled and

treated volunteers, we can say that current treatment methods are not effective at the expected level, at least antioxidant mechanisms in oxidative stress are not being supported by the current treatment strategies.

PC035

Can Total Thiol Be a New Parameter for The Diagnosis of COPD?

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AIM: COPDis characterized by progressive airway obstruction as a consequence of normal inflammatory processes against harmful irritants and chemicals. Although the pathogenesis of COPDhas not been fully elucidated, it is known that imbalance between oxidative stress and antioxidative capacity plays an important role in the development and progression of the disease, but due to conflicting results, the oxidative status ofCOPD is not fully understood. In our study, we aimed to identify alltogether a number of oxidative status markers inCOPD patients to identify an oxidative marker that could be used primarily to support the pathogenesis of the disease and to support the diagnosis.
METHODS: This study was performed on 58COPD and 35healthy individuals. The diagnosis of COPD was established on the basis of criteria proposed by the Global Initiative for Chronic Obstructive Lung Disease(GOLD Guideline, 2014). Control group is consisting of35healthy age matched subjects.The study protocol conforms to the ethical guidelines of Declaration of Helsinki, and was approved by the Ethics Committee of Afyon Kocatepe University.Serum concentrations of TAS,TOS, serum paraoxonase, arylesterase, total thiol were measured by ELISA. The OSI parameter was calculated.Serum levels of interested parameters were given as mean±standard deviation. Statistical significances between two groups were analyzed by Mann-Whitney U and ANOVA tests.
RESULTS: The serum total thiol parameter was found to be significantly decreased in theCOPD group compared to the control group.
CONCLUSION: In our study, we observed that the oxidative balance in COPD patients shifted in the direction of increased oxidative damage. For this reason, we can say that oxidative stress is associated with disease in COPD patients. We plan a different evaluation period with patient data to fully assess the cause and effect of this relationship. In addition, we think that the decrease in serum total thiol parameter may be a new criterion that can be used to support the diagnosis of COPD.

PC036

The Effect of Hypothyroidism on XBP-1 Protein Expression Levels in Hippocampus and Amygdala in Rats

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AIM: Hypothyroidism is caused the neurodegenerative disorders which lead to memory, mood and cognitive dysfunctions. As a result of metabolic diseases, endoplasmic reticulum (ER) stress and unfolded protein response (UPR) are emerging which are related to the accumulation of unfolded proteins in the ER by impaired protein folding and processing reactions. X-box binding protein 1 (XBP-1) is a multitasking transcription factor in the response of ER stress, also plays the pivotal role in learn and memory-related activities. The aim of this study is to investigate the effect of the hypothyroidism on the alteration of XBP-1 protein expression levels in the hippocampus and amygdala regions of the rats.
METHODS: Male Wistar Albino rats (12 weeks) were randomly divided into two groups as control (C,n=6) and thyroidectomized (Tx,n=12). Hypothyroidism was induced by surgical thyroidectomy in the rats. Four weeks after, blood samples for the hormonal analysis were taken from the heart under anesthetized and hippocampus and amygdala were collected immediately. Serum concentrations of thyroid stimulation hormone (TSH) and free tri-iodothyronine (fT3) were assessed by autoanalyzer. The amount of protein were determined according to Bradford method afterward XBP-1 protein expression levels were determined by western blot analysis. RESULTS: Hypothyroidism was confirmed in the thyroidectomized group by elevated TSH ($p<0.01$) and decreased fT3 ($p<0.01$) levels in serum. Besides this, XBP-1 protein expression was found to be upregulated in the hippocampus ($p<0.01$), whereas downregulated in the amygdala ($p<0.01$) in the Tx group. The significant alterations in the XBP-1 protein expression levels have occurred during hypothyroidism suggested that XBP-1 may play a crucial role in the physiopathology of the memory and cognitive dysfunctions.
CONCLUSION: These results are the valuable preliminary data for more extensive

genomic and proteomic studies planned in the future, taking into account the different stress pathways and their cross-reactions that have yet to be elucidated.

PC037

Histologic and Physiologic Analysis of the Relationship Between the Dorsal Nerve of the Penis and the Corpus Cavernosum: A New Tract on the Innervation of Penile Erection?

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METHODS: Ten Wistar albino rats between 4-5 months old were used. The rats were sorted into the electrical activity and the intracavenous pressure groups. Na-pentobarbital was used for anesthesia. The dorsal nerve was prepared and hook electrodes were placed bilaterally. For intracavernous pressure measurement; poliethylen catheter washed with heparin was attached to a cannula inserted into the right corpus cavernosum. Stimulation; Monophasic square pulses generated by the stimulator were transferred via bipolar (amplitude 7 V, frequency 16Hz, signal duration 5msec). After amplification, the pressure was recorded as numeric values. EMG signals were filtered after amplification. Filtration parameters were 10kHz-300Hz. Signal sampling was 4000 samples/sec. Mean intracavernous pressure values and the amplitudes of electrical activity before and after the electrostimulation were compared as mean absolute values. To inhibit any possible efferent interaction by the cavernous nerves, the dorsal nerve was transected more proximally and the procedure was repeated immediately. Histologic Evaluation: Following routine fixation and parafinization, penile tissues were stained for primary antibodies against eNOS, iNOS and nNOS using indirect immunohistochemical methods. Immunereactivity was examined by two independent researchers and grouped as weak(+), moderate(++) and strong(+++).
RESULTS: After electrostimulation; the decrease in the electrical activity of the intracavernous smooth muscles and the increase in the intracavernous pressure were statistically significant. Findings were reproducable after transecting the dorsal nerve proximally prior to a second stimulation. eNOS was moderately positive(++) in vascular endothelial cells that are not only in corpus cavernosum but also in other tissues of penis. nNOS was moderately positive(++) in corpus cavernosum and in the neuron bundle that is in deep penil fasia under the tunica dartos and iNOS was observed as moderately positive(++) only in corpus cavernosum.
CONCLUSION: Dorsal nerve of the penis, far from the classical knowledge, as being solely sensorial, also has active role in the hemodynamic process of erection.

PC038

Possible Effect of Intermittent Hypoxia on Anxiety and Obsession-Like Behaviors in Male Rats

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AIM: Anxiety and depression is an increasingly important health problem day after day. Prevelance of Anxiety and depression and resistence of medicine are increasing, despite therapies of medicine. This sitution brings on new treatment. Present study is to investigate effect of intermittent hipoxia on anxiety and depression like behaviour.
METHODS: 24 Wistar albino male rats were divided into randomly (n=8)(Control, Fluoxetine and hypoxia group). Fluoxetine was administered by intraperitoneally (21 days, 30 mg/kg), Intermittent hypoxia protocol was conducted(21 days, 6 hours in a day, 520 mmHg pressure, 3000m altitude). Subjects were recorded for 15 minutes and 5 minutes in marble burrying test and in open field test respectively. Sucrose preference was applied as depression test(21 Days, %1 Sucrose). Locomotor activity (total distance traveled and rearing numbers), centre zone entrance, centrezone time were evaluated in open field test; Sucrose intake percenatge was measured;burrying marble number was counted in marble burrying test. After the experiment, rats were sacrified under the thiopental anesthesia (50 mg/kg).Kruskal Wallis and Mann Whitney U was conducted as statistics tests. Significance value was admitted $p<0.05$.
RESULTS: Anxiety parameters were not difference among all experiment groups in open field test ($p>0.05$). Total distance traveled and rearing numbers (locomotor activity parameters) increased in hhypoxia group when compared to fluoxetine group in open field test ($p<0.05$). Burrying marble number decreased

significantly in hypoxia group ($p<0.001$) and fluoxetine group ($p<0.05$) when compared to control group. Sucrose intake percantege was found above % 65 in all groups.
CONCLUSION: Anxiolytic effect was not observed in open field test. Burrying marble number was reduced in marble burrying test. Intermittent hypoxia showed that obsession like behaviour reduced remarkably. Present study, Intermittent hypoxia prevents neofobia in rats.

PC039

Determination of Plasma Cholecystokinin Levels in Patient With Migraine Without Aura

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AIM: Migraine is a type of a headache that lasts 4-72 hours, accompanied by nausea and vomiting, manifested by recurrent moderate or severe attacks. Hormonal, environmental and genetic factors play an important role in migraine sensitivity.The aim of this cross-sectional and descriptive study is to examine whether there is a difference between plasma cholecystokinin levels in patients with migraine without aura and in migraine-free patients.
METHODS: Thirty-six migraine patients who were diagnosed as Migraine without aura by Duzce University Application and Research Center Neurology Policlinic were enrolled in the study, thirty-seven patients who were not migraine patients and referred to other outpatient clinics of the hospital participated in the study as a control group.The patient information form was used as the data collection tool and the blood samples were taken from the participants and examined in the laboratory environment. Participants' sociodemographic characteristics, medical history, vital signs, and knowledge of migraine were assessed by descriptive statistics (percent, number, mean). In the comparative analyzes of the migraine group and the control group, the X^2 test was used in the comparison between the subgroups, and the Mann Whitney U and Kruskal Wallis test, which was recommended as a non-parametric test, were used in the comparison between the averages. In the statistics p confidence interval for p significance was accepted as $p\leq0.05$. Duzce University Clinical Researches Ethics Committee (decision no:2014/3) has been approved.
RESULTS: The mean age of the migraine group was 35,53±6,83, the mean age of the control group was 34,99±7,79, and the total group mean age was 35,23 ±7,29.When the cholecystokinin(CCK) values of the migraine group and the control group were compared, the CCK value of the migraine group was found to be 1,83±0,60, while the CCK value of the control group was 1,73±0,49.
CONCLUSION: There was no significant relationship between migraine and CCK level.

PC040

Effects of Methyl-Beta-Cyclodextrin on Blood-Brain Barrier Permeability in Acute Hypertension Induced by Angiotensin-II

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AIM: The loss of blood-brain barrier (BBB) integrity primarily occurs in cerebral venules and veins during acute hypertension. Methyl-beta-cyclodextrin (MCD) causes cholesterol depletion from the cell plasma membrane and leads to caveolar transport disruption. The present study was intended to examine the effects of MCD on the functional and structural properties of barrier type of brain microvessels in angiotensin (ANG) II–induced acute hypertension in rats.
METHODS: Wistar rats were used in this study. The experimental groups were designed as control, MCD, ANG-II, and MCD+ANG-II. The total number of animals used in these experiments was 48. BBB permeability was evaluated by determining extravasation of Evans blue (EB) and horseradish peroxidase (HRP) tracers, respectively. At five minutes after MCD administration (5mg/kg), acute hypertension was induced by ANG-II (60µg/kg), and arterial blood pressure measurements were taken. In the study, to compare extravasation of groups, one-way ANOVA and following Tukey's test were used,

and Kruskal-Wallis test was performed to compare the blood pressure of animals.
RESULTS: ANG-II caused a significant increase in arterial blood pressure when compared with baseline values of rats ($p<0.01$). The content of EB dye in the left and right cerebral cortex, and left hippocampus regions of animals significantly increased in the ANG-II, MCD, and MCD+ANG-II groups when compared with controls ($p<0.05$). Ultrastructurally, frequent empty vesicles which did not contain HRP reaction products were observed in endothelial cells of venules and veins in the cerebral cortex and the hippocampus regions of brains of animals in ANG-II, MCD and MCD+ANG-II groups. However, HRP reaction products were mainly observed in astrocytes and neurons of the same brain areas.
CONCLUSION: Our results revealed that MCD did not provide overall protective effects on the BBB integrity in acute hypertensive conditions and even led to BBB disruption in intact animals.

PC041

Effects of Normobaric Oxygen and Melatonin Treatment on Newborn Hypoxia Plasiticity

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AIM: Newborn hypoxia-ischemia and brain injury is the main reason of chronic injury and acute mortality in the world, which is a concern social-healt problem. Hyperacitivity, cerebral paly and epilepsy are observed beside mental reterdation in the patients who has oxygen deprivation in their brain tissue. We demonstrated in our recent studies that although Normobaric Oxygen (NBO) increase the re-oxygenation of post-ischemic tissue and supported neuronal survival in adult animals, it causes the formation of free oxygen radicals. The main aim of this study is to investigate the effects free radical scavenger melatonin and NBO treatment after long term HI in brain pathophysiology.
METHODS: Seven days old pups (n=10) were anesthetized with 1% isoflurane and carotid artery were ligated and exposed %8 oxygen for two hours. Afterwards pups were treated with 21-70 and 100% oxygen for two hours. 100% oxygen group was combined with melatonin to reduce the formation of reactive oxygen species. Open field, rotarod, barnase labirent, o-maze and light-dark tests were applied to animals to investigate the long term effects of treatments and the rats were sacrified after 60 days. One Way Anova was used for statistical analyses.
RESULTS: As a result of the behavioral tests, it was observed that the pathophysiologic effects were reduced, which caused by long-term hypoxia ischemia and also neurological, motor activities and memory improvement in the long term period were observed in rats due to increased oxygen concentration.
CONCLUSION: It has been found that NBO treatment and melatonin increase neuronal survival and consequently behavioral disorders are eliminated. With these results, NBO treatment may be a concept study in neonatal hypoxia.

PC042

Effect of P2X7 Receptor on Activation of Microglia and IL1β Following Ischemia

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AIM: P2X7 receptors (P2X7R) are cation channels belonging to the purinergic receptor family which are implicated with cation trafficking, inflammation and ATP mediated cell death following ischemic injury. However, there are conflicting opinions on the role of the receptor during and after the injury. In this study, it was aimed to investigate the effects of activation and inhibition of the receptor on the activation of microglia and IL1β after middle cerebral artery occlusion (MCAo).
METHODS: Ethical committee approval (2014/05) was obtained from Istanbul Medipol University. To mimic cerebral ischemia, 8-12 week old male BALB/c mice were subjected to 30 min MCAo which mainly results in striatal injury. Thirty minutes before the induction of ischemia, vehicle (isotonic saline), P2X7R agonist (BzATP, 5 ug), antagonist (BBG, 10 ug) or BzATP+BBG were administered i.c.v. in a total volume of 2 uL. Animals were sacrificed after 72 h of reperfusion. Activation of microglia was analyzed by Iba1 immunofluorescent staining in the ischemic striatum and IL1β activation was determined using Western blot. Data were evaluated by one-way ANOVA followed by LSD tests. P values <0.05 were considered significant.
RESULTS: Number of Iba1(+) cells were determined in the ischemic striatum of animals. BBG administration significantly decreased the number of Iba1(+) cells. BzATP and BBG+BzATP significantly increased Iba1(+) cells. Moreover, protein levels of Caspase-1 and IL1β were significantly increased with BzATP, while significantly decreased with BBG

administration.
CONCLUSION: BzATP-treated microglia was reported to provide protective factors to the neurons. To this end, the results of this study indicate that P2X7R activated microglia may induce protective mechanisms in response to ischemic injury in mice.

PC043

Effect of Circadian Rhythm Protein BMAL1 on Neuronal Damage

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AIM: Circadian rhythm has an important role in both promotion of brain ischemia and pathophysiological outcomes developed in post-ischemic process. According literature, stroke cases observed at late times of the day have less damaged area and apoptotic cell death relative to the ones at early times of the morning. In this study, we aimed to investigate the activity of Bmal1 protein which shows a circadian oscillation and melatonin after induction of cerebral ischemia or oxygen-glucose deprivation (OGD).
METHODS: 12 weeks male C57BL6/j mice were exposed to 30 minutes middle cerebral artery occlusion and following 72 hours reperfusion. Effect of melatonin (4mg/kg) which was intraperitoneally administered on Bmal1 expression was analyzed. Melatonin was changes in the expression of Bmal1 and at which extent it depends on melatonin treatment were also investigated in Neuro2A cells subjected to OGD. Data were evaluated by one-way ANOVA followed by LSD tests or independent samples t-test. Throughout the study, p values < 0.05 were considered significant.
RESULTS: Melatonin treatment (4mg/kg) after ischemia was shown to activate PI3K pathway and increase Bmal1 levels in animal studies. However, when melatonin was combined with Wortmannin (0,1mM), expression of Bmal1 decreased. In case of in vitro studies melatonin treatment (1mM) after OGD increased the amount of Bmal1. Also, Bmal1 overexpression induces cell survival which might relate to Akt signaling pathway.
CONCLUSION: In conclusion, melatonin acts on Bmal1 protein and affects the injury mechanisms triggered by brain ischemia or in vitro OGD. Post-ischemic melatonin treatment which activates PI3K signal pathway decreased neuronal injury and apoptosis by increasing Bmal1 expression level. These results contribute identification of new pharmacological therapeutic target molecules after neuronal injury.

PC044

Effects of Repetitive Transcranial Magnetic Stimulation on Motor Activity and Neuronal Survival After Spinal Cord Injury

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AIM: Spinal cord injury is a process where the ascending and descending tracts are damaged due to a trauma. Various therapeutic strategies like stem cell transplantation, application of neuroprotective agents or physiotherapy have been developed. However, currently there are no effective treatment. To prevent neuronal cell death and generate neuronal reorganizations, repetitive transcranial magnetic stimulation (rTMS) can be an alternative method. This study aims to evaluate the effects of rTMS on motor activity and neuronal survival after spinal cord hemisection.
METHODS: Adult (10 weeks old) male BALB/c mice (ethical permission no:31/2017) were exposed to spinal cord hemisection at T10 level. One day after injury, rTMS was applied for 28 days with 1Hz (inhibitory) or 20Hz (excitatory))(n=10). Behavioral tests were conducted, which evaluate the motor recovery, kinematic analysis and the ankle joint angle of the hind limb and locomotor activity in open field. Collateral axons and axons trespassing the lesion were detected with tracer. Neuronal survival and apoptotic cell death were evaluated from coronal sections. Data were evaluated with one-way and repeated ANOVA tests.
RESULTS: Groups that received rTMS, especially 20 Hz group have shown an increased motor recovery compared to control group. Total distance (15m±2,77 in control and 24m±3,48 in 20Hz)($p<0,05$)) and mean speed (control: 0,025m/s±0,02 20 Hz: 0,041m/s±0,01 ($p<0,05$)) were increased in groups treated with 20Hz. Furthermore, in ladder rung test, mice treated with 20Hz rTMS showed 25% correct stepping while control group showed 12%. Paralysis of the hind limp and the ankle joint angle showed a better recovery in 20Hz rTMS group.
CONCLUSION: Our results suggest that rTMS treated groups have a higher motor activity and faster functional recovery. These results may improve the development of therapeutic strategies for spinal cord injury.

PC045

The Role of Repetative Transcranial Magnetic Stimulation After Focal Cerebral Ischemia

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AIM: Following cerebral ischemia, brain has an endogenous capacity for reorganisation and axonal growth. In this study, the role of repetative transcranial magnetic stimulation (rTMS) on the short term intracellular signaling pathways and neuronal plasticity after cerebral ischemia was investigated.
METHODS: In this study, 8-12weeks old male BALB/c mice were submitted to 30 or 90 minutes of middle cerebral artery occlusion. At the beginning of the reperfusion, 1Hz or 20Hz rTMS was applied to the ischemic motor cortex. Infarct volume, neuronal survival, apoptotic cell death, intracellular signaling pathways, functional recovery, neurogenesis and neuronal plasticity was evaluated.
RESULTS: 20Hz rTMS treatment significantly decreased infarct volume and apoptotic cell death, significantly increased cerebral blood flow and neuronal survival when compared with vehicle. Additionally, 20Hz rTMS treatment significantly decreased the level of pro-apoptotic proteins, Bax and Caspase-3, and significantly increased the level of anti-apoptotic protein Bcl-xL. In the long term study, 20Hz treatment promotes ischemic paw strength, motor coordination and axonal projections towards the ischemic hemisphere.
CONCLUSION: 20Hz rTMS treatment does not only ameliorate acute injury but also functional recovery and neuronal plasticity in the long term after cerebral ischemia. These results suggest that rTMS treatment might have a translational potential.

PC046

The Effect of Exercise on Hippocampal Antioxidant Status and Lipid Peroxidation of Spontaneously Hypertensive Rats

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AIM: Hypertension is a risk factor for cognitive impairment and neurodegeneration. The aim of this study was to examine the effect of exercise on hippocampal antioxidant enzyme activity, lipid peroxidation and nitrite/nitrate levels in spontaneously hypertensive rats (SHR).
METHODS: SHR (n=16) and aged-matched normotensive Wistar Kyoto (WKY) (n=20) rats were divided into sedentary and exercised groups. The animals in the exercise groups were subjected to swimming exercise (60 min/day, 5 days/week, for 8 weeks). Systolic blood pressure (SBP) of all rats was measured by tail cuff method every two weeks during the eight weeks period. At the end of 8th week the animals were killed by exsanguination under urethane anesthesia, brain tissues were removed, and hippocampi were dissected. Hippocampal Superoxide dismutase (SOD), Catalase (CAT) and Glutathione peroxidase (GPx) enzyme activity levels, thiobarbituric acid reactive products (TBARS) andnitrite/nitrate levels were measured. Data were assessed using one-way ANOVA followed by Tukey Post Hoc Test or by Kruskal Wallis followed up Mann Whitney U Test.
RESULTS: Exercise has been shown to reduce ($p<0.001$) SBP in SHR. Hippocampus SOD and GPx enzyme activities were found to decrease ($p<0.05$) in SHR and exercised-SHR groups compared to WKY group. Hippocampal CAT enzyme activity has not been altered in any group. There was no difference between the groups at TBARS level, but nitrite/nitrate levels were found to be significantly increased ($p<0.05$) in the exercise-treated WKY group compared to the WKY group.
CONCLUSION: Exercise in SHR resulted a significant decrease in SBP, but no effect on hippocampal antioxidant enzyme activity levels, lipid peroxidation and nitrite/nitrate levels.

PC047

Salmon Calcitonin Ameliorates Nitroglycerin-Induced Migraine Pain Through Inhibition of Calcitonin-Gene Related Peptide Release From Trigeminal Neurons and C-Fos Expression in Trigeminal Nucleus Caudalis in Rats

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AIM: Migraine is a complex neurovascular disorder. Main event in migraine pain initiation is activation of trigeminovascular system. Calcitonin gene-related peptide(CGRP) released from peripheral and central terminals of trigeminal sensory neurons following activation of these neurons, leads to dilatation in intracranial vessels and neurogenic inflammation. CGRP is established as a migraine biomarker and potent vasodilator that enhances migraine pain by causing peripheral and central sensitization of nociceptive neurons. It was reported that salmon-calcitonin exerted antinociceptive effects in animal models of neuropathic pain but effects of salmon-calcitonin on migraine pain remain unknown. In present study, we aimed to investigate effects of salmon-calcitonin on CGRP levels in trigeminal neurons and c-fos expression in trigeminal nucleus caudalis(TNC) in nitroglycerin(NTG)-induced model of migraine in rats.
METHODS:Male Wistar rats(8-10 weeks) were divided into four groups with seven rats in each group. Control and NTG groups received saline(0.2 ml) and nitroglycerin(10 mg/kg), respectively; SF+NTG group received saline plus nitroglycerin; Calcitonin+NTG group received salmon-calcitonin(50 µg/kg) plus nitroglycerin, intraperitoneally. After four-hours, brainstem and trigeminal ganglion were collected. TNC sections were applied immunohistochemical staining to determine c-fos-positive neurons. CGRP levels in trigeminal ganglion homogenates were measured using enzyme-immunoassays. Data were analyzed with one-way ANOVA using SPSS_20.0 software.
RESULTS: Nitroglycerin increased number of c-fos-positive neurons in TNC from 17±1.5 to 57±4.1, and CGRP levels in trigeminal ganglion neurons from 32.7±1.4 to 75.3±6.1 pg/ml($p<0.001$). Salmon-calcitonin decreased number of c-fos-positive neurons induced by nitroglycerin from 57±4.1 to 36±3.4 and CGRP levels induced by nitroglycerin from 75.3±6.1 to 49.6±3.7 pg/ml($p<0.05$).
CONCLUSION: Our findings suggest that salmon-calcitonin ameliorates migraine pain by suppressing activation of trigeminovascular system which plays a key role in pathophysiology of migraine. Salmon-calcitonin exerts this effect on activation of trigeminovascular system by decreasing c-fos expression in TNC and CGRP levels in trigeminal ganglion neurons.
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PC048

Effect of The Cyclooxygenase-2 Inhibitor Tenoxicam on Pentylenetetrazole-Induced Epileptic Seizures in Rats

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AIM: Epilepsy describes short-term paroxysmal disturbances of brain functions observed between sudden, abnormal and hypersenscronisation discharges and seizures of group of neurons in the central nervous system. The nonsteroidal anti-inflammatory tenoxicam is chemical agent that selectively inhibits type 2 cyclooxygenase (COX2), which converts arachidonic acid to prostaglandins. The aim of this study was to investigate the effect of the cyclooxygenase-2 inhibitor tenoxicam on pentylenetetrazole on epileptic seizures.
METHODS: In our study, we used 18-22-240 grams Wistar Albino male rats. Animals were divided into three groups: control (n=6), 10 mg/kg/day tenoxicam (n=6) and 20 mg/kg/day tenoxicam (n=6). For ten days, tenoxicam was administered intramuscularly to two groups at the indicated doses and solvent to control group. On the tenth day, pentylenetetrazol (PTZ) was injected intraperitoneally at 70 mg/kg after 45 minutes of drug administration. The animals were observed for 30 min. Stages were determined according to the Racine seizure scale(RC) and the first myoclonic jerk time (FMJ) was recorded in seconds. After the procedure the animals' brain tissues were removed. Brain tissues were stained with toluidine blue stain after routine histological follow-up. The number of 'Dark neurons' showing neuronal damage in hypocampal CA1 and dentate gyrus was determined as percentage.
RESULTS: Epileptic behavior were evaluated according to the Racine seizure scale (RC), 10 mg/kg of tenoxicam significantly reduced the seizure stage compared to the control ($p<0,05$). In addition, 10 mg/kg tenoxicam significantly increased the first

myoclonic jerk time compared to the control (p<0,05). Histopathologically, when the groups were evaluated, neuronal damage was increased in CA1 region 20 mg/kg of tenoxicam compared to control, whereas 10 mg/kg and 20 mg/kg of tenoxicam in the dentate gyrus neuronal damage was reduced significantly (p<0,05). CONCLUSION: This study shows that administration of tenoxicam may reduce epileptic seizures and post-seizure neuron damage dose-dependently.

PC049

The Effect of Post-Learning REM Sleep Deprivation on Hipocampal REST Tomosyn Expression in Mice

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AIM: Sleep is an essential process for memory consolidation(MC) that stabilize a memory trace. The behavioral experiments have led to the conclusion that post-learning Rapid Eye Movement Sleep Deprivation(REM-SD) disrupts MC if specific period of sleep is eliminated. Tomosyn, a syntaxin-binding protein, is known to inhibit vesicle priming and synaptic transmission. Recently it has been shown that neuron-specific overexpression of tomosyn in the mouse hippocampus impairs spatial learning and memory. Therefore, the current study aims to determine the effects of specific time period of REM-SD on MC and the changes of the expression of tomosyn in hippocampus.
METHODS: 30 male BALB/c mice, aged 2 month, were grouped in to three different gorups where each group consists of 10 mice. In the first group, mice were sleep deprived for 3h after the last training session(SD1). In the second group, after the last training session and a waiting period of 3h, the mice were sleep deprived for 3h (SD2) and the last group was Non-sleep deprivation(NSD). Spatial learning and memory were tested in the Morris Water Maze. REM sleep was eliminated by using the modified multiple platform method. RT-PCR was used to measure changes in mRNAs. Repeated-measures ANOVA was used to analyze the changes in Distance Moved(DM) and Escape Latency(EL). Probe trial(PT) were analyzed using oneway ANOVA. For analyses of mRNAs were used ANOVA and Kruskal–Wallis H test..
RESULTS: We found that DM and EL reduced in NSD and SD1,but these parameters were higher in SD2 (p<0.05). In SD2,PT was found lower than NSD. Tomosyn mRNA was higher in sleep deprivation groups (p>0.05).
CONCLUSION: Our findings indicate a fundemental period, extending from 3 to 6 h after last training, during which sleep deprivation impairs spatial memory function. Although statistically insignificant that expression levels,Tomosyn may mediate the disruptive effect of REM-SD on MC.

PC050

Investigation of the Effects of Seizures Induced with Penthylenetrazole on Biomolecular Structure in Peripheral Tissues with Fourier Transform Infrared Spectroscopy Method and Comparison with Oxidative Stress Markers

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AIM: In this study, we aimed to investigate the biomolecular structure changes caused by acute seizures (statusepilepticus) which we induced by pentylenetetrazole (PTZ)in liver, kidney and heart tissuesby using a new method-Fourier-transform infrared (FTIR) spectroscopy and also compare with oxidative and antioxidant marker levels. METHODS: Sprague-Dawley adult male rats were divided into two groups: control (i.p saline) and PTZ (60mg/kg i.p PTZ). Heart, kidney and liver tissues of rats decapitated under anesthesia 72 hours after tonic-clonic seizures induced by a single dose of PTZ were obtained. We evaluated FTIR spectral analysis in two regions protein domain (1750-1470cm-1) which includes amide I, amide II bonds and lipid domain (3200-2800cm-1) which includes CH2 and CH3 alkali chains and olefinic band. We compared FTIR results with lipid and protein oxidation (MDA-malondialdehyde, AOPP-advanced oxidation protein products respectively) and antioxidant (SOD-superoxide dismutase) markers.
RESULTS: In PTZ group, MDA (most in kidney (p<0.05)) and AOPP (most in liver (p<0.05)) levels were increased. The AOPP and SOD levels in the heart unchanged, but SOD levels in the other tissues

decreased ($p<0.05$). FTIR analysis showed that the olefinic acid band area which is lipid peroxidation indicator decreased in the liver and kidney. Reduced amid II band area, especially in the liver, supports protein oxidation in the liver.
CONCLUSION: The findings of this first study investigating the effect of epileptic seizures on peripheral tissues using the FTIR method suggested that epileptic seizures could alter the molecular structure through oxidative stress in the peripheral tissues and thus cause dysfunction and necessitate further study.

PC051

Effects of Dopamine D1 and D2 Receptors on Analgesia Created By a Very Low Frequency Electromagnetic Field in Rats

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AIM: Many studies demonstrated that very low frequency electromagnetic field (EMA) has an analgesic effect. The mechanism of this analgesic effect created by EMA is not fully understood. The purpose of this study is to investigate the effects of dopamine D1 and D2 receptors on analgesia which is generated by very low frequency electromagnetic field in rats.
METHODS: In this study, Wistar albino male rats weighing 250 ± 13 gr (n=60) were used. Tail-flick and hot-plate tests were used to determine the analgesic effect. D1 receptor agonist SKF-38393 (0.1 mg/kg, intraperitoneal), antagonist SCH-23390 (0.4 mg/kg; subcutaneously) and D2 receptor agonist cabergoline (1 mg/kg intraperitoneal), antagonist sulpride (20 mg/ kg; intraperitoneal) were administered alone or immediately after 1 week of 5 mT magnetic field. Saline was injected to Control and magnetic field groups. The obtained data were converted into % analgesic effect (% MPE) and subjected to statistical analysis.
RESULTS: After 1 week of magnetic field, SKF-38393 significantly increased the analgesic effect ($p <0.05$), while SCH-23390 reduced the analgesic effect of EMA and brought it closer to the control group ($p<0.05$). Cabergoline application did not increase the analgesic effect of EMA in statistical analyzes according to alone EMA group ($p> 0.05$) and also Sulpride did not cause a significant decrease on analgesic effect of magnetic field ($p> 0.05$).
CONCLUSION: Analgesic test data show that the dopamine D1 and D2 receptor agonists, which administered alone, cause an analgesic effect. However, it appears that the D2 receptor agonists can not play a role on the analgesic effect of the very low frequency magnetic field. These findings suggest that the analgesic effect of the magnetic field is exerted through only D1 receptors.
This study is supported by CUBAP (Project Number: T652)

PC052

The Effect of Different Selenium Forms on Hypothyroidic Rats on Learning And Memory

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AIM: Thyroid hormones are an essential hormone in maintaining brain function and normal brain function.Adult hypothyroidism is associated with depression,loss of cognitive function and memory impairment.Selenium is an important trace element in the structure of antioxidant selenoproteins (Deiodinase,glutathione peroxidase,thioredoxin reductase).It is found in nature in organic (selenomethionine and selenocysteine) and inorganic (selenite and selenate) forms.In this study,it was aimed to show the effect of different types of selenium on learning disorderwhich is also seen in hypothyroidism.
METHODS: The study was studied with 2-month old male Wistar albino rats.The control group,PTU group given propylthiouracil (PTU),PTU+SENA group receiving sodium selenite (0,7mg / kg)+PTU and PTU +SEMET group receiving selenomethionin(0,5 mg/kg) +PTU.Drugs were given to all groups with gavage as 1 ml of liquid per day for 21 days.Learning and memory were assessed with the Morris Water Tank Test.Plasma and hippocampal Se values were measured by inductively coupled plasma-mass spectrometry.Plasma T3 and T4 levels were measured with an ELISA reader.RESULTS: Free T3 and T4 levels were significantly lower in the PTU group than in the control group($p=0.05$).Plasma selenium levels did not differ significantly between the groups.The levels of selenium in the Semet and Sena groups were significantly increased compared to the control and PTU groups($p<0.001$).The mean distance to platform was affected by day and trial factors.The control group differed significantly from all other groups.
CONCLUSION: Although plasma Se levels in Se-supplemented groups are similar to other groups, an increase in brain Se levels in the Semet and Sena groups suggests that brain tissue may function as a selenium reservoir.In particular, selenomethinone was found to have significantly higher levels of sodium selenite in brain tissue.This elevation may be due to high intestinal absorption of selenomethionine.T3 and T4 levels in the PTU group were not observed in Se supplemented groups.The deiodinase enzymes increase thyroid hormone levels.

PC053

The Effect of Agomelatine on Cognitive Function in Model of Depressed Rats

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AIM: It is known that depressive disorders disrupts the cognitive functions. The aim of the study was to determine the effect of the agomelatin(Ago) on cognitive functions of depressed rats.
METHODS: Depression model was created based on the method developed by Porsolt(Forced swimming test(FST)). Forty male rats were used in the study(10-12 week old). The rats were divided into 4 groups(n=10). Depression group(n=10) was administered saline(SF) with gavage for 15 days. The other 10 rats undergoing FST were treated with 1 mg/ kg dose Agomelatine for 15 days and formed depression+agomelatine(Dep+Ago) group. Ten male rats were divided as control group. Ten male rats were also given Ago for 15 days before FST and a control +agomelatine(Cont+Ago) group was formed. All groups were subjected to the sucrose preference test. Cognitive functions were then assessed with Y-maze and elevated T-maze was used to observe anxiety and panic behaviour. The data were analyzed with one-way ANOVA followed by LSD post hoc test.
RESULTS: Depressed rats had elevated immobility forced swim test(FST) and reduced sucrose preference($p<0,01$). The sucrose preference in the Dep +Ago group was significantly higher than that in the depression group($p<0.01$). In Y-maze test; showed significant difference between the groups($p<0,05$). The mean T value of the Dep group compared to the control group rats spatial performance decreased significantly($p<0,05$). The mean T value of Dep+Ago group rats was significantly higher than Dep group rats($p<0,05$). In the elevated T-maze; showed a significant difference between the groups($p<0,05$). The mean T value of the Dep group compared to the control group in the rats was significantly decreased($p<0,05$). The mean T value of Dep+Ago group rats was significantly higher than that of Dep group rats($p<0,05$).CONCLUSION: Agomelatinin is a healing effect on cognitive functions impaired by depression.
This study was supported by Erciyes University Research Fund(TTU-2016-6430).

PC054

Regulation of E3 Ligase Nedd4-1 Under Oxidative Stress

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AIM: Nedd4-1 is an E3 ligase with a significant role on central nervous system (CNS) development. However, mechanisms regulating its activity during CNS injury remains largely unknown. On the other hand, melatonin is neuroprotective molecule. It was also proposed to be a proteosome inhibitor. Our study aims to investigate the role of melatonin on Nedd4-1 after oxygen glucose deprivation (OGD) injury.
METHODS: To examine the effect of melatonin on neuronal survival after OGD, primary cortical neurons from P0 Balb/c mice were seeded as control, vehicle and melatonin groups. Neuronal survival was assessed via counting the Hoechst staining. Mass spectrometry analysis of the same group of cells revealed that melatonin downregulates Nedd4-1 at protein level. To better investigate the role of Nedd4-1 on cellular survival upon OGD, N2A cells were transfected with Nedd4-1 over expression plasmid. The effect of melatonin on Nedd4-1 protein levels after OGD were evaluated by Western Blot analysis. qPCR studies were performed to show whether the detected difference at Nedd4-1 level occurs on mRNA level or not. Finally, mitochondrial activity assays were performed to clarify the relationship between cellular survival and melatonin treatment on Nedd4-1 over expressing cells.
RESULTS: Melatonin treatment increases cellular survival after OGD. Moreover, the level of Nedd4-1 upon OGD increases in cortical neurons, wild type N2A and Nedd4-1 over expressing N2A cell lines. Melatonin treatment causes Nedd4-1 level to decrease. This was also related to increased cellular survival after OGD.
CONCLUSION: Our proteomic analysis proposes a new role for melatonin in ubiquitin proteosome system by regulating protein level of Nedd4-1 as well as increasing neuronal survival. Nedd4-1 level increases after OGD and decreases cellular survival. Melatonin rescues survival by decreasing Nedd4-1 level. Our study suggests that Nedd4-1 might be targeted at protein level as a treatment for in vitro oxidative stres injuries.

PC055

Characterization of Intracellular Calcium Responses to Membrane Depolarization in Sensory Neurons from Absence Epileptic WAG/Rij Rats

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AIM: WAG/Rij rats, which develops absence epileptic seizures in a development-dependant manner, has been shown to exert increased pain sensitivity after being symptomatic after about 4-months old of age. The aim of this study was to investigate the intracellular calcium responses to membrane depolarization in sensory neurons from absence epileptic WAG/Rij rats and compare the responses from pre-symptomatic and symptomatic animals
METHODS: Dorsal root ganglia (DRG) were isolated and primary culture was prepared from pre-symptomatic 2-months old and symptomatic 4 months WAG/Rij rats. DRG cells were loaded with the fluorescent Ca 2^{+}-indicator Fura-2 acetoxymethyl ester intracellular free calcium levels $(Ca2^{+})i$ were measured ratiometrically using fluorescence calcium imaging. DRG neurons were stimulated with KCl^{+} (30 mM) and results are expressed as normalized to the basal intracellular calcium levels.
RESULTS: Neurons from presymptomatic (from basal levels of 1±0 to 1.41±0.28, $p<0.01$, n=20) and symptomatic (basal: 1±0 vs. 1.36±0.15, $p<0.01$, n=30) WAG/Rij rats showed significant $(Ca\ 2^{+})i$ increase in response to membrane depolarization by KCl. There was no significant difference between the (Ca2+)i response to membrane depolarization by KCl among DRG neurons from pre-symptomatic and symptomatic rats.
CONCLUSION: These data suggest that sensory neurons from WAG/Rij rats show intracellular calcium response to non-specific membrane depolarization. Similarity of the extent of (Ca2+)i signaling response to membrane depolarization indicates peripheral mechanism does not seem to be responsible from increased pain sensitivity in this epileptic animal model after being symptomatic. The study was performed within the scientific grant from TÜBİTAK (The Science and Technological Research Council of Turkey, Project No 214S206).

PC056

Long Period Housing in Metabolic Cage Causes Unfavorable Effects on Psychophysiological Parameters in Adult Male Rats

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AIM: Metabolic cages are widely used in the physiology and pharmacology. However, the metabolic cage housing may cause adverse effects on animal physiological parameters due to its characteristic structure such as grid flooring, an absence of bedding substrate, and single housing. The aim of present study was to determine the effect of long-term housing in the metabolic cage on stress-related behaviors in male rats.
METHODS: Adult Wistar rats were randomly divided into two groups as metabolic cage group and control group (normal housing in standard polycarbonate cages) and housed in these cages for four weeks (n=10). Stress-related behaviors were evaluated by open field test and forced swimming test.
RESULTS: Scores of the time spent in central area ($p<0.001$), total distance ($p<0.05$), velocity ($p<0.05$), rearing ($p<0.001$) and grooming ($p<0.05$) in metabolic cage group were significantly lower than control group. In the forced swimming test, immobilization duration significantly increased in metabolic cage group compared with control group rats ($p<0.001$). Moreover, serum corticosterone level of the metabolic cage group significantly higher than control rats ($p<0.001$).
CONCLUSION: Our results indicate that long-term housing in the metabolic cage causes an increase stress-related behavior in male rats.

PC057

Evaluation of Effects of Three Distinct Stress Protocols on Depression and/or Anxiety-like Behaviors in Female Rats

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AIM: In the female rats, although there are many stress models, the results obtained from these models are controversial. Therefore, the aim of present study was to evaluate effects of three distinct stress protocols on depression/anxiety like behaviors in adult female rats.
METHODS: Adult Wistar rats were randomly divided into four groups (n=8) as control, immobilization

stress-1 (daily 45 minutes) immobilization stress-2 (daily twice 45 minutes) and social isolation (rats were housed in a metabolic cage). Stress protocols were performed during ten days. When the animals were in diestrus, depression/anxiety-like behaviors were evaluated by open field test and forced swimming test. The same behavioral tests were repeated after a 10-day rest period.
RESULTS: In the open field test, a percentage of time spent in the central area significantly decreased in immobilization stress-2 and social isolation groups ($p < 0.05$), and total distance was lower in immobilization stress-1 and social isolation groups compared with control group ($p < 0.01$ and $p < 0.05$, respectively). A total mobility of the immobilization stress-1 group and rearing scores of the social isolation group were lower than the control group ($p < 0.05$). Scores of swimming decreased, and immobilization duration increased in the immobilization stress-1 and social isolation groups compared with the control group ($p<0.01$ and $p<0.05$, respectively). In the second tests, time spent in the central area was lower in immobilization stress-1 and immobilization stress-2 groups ($p < 0.05$ and $p < 0.01$, respectively), and total mobility of the immobilization stress-2 group was lower than the control group ($p < 0.05$). Scores of swimming were lower and immobilization behaviors were higher in the immobilization stress-1 ($p < 0.001$) and social isolation groups ($p < 0.01$ and $p < 0.001$, respectively) than control group.
CONCLUSION: We suggest that depression-like behaviors more dominant in the immobilization stress-1 and social isolation groups of adult female rats.

PC058

Comparison of Effect of Two Immobilization Stress Protocols on Depression/Anxiety Behavior in Male Rats

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AIM: Effect of acute and chronic stress models on depression and/or anxiety-like behaviors in rodents has been widely studied with contradictory results. This may be due to differences in the sex and age of the animals studied or in the stress models used. Therefore, the aim of present study was to evaluate the effects of two immobilization stress protocols on depression/anxiety like behaviors in adult male rats.
METHODS: Adult Wistar rats were randomly divided into three groups (n=10) as control, immobilization stress 1 (daily 45 minutes during ten days,) and immobilization stress 2 (daily twice 45 minutes during ten days). Stress-related behaviors were evaluated by open field test and forced swimming test. In addition, body weight change and fasting glucose level were measured.
RESULTS: In the open field test, a percentage of time spent in the central area significantly increased in immobilization stress-1 and immobilization stress-2 groups compared with control group ($p < 0.05$ and $p < 0.01$, respectively). Moving ratios were lower in both immobilization stress groups than control group ($p < 0.001$ and $p < 0.01$, respectively). In the forced swimming test, durations of swimming, climbing and immobilization behaviors in both immobilization stress protocols did not differ from the control group. No overt differences in body weight change and fasting serum glucose level were determined between stress protocol groups and control group ($p > 0.05$).
CONCLUSION: We can suggest that immobilization stress-1 (daily 45 minutes during ten days,) and immobilization stress-2 (daily twice 45 minutes during ten days) protocols did not cause a depression-like behavior in adult male rats. However, anxiety-like behaviors were predominant in both stress protocols.

PC059

Effects of Oxytocin Receptor Antagonist Atosiban on Analgesia and Morphine Analgesia in Rats

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AIM: Oxytocin is a peptide-based hormone released from the supraoptic and paraventricular nuclei in the hypothalamus and consisting of nine amino acids. It has been shown that oxytocin may have an effect on opiate receptors in studies performed. Atosiban, a dezamino-oxytocin antagonist, is a nonapeptide and is a vasopressin/oxytocin receptor antagonist. Our aim in this study is to investigate the effects of atosiban on analgesia and morphine analgesia.
METHODS: The animals were divided into eight rats (control (C), 200 µg/kg oxytocin (OT), 3 mg/kg atosiban (AT), OT+AT, 5 mg/kg morphine(M), M+AT and M+OT+AT). Serum physiologic was given to the control group and oxytocin and atosiban were given intraperitoneally at the indicated doses to the other groups. Morphine was administered subcutaneously. Pain latencies were assessed by hot plate (HP) and tail flick (TF) tests and recorded at 15, 30, 60, 90 and 120 minutes. Assessment of analgesic effect was formulated as % analgesia (% maximum possible effect(MPE)).%MPE = 100x [postdrug reaction time-predrug reaction time]/[cut off time-predrug reaction time]). Statistical evaluation of the data was performed by two-way ANOVA and multiple comparison was determined by the Tukey test. Data were presented as mean±standard deviation. Statistical significance was defined at $p < 0.05$ level.
RESULTS: When tail flick and hot plate results are evaluated as% analgesia (% MPE), atosiban showed hyperalgesic activity and decreased the analgesic activity of oxytocin when given with oxytocin (C:2,9±1,4 AT:-8,5±1,4 OT:16,6±2,4 AT+OT:12,7±2,4 ($p<0,05$)). In addition, although atosiban did not alter the analgesic activity of morphine, morphine analgesia increased by oxytocin was reduced (M:52,6±5,4 M+AT:47,5±3,1 M+OT:62,7±7 M+OT+AT:47,6±3,9 ($p<0,05$)).
CONCLUSIONS: The oxytocin receptor antagonist atosiban may have hyperalgesic activity. But we think that there is no effect on the analgesic effect of morphine alone.

PC060

Protective Effect of Zn2+ Loaded Fe3O4-SiO2-NH2- (Zinpyr-1) Nanocomposite on Glutamate Exercise Toxicity in Primary Cortical Neuron Cell Culture

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AIM: Zn2+ is an essential bioelement for vital functions of organisms and involved in many metabolic events such as neurotransmission. Glutamate is the major stimulant neurotransmitter in the central nervous system and functions in physiological events such as learning and perception. Nowadays, there is a growing interest in the development of nanocomposites with specific compounds and different matrices with superior and desired properties. In this study, it is aimed to investigate neuroprotective effects of Fe3O4-SiO2-NH2-Zinpyr-1 and Zn2+ loaded Fe3O4-SiO2-NH2-(Zinpyr-1) ((Fe3O4-SiO2-NH2-Zn(Zinpyr-1)) which have fluorescence and magnetic properties and Zn2+ on glutamete induced exitotoxicity on primer cortical neuron culture.
METHODS: Fe3O4 - SiO2 – NH2 - (Zinpyr-1) nanocomposite was formed by immobilization with the nanoparticles Fe3O4-SiO2–NH2, whose surface functionalized with ligand containing amine, of Zinpyr-1, which has a selective ligand, to Zn2+ by covalent bonds. The nanocomposite was loaded with Zn2+. The structure and chemical composition of nanocomposites were determined by TEM, FTIR and ICP/MS techniques. Glutamate exitotoxicity was induced by exposure of 6x10-5 M glutamate on primary cortical neuron culture using newborn Spraque-Dawley rats. At doses of 1.4 mg/L, 6.8 mg/L and 34 mg/L Fe3O4-SiO2–NH2-(Zinpyr-1), Fe3O4-SiO2–NH2-Zn(Zinpyr-1) and Zn2+ were applied. Cell viability were determined by MTT assay. In addition, the produced reactive oxygen species were evaluated by TAS-TOS analysis.
RESULTS: According to MTT analysis results, it was found that 1.4 mg/L and 6.8 mg/L doses of Fe3O4-SiO2–NH2-Zn(Zinpyr-1) nanocomposite group had significant protective effect on cell viability compared to control group ($p<0.05$). According to TAS-TOS

results, Fe3O4 - SiO2 – NH2 - Zn (Zinpyr-1) nanocomposite significantly decreased oxidant levels and increased antioxidant levels in the range of 1.4-6.8 mg/L ($p < 0.05$). Zn2+ and Fe3O4-SiO2–NH2-(Zinpyr-1) alone weren't effective.
CONCLUSION: In this study, it has been shown that Fe3O4-SiO2–NH2-Zn(Zinpyr-1) nanocomposite has protective effect against glutamate excitotoxicity in low doses on primer cortical neurons and it can be used as a therapeutic agent against glutamate excitotoxicity.
This study was supported by TUBİTAK (Project Number 214Z153)

PC061

The Protein Expression Profile of Old And Young Mice After Cerebral Ischemia

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AIM: Incidence of cerebral ischemia increases with age. Damage resulting from cerebral ischemia differs between young and old animals. There are conflicting results reported in the literature in the experimental modelling of the damage. This study aims to present the differences in neuronal survival and apoptotic cell death and to observe the changes in the protein profiles after cerebral ischemia between young and old mice.
METHODS: Ethical committee approval was obtained from Istanbul Medipol University. In this study, 20-25 g, 8-12 weeks old male C57BL6/j mice (n=14) were used as the young group and 18-22 months old mice (n=14) were used for the old group. Animals were submitted to middle cerebral artery occlusion for 30 min and sacrificed 72 hours of reperfusion. Neuronal survival and apoptotic cell counts were evaluated and protein profile analyses using proteomics methods were performed. Data were evaluated by t- tests. P values <0.05 were considered significant.
RESULTS: After cerebral ischemia, neuronal survival was significantly higher and number of apoptotic cells was significantly decreased in the old group, compared with the young. Proteomic analyses of ischemic striatal tissues from both groups resulted in 1646 proteins. Of these, 107 proteins with expression levels that differ 1.4 times and that are statistically $p<0.05$ significant were detected.
CONCLUSION: In this study, 107 proteins in the striatum of young and old animals subjected to cerebral ischemia with significantly different expression profiles were suggested to play a role in the neuronal survival and apoptosis. Target mechanisms to be determined following an in-depth analysis of these proteins can contribute to the development of clinically relevant treatments.

PC062

Role and Electrophysiological Analysis of Appetite Circuits of ChAt Neurons in the Arcuate Nucleus

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AIM: The hypothalamus is composed of many sub-nuclei and also contains the neural pathways leading to eating behavior. Cholinergic neurons in the basal forebrain have been shown to play a role in nutritional satiety activation. Cholinergic nerve cells are numerous in the hypothalamus nuclei. The aim of this study is to elucidate the electrophysiological activity of the arcuate nuclei of ChAT neurons, which are closely related to nutrient uptake, on ad libitum and starvation conditions.
METHODS: To selectively stimulate ARC cholinergic neurons, we expressed stimulatory designer receptors exclusively activated by designer drugs (DREADDs) and green fluorescent protein (GFP) by injection of adeno-associated virus (AAV) vectors into the ARC of choline acetyltransferase (ChAT)-IRES-Cre (C57BL/6). The Injected mice were tested for chronic behavior after a 2-week period of optimal infection. Chronic stimulation of ChAt neurons was achieved by intraperitoneal (IP) injection 3 times daily for 15 days. Food intake and body weight were monitored for 12 and 24 hours during 15 days. ARC ChAT neurons were infected with AAV-tdTomato (red fluorescent protein) in order to observe the physiological response of the ChAT neurons in terms of hunger and satiety. Recordings were obtained with patch clamp from infected cells.
RESULTS: There was a significant change in eating behavior in animals with chronic ChAT neuron activation for 5 days compared to control. It was observed that ChAt neurons in the Arkuat nucleus produced different physiological responses in hunger and satiety conditions. Statistical analyses were performed using unpaired t-test ($p<0.05$).
CONCLUSION: ARC ChAT neurons have been shown to be sensitive to metabolites to produce different responses in hunger and satiety states. Significant difference resulting from the chronic stimulation of ChAT neurons in ARC shows that this model modulates the hypothalamic appetite circuits.

PC063

Effects of High Fructose Corn Syrup Hippocampal-mediated Learning and Memory Mechanisms

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AIM: The aim of this study was to investigate the effect of hippocampal mediated learning memory mechanism of high fructose corn syrup and role of melatonin.
METHODS: In the study, 36 Sprague-Dawley (150-250g) male rats 12 months age were used. Control group (C) (only given standard commercial bait and tap water), HFCS group (Along 10 weeks, 20% solution of HFCS was added to drinking water); HFCS +Melatonin group (20% of HFCS solution was added to drinking water along 10 weeks and 10mg/kg/Daily melatonin was given for last 6 weeks). At the end of the experiment, the Morris Water Maze test was done. Statistical analyzes were done by ANOVA.
RESULTS: Weight gains were significantly different among the control, HFCS and HFCS+M groups (p=0.001) and increased in the HFCS group and decreased in the HFCS+M group. Fluid consumption was significantly different between weekly control and HFCS groups (p=0.03) and more fluid consumption was observed in HFCS group. There was a statistically significant difference between the first day and the fifth day according to the learning and memory test data (p=0.005), and the time of finding the platform gradually decreased. It was statistically significantly decreased for the C group(p=0.005) and the HFCS group (p=0.001). There was no statistically significant difference between the 4th and 5th days in the HFCS group (p>0.05). A statistically significant difference was observed in the HFCS+M group as time (p<0.05).There was no statistically significant difference between the groups in terms of the spent time on the target platform in the memory test (p>0.05).However, the spent time in the HFCS group decreased compared to the control.
CONCLUSION: We suggested that melatonin which is affected during adolescence in learning and memory impairment related to HFCS may be protective of sleep cycle and sleep hygiene.

PC064

Depression and Anxiety Levels in the Secondary Education Students

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AIM: Students who receive education in evening education programs generally have an active life style at night. This situation cause to circadian rhythm disorders to students. Depression and anxiety levels were investigated of evening education and it was related to life style in different faculty students of the Suleyman Demirel University (SDU).
METHODS: Different classes in evening education programs of SDU were enrolled (n:204). Back depression(BDS) and anxiety scale(BAS), Hospital depression(HDS) and anxiety scale(HAS) together with 36 number socio-demographic questions have been performed under observation.Collected data have been analyzed with Descriptive Statistics, Chi-Square, T and ANOVA Test, Pearson Correlation. RESULTS: 77 person of 204 students who attend to study was male (%37,7), 127 was female (%62,3). The average age was 20,68±2,55.Students were 28 (13.7%) Engineering, were 59(28.9%) Arts and Sciences, were 50(24.5%) Economic and Administrative Sciences and were 67(32.8%) Health Sciences. Scores of questionary were found BDS 14,33±10,11, BAS 15,53±11,48, HDS 6,25±4,27 and HAS 8,13±4,43. There is significant difference at gender between scores BDS (p=0.047), BAS (p=0.015) and HAS (p=0.001) and scores were higher in the female. BDS was significant different (p=0.027) between no smokers and smokers less than 1 package for day and it was higher in the smokers.BAS was found statistically significant(p=0.026) in the caffein consumer.BAS was found significant between sleeping at night and spending time in social media(p=0.005).BAS was found statistically significant between satisfied or not the social environment in the Isparta (p=0.010). BDS(p=0.001), HDS(p=0.001), HAO(p=0.014) scores were found statistically significant between satisfied with school's life or not. BDS scores was found statistically significant between willing to come to they studied department or not (p=0.042).
CONCLUSION: Depression and anxiety were determined in the evening education students participated in our research. Gender, smoking, caffein consumption and social factors might be effect depression and anxiety.

PC065

Internal Motivation Modulates Voluntary Repetitive Movements: "Ha gayret" Energy

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AIM: Studies associating maximal voluntary movement with energy use and fatigue pointed out its polyphasic nature and the presence of two critical time points that divide the movement into 3 distinct periods. Limited number of studies in the literature displayed performance discrepancy in the last period of the movement. The present study aimed to bring up a matter of the behavioral pattern of this period.
METHODS: Finger tapping data of 10s and 20s of total task duration were obtained from 27 male university students. The critical time points at which a significant performance changes occur were measured using the statistical method of "sum of squared difference at discrete points". The relations between the behavioral patterns and the total task times were evaluated by linear regression analysis.
RESULTS: Both study groups displayed polyphasic behavioral pattern and each having increased performance in the last period of the movement. The absolute onset time of the last period in each group was calculated as approximately 8s and 16s and they remained a constant proportion of approximately the last 20% of total task time.
CONCLUSION: Despite the studies suggesting a sustained plateau in performance as the symptom of central and peripheral fatigue, the increased performances we observed in the last period of the tasks were consistent with our previous studies. This performance discrepancy and the proportionally varying critical time points support the suggestion of the dynamical systems approach to generalized motor program. Besides various physical variables, emotional states originating from higher neural structures such as limbic system are also important performance modulating factor. In this preliminary study we emphasize on the impact of internal motivation that may smartly modulates the performance in unexpected time periods. We name this phenomenon as "Ha gayret" energy in Turkish that may stand for "win or die" circumstances.

PC066

Selenium Decreases Myelin and Axonal Damage in Peripheral Nerve Injury

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AIM: Although, the neuroprotective effects of selenium are known, its effect on peripheral nerve injury has not been shown. The aim of this study was to investigate whether selenium decreases myelin and axonal damage in experimental peripheral nerve injury.
METHODS: Twenty-eight male Wistar albino rats were divided into four groups (n=7 in each group): control (C), selenium (S), injury (I), and selenium-treated injury (SI). Injury was generated by 30 second of compression via Yasargil aneurysm clip on the sciatic nerve of rats in the I and SI groups. Then, selenium was given to rats in the S and SI groups at a dose of 1.5 mg/kg by oral gavage at 1, 24, 48 and 72 h after surgery. At the end of fourth day, electrophysiological, histological, and biochemical tests were performed. One way ANOVA and post hoc Tukey tests were used for statistical analysis. P values<0.05 were considered statistically significant.
RESULTS: Nerve conduction velocity (NCV), amplitude of compound action potential, myelin thickness, average axon diameter, myelinated and unmyelinated axon number of I group were significantly lower than the C, S and SI groups (All p values<0.001 except the p value between NCV values of I and SI groups, this p value<0.05). Also, SOD activity in the red blood cells of I group was significantly lower than the C and SI groups (All p values<0.05), the serum MDA levels of I group were significantly higher than the C, S and SI groups (All p values<0.001).
CONCLUSION: The findings of this study showed that selenium decreases myelin and axonal damage on peripheral nerve injury in rats and this neuroprotective effect of selenium is at least partially mediated by

PC067

The Investigation of Cognitive Function, Emotional Learning, Startle Reflex and Pain Threshold in Female and Male Depressed Rats

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AIM: Despite strong evidence and acknowledgement that women have a two-fold lifetime greater risk of developing major depression compared to men, the inclusion of female rats in studies employing animal model of depression are very rare.The aim of this study is to investigate gender differences in behaviors, conditional and unconditional fear responses, cognitive functions, anhedonia, pain threshold, and startle reflex in depression-induced male and female rats.
METHODS: Forty Wistar albino rats were used (8 week old).They were divided into 4 groups (n=10);control female (CF), control male (CM), depression female (DF), depression male (DM). Porsolt test was used for the depression model. Sucrose preference test; Depression-like behavior, open field practice; Anxiety-like behavior, locomotive activity, Y-maze; Cognitive functions, elevated T-maze; Emotional learning, conditional unconditional fear responses, panic behavior, Pre-pulse inhibition device; Startle responses, Hot plate and von Frey filaments; used to assess pain threshold. The data were analyzed with one-way ANOVA followed by LSD post hoc test.
RESULTS: In the sucrose test, DF and DM groups consumed less sucrose water and more fountain water than CF and CM. At the open area, the number of line crossings increased in DF and DM groups according to CF and CM, and the number of itching decreased ($p < 0.05$). The escape time of the elevated T maze depression groups was decreased compared to the control groups ($p < 0.05$). PPI + 4, PPI + 8, and PPI + 16 stimuli increased the severity of startle response ($p < 0.05$) in the pre-pulse test. There was no significant difference between sexes.
CONCLUSION:The absence of a difference in behavioral tests between both sexes demonstrates that depressive behavior in female rats similar to male rats will increase the use of female rats in animal models of depression.
This study was supported by Erciyes University Research Fund (TOA-2015- 5368).

PC068

Duloxetine is Anxiolytic Effect for Rats in Light/ Dark Box

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AIM: Duloxetine is antidepressant drug administiration for depressive disorder, anxiety disorder and pain syndromes such as fibromyalgia. Our aims are to ivestigate duloxetine anxilotic effect for light related anxiety in animal anxiety test as light dark/box.
METHODS: 30 Male Wistar Albino rats were used and fed ad libutum during the experiment. All subjects were divided into 3 groups(n=10),(30,60mg/kg duloxetine, saline). Duloxetine was administered intraperitoneally 10 days. Light/dark box test was conducted 20:00-24:00.Light zone time, dark zone time, light-dark entrance, latency time, rearing behaviour numbers were recorded video (5 minutes) and analyzed by differrent two resarchers. Kruskal Wallis Test and pairwise comparison test were conducted as statistics test.
RESULTS: Light zone time increased significantly 30 mg/kg and 60mg/kg when compared to control($p<0.001$). Dark zone time reduced in 30mg/kg and 60 mg/kg duloxetine groups ($p<0.001$).Rearing beahviours increased in 30mg/kg vs control ($p<0.01$). Light/dark entrance wasn't any difference among all groups ($P>0.05$). Latency time increased in 30 and 60 mg/kg groups when compared to control ($p<0.05$).
CONCLUSION: Our data indicates that duloxetine is potent anxiolytic against light related anxiety. İnteristingly light zone time was virtually equal 30mg/kg and 60 mg/kg.

PC069

Effects of the Phosphodiesterase Type 5 Inhibitor Tadalafil on Morphine Analgesia and Tolerance in Rats

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AIM: Despite the fact that opiates are effective analgesic drugs, the continuous administration of such medicines causes tolerance development and limitation of their use against analgesic effects.Nitric oxide (NO) is nonadrenergic, noncholinergic

neurotransmitter that activates soluble guanyl cyclase. Tadalafil is a potent, selective and reversible inhibitor of cyclic guanosine monophosphate (c-GMP) cleaving phosphodiesterase type 5 (PDE5) enzyme. In this study, we aimed to investigate the effects of tadalafil on morphine analgesia and tolerance.
METHODS: In our study, 60 Wistar Albino male 230-250 grams rats were used.First, four different doses(2,4,8,16 mg/kg) were generated to determine the effect of tadalafil on the latency of pain and tadalafil with 24 animals, six animals in each group.After dosing studies, maximal activity was found 8 mg/kg and the remaining 36 animals were divided into six groups(control(C),8mg/kg tadalafil(TAD), 5mg/kg morphine(M), M+TAD, morphine tolerance(MT) and MT+TAD).Saline was administered to the control group,tadalafil intraperitoneal and morphine subcutaneously administered at the indicated doses the other groups.To develop tolerance to morphine, 10mg/kg morphine was injected daily in the morning and evening for five days and tolerance was evaluated after six days single dose morphine.Analgesic effects were assessed by hot plate and tail flick analgesia tests.The resulting analgesic effect was measured and recorded at 15th, 30th, 60th, 90th and 120th minutes. Assessment of analgesic effect was formulated as % analgesia (MPE) (% analgesia=100x[postdrug reaction time-predrug reaction time]/[cut off time-predrug reaction time]). Statistical evaluation was performed by two-way ANOVA and multiple comparison was determined by Tukey's test.Statistical significance was defined at $p<0.05$ level.
RESULTS: When the tail flick and hot plate results were evaluated as % analgesia (% MPE), tadalafil significantly reduced the analgesic effect of morphine ($p<0.05$).In addition, tadalafil significantly increased tolerance to morphine ($p<0.05$).
CONCLUSION: Phosphodiesterase type 5 inhibitor tadalafil may increase tolerance development and decrease morphine analgesic effect decreasing c-GMP degradation via nitric oxide pathway.

PC070

The Behavioral Responses in Open Field, Elevated T-maze and Y-maze in Schizophrenia-modeled Rats

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AIM: Schizophrenia is a chronic neuropsychiatric disorder affecting 1% of the world's population. The use of ketamine to create a model of schizophrenia in experimental animals is preferred because of its easy acquisition and low cost. In this study, it was aimed to investigate the parameters of behavior in the open field area, conditional and unconditional fear responses in the elevated T-maze and spatial learning in Y-maze after the application of ketamine in female rats.
METHODS: The Wistar Albino rats (10-month-old) were given two days 10 mg / kg, and second two days 20 mg/kg ketamine i.p. for four days (n = 10) and control group received SF injection (n = 10).. Ataxia was observed after ketamine administration for 25-30 minutes only on day 4. The open field behavior test was performed on day 5, elevated T-maze and Y-maze tests performed on day 6. The data were evaluated statistically by t test.
RESULTS: The locomotor activities, expolaration behaviors, autonomic functions did not change but pass through the center area and grooming behaviors were decreased in the open area in ketamin treated rats when compared to the control rats ($p <0.05$). Conditional and unconditional fear responses were found to be similar in the both groups in the elevated T-maze. The number of alternations did not change, but the number of entry into the target arm and the time spent there were significantly reduced in Y-maze in ketamine-treated rats ($p <0.05$).
CONCLUSION:According to the obtained findings, locomotor activity and fear response did not change but spatial learning was found impairment in rats given ketamine. It would be appropriate to increase the used dose of ketamine or to prolong the application period.

PC071

Expression of Aquaporin 4 Channels in Rat Ependymal Cells of the 3rd Ventricle and Examination of the Effects on the Glymphatic System

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AIM: Since there is no lymphatic circulation in brain, an alternative mechanism of clearing brain parenchyma from the excess substances is needed. Cerebrospinal fluid (CSF) passes into brain parenchyma and mixes with brain interstitial fluid. Thus, it takes extracellular proteins from interstitial fluid and mediates the clearing of brain. These extracellular proteins, cleaned via CSF, pass to the paravenous space which is facilitated by astrocytic aquaporin 4 (AQP4) channels. In there, they are removed from the media by blood circulation, subarachnoid space, or through the draining veins. This system is called glymphatic system. İn our study,

we aimed to demonstrate immunohistochemical expression in ependymal AQP4 channels of the brain's 3rd ventricle in different photoperiods and effects on glymphatic system.
METHODS: Two groups of Wistar Albino female rats were formed (n=7). First group was exposed in short photoperiod (8/16 hours light/dark) and second group was exposed in long photoperiod (16/8 hours light/dark) for 4 weeks. Brain tissues were then removed, first taken into paraformaldehyde solution and then into 30% sucrose solution. Brain tissue samples were stained with AQP4 antibody immunohistochemically.
RESULTS: AQP4 showed an intense immunoreaction in ependymal cells of the short photoperiod group, whereas the same staining pattern appears to be weaker in the long photoperiod group.
CONCLUSION: Removal of metabolic products that accumulate in brain interstitial fluid is mediated through glymphatic system and facilitated by astrocytic AQP4 channels. Ependymal cells may also help in this function of astrocytic AQP4 channels via their AQP4 channels. More intensive staining of AQP4 channels in ependymal cells of rats exposed to short photoperiod may be due to the regulatory effect of the melatonin hormone secreted in the darkness on metabolic homeostasis.

PC072

The Effect of Galanin and Exercise on Depression in Rats

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AIM: Depression is a condition characterized by enervation, dejection, unwillingness, inability to enjoy life, feelings of guilt in the event, and the desire to commit suicide in progressive process. Galanin is a neuropeptide that is stress-excitable and released with norepinephrine-serotonin. Galanin release from the many brain's region and its effects are dependent hormones. Depression model studies are thought to trigger depression due to increased release of galanin under high stress conditions. In exercise studies, exercise has been shown to prevent the development of depression by increasing the Brain-Derived Neurotrophic Factor (BDNF). Aim of this study was to investigate effects of galanin administered exogenously alone or with exercise on depression in rats.
METHODS: In study 108 adult Wistar Albino rats were used. Rats were divided into 9 groups and regular swimming exercises were performed to five groups for 6 weeks. Galanin was injected to rats intraperitoneal (10 µg/kg/day) or intracerebroventricular (3 nmol/kg/day). The control group was also saline injected. At the end of the sixth week, rats were subjected to porsolt depression test and recorded with a camera. The groups were evaluated with One-Way ANOVA and the Dunnett post-hoc test was used to examine the meaningful results. Ethics approval was received from Abant Izzet Baysal University Animal Researches Local Ethics Committee (Decision no.2015/12).
RESULTS: The ICV administered galanin increased the mobility periods in rats ($p<0,05$). There was no significant difference between the groups according to the exercise or not($p>0,05$). Administration of IP galanin groups were observed to vary according to the exercise status of the rats. It was found that the duration of mobility in exercise-treated rats was longer than in non-exercise rats ($p<0,05$).
CONCLUSION: It was shown that exercise and galanin reduce the depression by increasing mobility periods of rats.

PC073

Effect of Adropin on the Penicilline-induced Epileptiform Activity

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AIM: Epilepsy is a very common nervous system disease and effects nearly 1% (according to statistics of 1990) of world population. (1) Epileptic seizures occur when a group of neurons discharge together (2) and abnormally. Factors causing abnormal discharges include trauma, bleeding, hypoxia, anoxia, stroke, vascular malformations, infection, and metabolic disorders. (3) However it is not possible to find a reason in the half of the epileptic patients. Adropine was first described as a metabolic hormone responsible for the regulation of lipid metabolism, isolated from liver and brain tissues by Kumar et al. in 2008. Adropin is encoded by energy homeostasis-related gene (Enho), regulated by nutrient quantities, and maintains energy homeostasis. Central nervous system neurons are also synthesize adropin. This peptide plays a crucial role in the development of various CNS disorders such as stroke, schizophrenia, Alzheimer's and Parkinson's diseases. In the present study; the effects of adropin were investigated in penicillin-induced epilepsy model.
METHODS: Female Wistar rats (n=24) were subjected to a surgical removal of left crania prior to

be connected to a data acquisition system for recordings. Animals were divided into 3 groups according to the injected drugs as follows: control, penicillin, penicillin + adropin.
RESULTS: In this study, Adropin, at a dose of 100 mcg, administered intraperitoneally and reduced the mean of spike frequency between 30 to 60 minutes without changing the amplitude.
CONCLUSION: This study first investigated the effect of adropine on penisilin-induced epileptiform activity. In the penicillin-induced epilepsy model, adropine decreases the spike frequency. Further studies are needed on how adropin will act on the same model with different doses and different types of administration (icv).

PC074

Neuroprotective Effect of Diet Restricted Preconditioning on Cerebral Ischemia in Mice

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AIM: Nutrition is an important factor in maintenance of the healthy state. However, it can also become a threat in the cases of malnutrition. Malnutrition can result in the occlusion of major arteries that supply blood to the brain and this can lead to cerebral ischemia which is the third main cause of death worldwide. The aim of this study is to observe the effects of diet restriction preconditioning on treatment processes on mice after cerebral ischemia.
METHODS: In this study, 8-12 weeks old BALB/c mice (ethical permission no:2016/35) were divided into prophylactic and treatment groups. 30 and 90 minutes of Middle cerebral artery occlusion followed by 24 and 72 hours of reperfusion, respectively were performed on these mice. For the prophylactic group, animals were divided into four subgroups(n=8) and fed with standard ad libitum for control, %70 for high-protein, high-carbohydrate and high-fat diets three days prior to cerebral ischemia. For the treatment group, same diets were applied after cerebral ischemia. The effects of nutrition on infarct volume after cerebral ischemia, neuronal survival, apoptotic cell death and activation of cell signaling pathways were evaluated. Data were evaluated with one-way and repeated ANOVA tests.
RESULTS: Within the prophylactic group, the mice that had high fat diet has shown hipoperfusion on the Laser Doppler flowmetry records when compared with control and other diet groups. Furthermore, within the same group, the mice that had 90 minutes of occlusion period with high fat diet has increased edema(Control: 17mm3±4, high fat: 26±5, $p<0,05$) and infarct volume (Control: 51mm3±6, high fat: 67mm3±7) compared to the control group.
CONCLUSION: Diet restrictions have an important effect on cerebral ischemia. As seen on the high-fat diet groups, the decreased blood flow on the ipsilateral side has shown higher infarct volume and edema.

PC075

Sex-related Differences in Chronic Stress-induced Gastrointestinal Dysfunction in Maternally-separated Rats

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AIM: Neonatal and early-life stress exposure has been considered as a risk factor for functional gastrointestinal disorders (FGID) in adulthood. In rodents, postnatal maternal separation (MS) is a well-established model yielding permanent changes in brain-gut axis neurobiology, however gender-related differences are incompletely understood. METHODS: Male (n=22) and female (n=24) newborn Wistar pups underwent MS for 180 min/day from postnatal day-2 to day-14, while their littermates were kept in home cages with dams as controls. After weaning, pups were separated by gender and kept with their littermates until 8 week-old age. MS-induced anxiety-like behaviors were assessed by elevated plus maze test. For chronic homotypic stress (CHS), rats were loaded with restraint stress (RS) for 5 consecutive days. Throughout the CHS, fecal output was monitored daily, whereas solid gastric emptying (GE) was measured on day-5. In a separate group, corticotropin-releasing factor (CRF) level was measured in microdialysates obtained from paraventricular nucleus on day-1 and day-5 of CHS.
RESULTS: MS significantly ($p<0.01$) increased the anxiety-related behaviors both in male and female rats. Compared to controls, RS-induced high fecal output was restored in female MS rats, while it remained significantly higher ($p<0.01$) in male MS rats throughout the CHS. Likewise, RS-induced delayed GE was entirely recovered in female MS rats, whereas it remained unchanged in male MS rats. CRF level in microdialysates was significantly higher both in male and female MS rats, however, this increase was more pronounced in males. Compared to day-1, CHS remarkably elevated CRF level in males, but not in female MS rats.
CONCLUSION: While MS was effective both on male and females rats, males appear to be more susceptible to gastrointestinal dysfunction due to their

PC076

The Cytotoxic and Genotoxic Effects of Daidzein in Ht-29 Human Colon Adenocarcinoma Cells

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AIM: Colon cancer is one of the most common tumors and the third most common cause of cancer-related death globally. Daidzein with antioxidant properties is an isoflavone which has anticancer activity and founds in the soy products. Genotoxicity tests have an important role in the assessment of heritable and carcinogenic risks. The aim of this study was to evaluate the cytotoxic and genotoxic effects of daidzein in human colon adenocarcinoma cells (HT-29)
METHODS: HT-29 cells were cultured in the appropriate culture medium. Daidzein was administered at a dose range of 25-1000 μM and its cytotoxic effect on HT-29 cells was evaluated using XTT method depending on time and concentration. At the same time, the genotoxic effect of daidzein was determined by the Comet Assay. The data were analyzed statistically by using Student's t-test.
RESULTS: In this study, the IC50 of daidzein was found as 200 μM in HT-29 cells at the 48th hour by XTT assay. According to the results of the Comet assay, there was an increase in the length of the DNA tail in the daidzein group compared to the control group but this increase was found to be statistically insignificant ($P>0.05$). However, the DNA tail intensity and DNA tail moment in the daidzein treated cell groups were significantly higher than those in the control group ($p<0.01$).
CONCLUSION: It has been determined that daidzein has cytotoxic and genotoxic effect in HT-29 cells. At the same time, the results of the study show that daidzein alone or in combination with other drugs may be useful in the treatment of colon adenocarcinoma. However, further studies are needed to clarify the mechanisms of the cytotoxic and genotoxic effects of daidzein.

PC077

The Effects of Nutritional Differentiation and Duration on Levels of Inflammation Markers in the Experimental Acute Colitis Model

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AIM: In this study, it was aimed to comparatively investigate the relationship between the type and frequency of dietary in ulcerative colitis (UC), which is one of the inflammatory bowel diseases (IBD), which is increasing in the world today.
METHODS: For this purpose, 7 rats were randomly selected and 6 groups were formed. Groups: Control (n =7), Colitis (n =7), Colitis-High Carbohydrate Diet (C-HCD) (n =7), Colitis-High Carbohydrate Intermittent Fasting Diet (C-HCIFD) (n =7), Colitis-High Fat Diet (C-HFD) (n = 7), Colitis- igh Fat Intermittent Fasting Diet (C-HFIFD) (n =7). Intermittent fasting dietary groups were interrupted 24 hours for only 2 days a week (intermittent). After 7 weeks of feeding, the rats in the group of colitis, C-HCD, C-HCIFD, C-HFD, C-HFIFD were treated with 1 ml, pH 2.4, 4% acetic acid intrarectally. After the rats were sacrificed CRP, Leptin, TNF-α and IL-6 levels of blood samples were analyzed.
RESULTS: As a result of the analysis, high carbohydrate diet did not make a statistically significant difference in blood parameters in any colitis group, while CRP level was 130.935±10.413 ng / ml and leptin level was 5.119±0.694 ng / ml in high fat diets And $p <0.05$ was found statistically significant. TNF-α level was found as 105.299±43.801 ng/ml in colchic high carbohydrate intermittent diet groups and this value was found to be lower than other groups and statistically significant at $p <0.05$ level. The CRP level was found to be 120.496±10.523 ng/ml, the TNF-α level was 105.299±43.801 ng/ml and the IL-6 level was 95.152±20.035 ng/L, which was statistically significant at $p <0.05$ level It was found.
CONCLUSION: Intermittent fasting dietary administration in colitis may be increased longevity by decreasing the level of general inflammation markers in the organism with anti-inflammatory effect.

PC078

Effect of Docosahexaenoic Acid on Apoptosis in the Stomach in 1-Methyl-4-Phenyl-1.2.3.6.-Tetrahydropyridine-induced Parkinson's Disease

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AIM: Parkinson's disease (PD) is a degenerative disorder of the human central, peripheral, and enteric nervous systems. Omega-3 fatty acids have anti-inflammatory effects and regulate apoptosis in various cells. The purpose of this study is to investigate the effect of docosahexaenoic acid (DHA) treatment on apoptosis in the gastric tissue in 1-methyl-4-phenyl-1.2.3.6.-tetrahydropyridine (MPTP)-induced Parkinson's model.
METHODS: Adult male C57BL/6 mice were randomly divided into three groups as follows (n=30 for each group): 1) Control; 2) Parkinson; 3) DHA+Parkinson. DHA was given to the DHA+Parkinson group for 30 days (36 mg/kg/day) by gavage. On the 23rd day of DHA treatment, the animals of Parkinson and DHA+Parkinson groups were intraperitonealy injected with MPTP four times at a 2-hour interval. After 7 days of MPTP injection, open field, pole, and rotarod tests were used to evaluate motor parameters. The animals were dissected and gastric tissues were removed. Apoptosis by TUNEL method, cellular changes by image analysis, the level of TNF-α and histamine by enzyme immunoassay were measured in the gastric tissue. The data were analyzed statistically by Anova.
RESULTS: In all animals treated with MPTP, all motor parameters were found to be decreased ($p<0.05$), and DHA administration prevented the disturbances in the motor parameters ($p<0.05$). In the Parkinson group, the apoptotic changes ($p<0.001$), the number of mast cells ($p<0.001$) in the submucosal layer of the stomach wall, the histamin release ($p<0.01$) and also, the level of TNF-α ($p<0.01$) significantly increased in the stomach. DHA showed a protective effect against MPTP-induced apoptosis ($p<0.001$) and prevented the increase in the levels of TNF-α ($p<0.05$) and histamine ($p<0.05$) and the number of mast cell ($p<0.001$) in the gastric wall.
CONCLUSION: DHA treatment reduced apoptosis and mast cell accumulation in gastric tissue due to MPTP-induced Parkinson's disease.

PC079

Apelin Contributes to Stress-induced Changes in Large Bowel Motor Functions Through CRF-independent Neuronal Paracrine Pathway

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AIM: In rodents, restraint stress (RS) is known to stimulate the production of intestinal corticotropin releasing factor (CRF), colon transit (CT) and fecal expulsion. Apelin and APJ receptor are widely expressed in alimentary canal, furthermore, accumulating evidence suggests the stimulatory effect of stress on intestinal apelin. The aim of this study was to investigate whether RS alters apelin production in colon and whether endogenous apelin mediates RS-induced changes in colonic motor functions.
METHODS: CT was measured in male Wistar rats loaded with RS for 90 min. CT was spectrophotometrically quantified by geometric center of phenol red solution given through a chronically implanted tubing into cecocolic junction. APJ receptor antagonist F13A (100µg) and/or CRF antagonist astressin (50µg) was intraperitoneally administered 30 min prior to RS. Distribution of APJ receptor-immunoreactive cells was detected in coronal sections, whereas co-expression of enteric neuronal marker PGP 9.5 with apelin was demonstrated in colonic whole-mount preparations.
RESULTS: Compared to non-stressed rats (4.1±0.1; n=5), RS significantly accelerated CT (6.2±0.2; $p<0.01$, n=7), which was partially attenuated ($p<0.05$) by astressin (4.9±0.2; n=8) or F13A (5.3±0.7; n=9). RS-induced acceleration was completely restored in rats injected with both antagonists (4.3±0.3; $p<0.01$, n=8). APJ receptor-immunoreactive cells were detected within myenteric and submucosal plexi and muscularis externa layers. Coexpression of PGP 9.5 and apelin was detected in the myenteric plexus which was observed more pronounced in RS-loaded rats.
CONCLUSION: These results suggest that following stress, apelin released from enteric neurons alters large bowel motor functions through a CRF-independent paracrine mechanism.

PC080

Hypothalamic Orexin-A Contributes to the Stress-induced Increased Fecal Output

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AIM: Stress exposure stimulates the production of corticotropin-releasing factor (CRF) in hypothalamic paraventricular nucleus (PVN) which in turn influences gastrointestinal (GI) motor functions by altering autonomic signaling in brain. In rodents, acute restraint stress (ARS) was shown to accelerate colonic motility and fecal output. Central orexin-A (OXA) is known to mediate central autonomic pathways, furthermore, OXA-producing cells reside mainly in lateral hypothalamic area (LHA), while its receptor OX1R is present in PVN. However, it is not clear whether hypothalamic OXA plays a role in stress-induced and CRF-mediated changes in lower GI motor functions.
METHODS: A total of fifty male Wistar albino rats (12/14-week-old) were separated into five groups;

1.Control, 2. ARS, 3. ARS+α-helical-CRF9,41, 4. ARS+SB-334867, 5. ARS+α-helical-CRF9,41+SB-334867. In rats, an intracerebroventricular cannula was stereotaxically implanted into lateral ventricle 7 days before the experiments. CRF receptor antagonist α-helical-CRF9,41 (10 nmol/5 µl) and/or OX1R antagonist SB-334867 (100 nmol/5 µl) were centrally injected in rats subsequently underwent ARS for 90 min. Following stress, rats were euthanized and brains were dissected after fixation. Immunohistochemistry was performed for detection of the reactive cells for OXA or CRF in hypothalamic sections.
RESULTS: Compared to non-stressed (NS) rats (0.6±0.2), the fecal output was significantly increased by ARS loading (6.6±0.2, $p<0.01$). The ARS-induced increased fecal output was partially attenuated by α-helical-CRF9,41 (3.2±0.5, $p<0.05$) and SB-334867 (4.1±0.8, $p<0.05$), whereas it was completely restored (1.8±0.3, $p<0.01$) to the NS level in rats received both antagonists. In PVN, the number of CRF-immunoreactive cells was remarkably increased following ARS, which was significantly decreased by pre-administration of SB-334867. Likewise, ARS-induced increased number of OXA-immunoreactive cells in LHA was reduced by α-helical-CRF9,41.
CONCLUSION: These results suggest a reciprocal hypothalamic connection between PVN and LHA by OXA- and CRF-producing fibers, respectively. However, these two peptidergic fibers seem to project visceral brainstem regions through independent pathways.

PC081

Effect of Salusin-α and Salusin-β on Liver Damage Following the Renal Ischemia/Reperfusion

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AIM: In ischemia reperfusion (I/R) damage, other organs may also be damaged together with ischemic organ. Following renal I/R, the liver has clinic importance as the target organ. Salusin-α and salusin-β are expressed in many tissues including the central nervous system, vessels and kidneys. The protective effects of salusin-α and salusin-β against cardiac and kidney I/R damage established, but its effect on renal I/R induced liver damage has not been investigated. The present study investigates the effect of salusin-α and salusin-β on the liver damage after renal IR.
METHODS: 300–350 g male Sprague Dawley rat were divided into six groups (n=53): control, I/R, I/R+salusin-α1, I/R+salusin-α10, I/R+salusin-β1 and I/R+salusin-β10. After removing the right kidney, the left kidney was subjected to ischemia for 1 h and reperfusion for 23 h. The treatment groups were injected subcutaneously at the beginning of ischemia with 1 or 10 µg/kg salusin-α, and 1 or 10 µg/kg salusin-β. After 23h, all rats were sacrificed. The liver samples were processed by routine tissue techniques and embedded in paraffin. 5µm thick sections of tissues were cut, mounted on slides, stained with Hematoxylin-Eosin (H-E) and examined under a Leica DFC280 lıght microscope by Leica Qwin and Image Analysis System.
RESULTS: In control group, liver tissue showed normal histological appearance. In the liver tissues of I/R group, showed disruption of radial arrangement of hepatocytes from central vein, vascular congestion, necrosis, sinusoidal dilatation, mononuclear cell infiltration, hemorrhage and eosinophilic stained pyknotic cell nuclei cells. These histological changes significantly decreased in I/R+salusin-α 1 µg/kg, I/R+salusin-α 10 µg/kg, I/R+salusin-β 1 µg/kg, I/R+salusin-β 10 µg/kg groups, especially salusin-β groups ($p<0,05$).
CONCLUSION: In this empirical study, we demonstrated that Salusin-α and salusin-β have Histopathologically protective effect against hepatic injury induced by renal I/R injury. Further research is required on the subject.

PC082

The Effects of Erdosteine and Vitamin D on Liver Damage After Renal Ischemia Reperfusion

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AIM: It is reported that renal ischemia/reperfusion (I/R) injury is not only limited to the ischemic organ (kidney) but also causes damage to other organs. Liver injury is reported as a remote organ after kidney I/R. We aimed to evaluate the histopathological and biochemical effects of erdosteine (Erd) and vitamin D (VitD) on liver damage on rat renal I/R injury.
METHODS: In this study, 40 male Wistar albino rats were assigned into five groups (for each n=8): Sham, I/R, Erdosteine (50 mg/kg/day, p.o., 7 days) + I/R, vitamin D (500 IU/kg/day, p.o., 7 days) + I/R and Erdosteine (50 mg/kg/day, p.o., 7 days) + vitamin D (500 IU/kg/day, p.o., 7 days) + I/R. The left kidney of animals in ischemia/reperfusion groups were subjected to ischemia for 60 minutes followed by reperfusion for

24 hours. At the end of applications, blood samples and liver tissues of animals were taken for histopathological and biochemical evaluations.
RESULTS: An increase of perinuclear vacuolization, irregularity in hepatocyte cords, leukocyte infiltration, and sinusoidal dilatation was observed in I/R group as compared to the other groups (Mann-Whitney test; p>0,05), although it did not reach the statistical significance. The total anti-oxidative status (TAS) was not statistically significant (Mann-Whitney test; p>0,05); however, it was found that total oxidant status (TOS) and oxidative stress index (OSI), which is expressed as TAS/TOS, increased in I/R group in comparison to the other groups (one-way ANOVA; p<0.05). Additionally, a significant increase of aspartate aminotransferase (AST) and alanin aminotransferase (ALT) was observed in I/R group as compared to other groups (respectively one-way ANOVA; p<0.05 and Mann-Whitney test; p<0.05).
CONCLUSION: Against renal ischemia/reperfusion-associated oxidative hepatic injury, individual or in-combination administrations of erdosteine and vitamin D have found to alleviate the hepatic injury, but mono- or combined therapies were not superior to each other.

PC083

The Cytotoxic and Genotoxic Effects of Parietin Isolated from Rheum Ribes on Human Colon Adenocarcinoma Cells (HT-29)

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AIM: Colon cancer, the third most common cause of cancer-related deaths in the world, is the most encountered type of cancer in both men and women. Parietin isolated from ışkın (Rheum ribes L.) exhibits antimicrobial, anti-inflammatory, antioxidant and anticancer properties. Cytotoxicity and genotoxicity tests have an important role in the assessment of heritable and carcinogenic risks. In this study, it is aimed to investigate the cytotoxic and genotoxic effects of parietin on human colon adenocarcinoma cells (HT-29)
METHODS: HT-29 cells were cultured in appropriate culture medium and parietin was administered at dose range of 25-1000 µM. The cytotoxic effect of parietin on HT-29 cell line was measured by XTT method according to time and dose dependent manner. its genotoxic effects were also determined by the Comet Assay. The obtained data were statistically evaluated by Student's t-test.
RESULTS: In this study, the IC50 of parietin was found as 300 µM in HT-29 cells at the 24th hour of XTT assay. According to the "Comet" method, the DNA tail intensity and DNA tail moment s were measured as significantly higher and the head density was measured as significantly lower in parietin treated cell groups with respect to control group (p<0.01).
CONCLUSION: In this study, it has been shown that parietin has cytotoxic and genotoxic effect in HT-29 cells, and as a result, it has been concluded that parietin alone or in combination with other drugs may be useful in the treatment of colon adenocarcinoma.

PC084

Effects of S-nitrosoglutathione on Intestinal Ischemia Reperfusion Injury-Induced Oxidative Stress and Lung Injury in Rats

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AIM: Intestinal ischemia-reperfusion (I/R) occurs in a variety of clinical disorders such as shock, vascular surgery, organ transplantation and strangulated hernias. It induces a local and systemic inflammatory response that may cause remote organ injury. I/R injury results from oxidative stress caused by increased reactive oxygen and nitrogen species. S-nitrosoglutathione (GSNO),a nitric oxide donor, is produced by the reaction of nitric oxide with glutathione (GSH) in the presence of oxygen. GSNO has anti-inflammatory, antioxidant and neuroprotective properties in various animal models. In this study we investigated the effect of GSNO on the intestine and lung tissues of rats after intestinal I/R injury.
METHODS: Ischemia was induced by superior mesenteric artery occlusion for 30 minutes followed by reperfusion for 3 hours. Rats were divided to three groups (n=8). Sham operated control, I/R control and GSNO-treated I/R group. GSNO was administered (0,25 mg/kg) intravenously via tail vein before reperfusion. At the end of the experiment, intestine and lung samples were collected for measuring levels of malondialdehid (MDA), GSH, and myeloperoxidase (MPO) as well as histological analysis and immunohystochemical measurement of NF-kB. One-way analysis of variance (ANOVA) was applied for statistical comparison of groups, followed by analysis with the Bonferroni test to determine differences between the groups.
RESULTS: I/R injury aggrevated MDA and MPO levels and histopathological injury in both tissues

(p<0,05). GSNO-treatment decreased MDA levels and improved histopathological injury in the tissues (p<0,05). MPO levels in intestinal tissue decreased after the treatment (p<0,05). GSNO did not change GSH levels of both tissues. I/R was induced expression of NF-kB in intestine. Immunohystochemical expression of NF-kB was attenuated by GSNO-treatment in intestinal tissue (p<0,001).
CONCLUSION: Treatment with GSNO provided protection against oxidative damage and histopathological changes in the intestine and lung injury induced by intestinal I/R.

PC085

Effects of Resveratrol on In Vitro Stomach Smooth Muscle Contraction in Rats with Hepatocellular Carcinoma

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AIM: Hepatocellular carcinoma (HCC) is the fifth most common cancer in the world. Resveratrol is a polyphenol that has antiinflammatory, antiproliferative, antitumoral effects. There are studies on relaxant effects of resveratrol in various smooth muscles such as aorta, gallbladder, corpus cavernosum. In this study, we aimed to determine the effect of resveratrol on gastric smooth muscle contraction in HCC.
METHODS: 3 groups were formed using Wistar albino male rats: 1) Control Group (n=8) were injected 0.9 % NaCl intraperitoneally once daily for 80 days. 2) Diethylnitrosamine (DEN) group (n=8), DEN (100 mg/kg) was injected intraperitoneally once per week for 9 weeks and HCC was generated. 3) DEN+Resveratrol group (n=8), following DEN administration, resveratrol (100 mg/kg/day) was injected intraperitoneally for 14 days. Animals were sacrificed under anesthesia, then the stomachs were removed and placed in Krebs solution. The liver was histopathologically examined for tumor formation and HCC was detected. 2 x 10 mm strips were prepared longitudinally from each animal's stomach smooth muscle tissue. Muscle strips that applied 2 g tension were washed with 15 minute intervals and allowed to equilibrate for 1 hour in isolated organ bath. Then, contractions were induced by 10-5 M acetylcholine (Ach). Spontaneous contractions, Ach-induced contractions, and 10 minute plateau amplitudes of muscle strips were recorded. One way ANOVA was used for statistical evaluation.
RESULTS: There was a significant increase in Ach-induced contractions in DEN group (3505.21±268.05) compared with control group (2440.32±268.05) (p<0.05). Spontaneous contractions (974.95±124.80), Ach-induced contractions (1741.17±268.05) and 10 minute plateau amplitudes (1468.85±234.17) of DEN +Resveratrol group were decreased compared with DEN group (1731.23±124.80; 2440.32±268.05; 2107.58±234.17) (p<0.05).
CONCLUSION: This study suggests that resveratrol has a relaxing effect in gastric smooth muscles of HCC-induced rats.

PC086

Antioxidant Effects of Persimmon (Diospyros Kaki L.) Against Ethanol-induced Gastric Ulcer in Rats

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AIM: Free oxygen radicals, lipid peroxidation, Helicobacter pylori, alcohol and non-steroidal anti-inflammatory drugs contribute to the development of gastric ulcer. Alcohol-related stomach ulcer is the main disturbance of the gastrointestinal tract. We aimed to investigate the effects of Persimmon (Diospyros kaki L.) fruits with antioxidative effects against ethanol-induced gastric ulcer.
METHODS: 32 Wistar albino male rats weighing 250-300 gr were divided into 4 groups (n=8/group). Group 1: Control; a normal diet was applied; Group 2: Ulcer group; Group 3: Persimmon extract (4 ml/kg); Group 4: Persimmon extract (8 ml/kg). Persimmon extract was applied to rats by oral gavage for 10 days. Fruit samples were prepared with homogenizer. In 11th day, Group 2, Group 3 and Group 4 were applied 5 ml/kg of 99% absolute ethanol by oral gavage and after 90 minutes the animals were sacrificed and stomach tissues were collected. MDA (malondialdehyde), GSH (glutathione), SOD (superoxide dismutase) were investigated by biochemical methods. Data were analyzed using the One-way ANOVA test.
RESULTS: Increased MDA level in the ulcer group decreased in persimmon applied groups (p <0.05). Decreased SOD and GSH levels in the ulcer group increased in the persimmon applied groups.
CONCLUSION: Persimmon extract has been shown to play a gastroprotective role against ethanol-induced gastric ulcer. Persimmon extract may be considered as a new potential natural method for gastric ulcer treatment.

PC087

Determination of Glutathione Reductase Enzyme Activity in Liver of Ischemia/Reperfusion Damaged Rats

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AIM: Glutathione reductase (GR) catalyzes the reduction of oxidized glutathione (GSSG) at the expense of NADPH. By maintaining a high ratio of [GSH]/[GSSG], the enzyme enables several vital functions of the cell such as the detoxification of reactive oxygen species as well as protein and DNA biosynthesis. The aim of this study was to determine the effect of ischemia/reperfusion (I/R) damage on rat hepatic GR enzyme.
METHODS: Control (n=8), sham (n=8), and I/R (n=8) are as follows: A total of 24 male Wistar albino rats weighing 250-300 g were randomly divided into three groups. Liver tissues were removed after bilateral I/R process. Tissue levels of enzyme activity of glutathione reductase (GR) were measured. Enzymatic activity was measured by using Beutler's method by using a spectrophotometer. The assay system contained 100 mM Tris-HCl buffer pH 8.0, including 0.5 mM EDTA, 3.3 mM GSSG and 0.1 mM NADPH.
RESULTS: Specific activity values were determined for GR enzyme at three different experimental groups. Groups were determined as follows: Control group 0.445 ± 0.013 EU/mg protein, sham group 0.311 ± 0.012 EU/mg protein, I/R group 0.284 ± 0.009 EU/mg protein. Activity value of I/R group decreased by about 34% compared to controls was observed that $p \leq 0.05$ is as meaningful.
CONCLUSION: As a result, the activity of the GR enzyme was determined to be mostly inhibited in I/R group among all applications. This result implies that GR enzyme activity, one of the most important antioxidant enzymes in I/R damaged rats, is lowered and the defense of antioxidants is weakened. This study has been supported by Ataturk University BAP (Projects no:2014/146).

PC088

Investigation of Kisspeptin Role in Experimental Kidney Ischemia/Reperfusion Injury

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AIMS: Ischemia/reperfusion injury is one of the most important causes of acute kidney injury. Kisspeptin, encoded by the KISS1 gene, has been reported to suppress to tumour metastasis and regulate of reproduction and has some vasoconstrictor effects. Kisspeptin has been also reported to play a role in renal function, development and aldosterone release. This study aimed to investigate the relationship between kidney functions, angiotensin II (ANGII), angiotensin converting enzyme (ACE) and aldosterone in patients with experimental renal ischemia/reperfusion injury.
METHODS: In our study, 16 male Sprague-Dawley rats in 300 - 350 gram of weight were divided into two group as control and ischemia/reperfusion. The midline incision was performed to the rats in both groups. The kidney vessels of group 1 rats were separated by dissection and the incision was closed after 60 minutes. Renal vessels of group 2 were separated by dissection and microvascular clamp was reperfused for 48 hours after 60 minutes of ischemia. The rats were sacrificed under anaesthesia after 24 hours urine collection. The blood samples were collected and the kidney tissue was removed.
RESULTS: While serum AST, ALT, urea, creatinine and ACE levels were increased ($p<0.01$), aldosterone and ANGII levels were decreased ($p<0.05$). Although, there was not any significant change in serum kisspeptin levels, kidney kisspeptin levels were decreased and urinary kisspeptin levels were found to be increased ($p<0.05$). While there was an increase in the urine Kim-1 levels and in fractional sodium excretion, the creatinine clearance was decreased ($p<0.05$).
CONCLUSION: Our findings showed that kisspeptin may be associated with physiopathology of the acute kidney injury and renal functions. We think that the mechanism of this relationship of the kisspeptin should be investigated in details.

PC089

Investigation of the Effects of Tetrahydrobiopterin and L-arginine on the Renal Function and Damage in the Physiopathology of the Experimental Myoglobinuric Acute Kidney Injury

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AIM: In the pathophysiology of Myoglobinuric Acute

Kidney Injury (MAKI), a decrease in the nitric oxide (NO) and free radical levels play an important role. We aimed to investigate the effects of Tetrahydrobiopterin (BH4), L-arginine, L-NAME (nitric oxide synthase, NOS, inhibitor) and BH4+L-arginine treatment on the free radical damage and NO mechanism in kidney.
METHODS: Spraque Dawley male rats were divided into 3 large groups (A, B and C) and each large group had 6 subgroups. (Control, AKI, AKI+BH4, AKI+Arginine, AKI+Arginine+BH4 and AKI+L-NAME, n=8, Totally=144 rats). The rats were deprived of giving water prior to 24 hours of saline injection for control and hypertonic glycerol injection for the other groups. The rats were euthanatized for the group A; 24 hours, group B; 48 hours and group C; 96 hours after the glycerol injection. The comparisons were made with The Mann Whitney-U Test.
RESULTS: Amongst subgroups of the controls and AKIs; there were an increase in the serum urea, creatinine, potassium, urinary Kidney Injury Molecule-1, renal MDA and oxidized glutathione levels and there was a decrease in the activities of endothelial, neuronal and inducible NOS activities, reduced glutathione levels ($p<0.05$). In the kidney tissue, BH4+arginine treatment increased eNOS activity and reduced glutathione levels in group A and decreased iNOS activity in the group A and C and it decreased the MDA level in group B. The BH4 treatment decreased the urea level in group B and the creatinine level in group C in serum ($p<0.05$).
CONCLUSION: It was observed that the BH4 and BH4+arginine treatment plays a protective role on antioxidant systems and renal functions at the different time periods of acute renal damage. BH4 and BH4+Arginine treatments are thought to have a potential to be tested in clinics against AKI following rhabdomyolysis.
This study is supported by TUBITAK (115S183).

PC090

Irisin as a Biomarker of Experimental Myoglobinuric Acute Kidney Injury

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AIM: Myoglobinuric acute kidney injury (MAKI) is an uremic syndrome that develops after a damage in the skeletal muscle cells. In this study, we aimed to investigate role of irisin which produced by the skeletal muscle, on physiopathology of experimental MAKI.
METHODS: In this study was approved by the ethics committee, 42 rats (170-200 g, male, Sprague-Dawley) were used. Control and MABH groups were divided into 3 subgroups 6, 24 and 48 hours. Rats were deprived of water for 24 hours. Control groups were given saline and MAKI groups were injected intramuscular 50% glycerol solution (8 ml/kg). The rats were euthanasised under anaesthesia for 6 (C6 and MAKI6), 24 (C24 and MAKI24), 48 (C48 and MAKI48) hours after glycerol injection. We examined kidney irisin expression immunohistochemically and plasma/urine irisin concentrations using an ELISA system.
RESULTS: There was a significant increase in plasma irisin levels between C48 and MAKI48 groups and between MAKI24 and MAKI48 groups($p<0.05$, $p<0.01$ respectively). There was a significant decrease in the urine irisin levels and kidney tissue irisin expression immunohistochemically between C24 and MAKI24 groups and between C48 and MAKI48 groups($p<0.01$). There was significant increase in the MDA levels between C6 and MAKI6, C24 and MAKI24 groups($p<0.01$). There was significant decrease in the eNOS activity between C24 and MAKI24, C48 and MAKI48 groups($p<0.01$). There was significant increase in the iNOS activity between C6 and MAKI6, C24 and MAKI24, C48 and MAKI48 groups($p<0.01$).
CONCLUSION: A time-dependent decrease in the renal function and increase in the histopathological damage were observed. While there was a decrease in the urinary irisin levels and kidney tissue immunreactivity, serum irisin levels were increased depending on the time basis. These findings support that irisin might be used as a diagnostic marker in the pathogenesis of MAKI.
This study is supported by TUBAP (2014/124)

PC091

Investigation of the Effect of Nifedipine on Kidney Carbonic Anhydrase Enzyme of Ischemia/Reperfusion Injured Rat

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AIM: Carbonic anhydrases (CAs) are a metalloenzyme that alternately catalysed the hydration of carbon dioxide and dehydration of bicarbonate. Several ion channel blockers have been shown to play

a role in CA activation or inhibition. In this study, the effects of nifedipine (calcium channel antagonism) on the activities in ischemia-reperfusion (I / R) injured rats of CA, which have been shown to have effects on many tissues such as blood, kidneys, nervous system have been investigated.
METHODS: A total of 24 male Wistar albino rats have been used in the study. The animals were randomly divided into 4 groups. Group 1 is the control group. Group 2 sham; right kidney was dissected. Group 3 I/R; right kidney was dissected, ischemia for 1 hour and reperfusion for 24 hours was applied to the left kidney. The surgical procedure in the 3rd group have been applied to the animals in Group 4 and 4 mg/kg nifedipine was applied intraperitoneally before reperfusion. Kidney tissues were removed after I/R process. Tissue levels of enzyme activity of carbonic anhydrase (CA) were measured. CA activity was determined by the esterase method which follows the formation of 4-nitrophenylacetate to 4-nitrophenol at 348 nm.
RESULTS: Specific activity values were determined for CA enzyme at four different experimental groups. Groups were determined as follows: Control group 0.318 ± 0.012 EU/mg protein, sham group 0.582 ± 0.014 EU/mg protein, I/R group 0.695 ± 0.023 EU/mg protein, and nifedipin + I/R group 0.828 ± 0.028. It was determined that the activity of the carbonic anhydrase enzyme increased the most in the nifedipine + I/R group.
CONCLUSION: The results of this study showed that the calcium channel antagonist, nifedipine has a role in increasing CA enzyme activity.

PC092

The Effects of Tarantula Cubensis Extract on Renal Ischemia/Reperfusion Injury in Rats

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AIM: Ischemia and reperfusion injury is a serious problem during surgery such as organ transplantation. It has been shown that post-ischemic reperfusion may cause ischemic organs at greater risk of cellular necrosis, thus restricting the return of function. Acute renal failure caused by renal ischemia reperfusion(I/R) injury is an important clinical problem leading to high mortality and morbidity. Currently, there is still no effective drug or method that is protective or therapeutic against I/R injury. In this study, protective effects of tarantula cubensis extract(TCE) against kidney I/R injury and oxidative stresses were investigated from important causes of damage.
METHODS: In our study we used 48 Sprague-Dawley female rats between 250-300g. There were 6 random groups of 8 animals in each group. The 1st group was the Control. In the 2nd group right kidney was dissected. In the 3rd group right nephrectomy was performed and left renal artery was subjected to 1 hour ischemia, 24 hours reperfusion. In the 4th,5th and 6th group subcutaneous ethanol, 40mcg/kg and 400mcg/kg TCE were administered on days 1, 4 and 7, respectively, the same surgical procedures were applied as in the 3rd group on day 7. Malondialdehyde (MDA), superoxide dismutase (SOD) and glutathione (GSH) levels were measured in kidney tissues. Histopathological examinations were performed.
RESULTS: Increased MDA and decreased GSH and SOD levels in the I/R group compared to the control group increased the MDA($p < 0.01$) and SOD($p < 0.05$) and GSH($p > 0.05$) levels in the high dose TCE treated groups. NF-κB and caspase-3 immunoreactivity elevated in I/R-treated groups decreased in TCE-administered groups.
CONCLUSION: In this study, TCE was observed to be an oxidative damage reducing effect. In addition, NF-KB plays a role in cytokine release and caspase-3 expression, a marker of cellular damage, is suppressed. These results have shown us that TCE reduces I/R damage.

PC093

Determining 8-Hydroxy-2'-Deoxyguanosine and MDA Levels in Female Patients with Overactive Bladder

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AIM: In this study, we aimed to explain the role of oxidative stress in the pathophysiology of OAB in female patients with overactive bladder, by investigating the levels of 8-OHdG, a marker of

oxidative DNA damage as well as the levels of MDA, an indicator of lipid peroxidation.
METHODS: A total of 90 subjects were included in the study, 45 female patients diagnosed with OAB at Hopa State Hospital Urology Polyclinic and 45 healthy women without any metabolic disease.Ethical approvals were obtained from Ordu University Clinical Research Ethics Committee for the study. MDA and 8-OHDG levels were measured in 24-hour urine as well as serum creatinine levels were measured in blood samples for all subjects.Analysis was performed using SPSS.
RESULTS: The serum creatinine, urinary MDA and urinary 8-OHdG of the OAB patient group were found to increase statistically significantly with respect to the control group ($p<0.001$). In our study, a significantly positive correlation ($r=1.00$; $p<0.001$) was determined between the measurements of 8-OHDG and MDA. There was a significantly positive correlation of 34.3% between age and creatinine ($p=0.004$).
CONCLUSION: In conclusion, 8-OHdG and MDA may play a role in the etiopathogenesis of OAB. Increased levels of 8-OHDG is probably to be due to the damaged nuclear and mitochondrial DNA as a result of oxidative attacks caused by free radicals.

PC094

The Effects of Gossypin on Renal Ischemia/ Reperfusion Injury in Rats: Histopathologic Study

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AIM: Ischemia and reperfusion injury is a serious problem during surgical procedure such as organ transplantation. Renal failure caused by renal ischemia reperfusion (I/R) injury is an important problem causing to high mortality and morbidity. Gossypin is an flavanoid isolated from Hibiscus vitifolius. It has antioxidant, antiinflammatory and analgesic properties. In addition, it has a neuroprotective activity against cerebral ischemia model in rats. The aim of this study is to investigate antiapoptotic and antiinflammatory effects of gossypin against renal ischemia reperfusion (I/R) injury.
METHODS: A total of 48 Wistar albino rats were used in the study. Group 1 is the control group. Group 2 sham; Right kidney was dissected. Group 3 I/R; After the right kidney was dissected, the left kidney was reperfused for 24 hours after an hour ischemia. Surgical procedure applied to 3rd group was also applied to the rats in 4th, 5th and 6th groups. Then, vehicle (DMSO, because gossypin was dissolved in DMSO),400 µg/kg gossypin and 4 mg/kg gossypin were administered to the rats before reperfusion in groups 4, 5, and 6, respectively. Caspase-3 and nuclear factor ƙappa-B (NF-ƙB) immunoreactivity were determined by histological scoring. RESULTS: Increased caspase-3 and nuclear factor ƙappa-B (NF-ƙB) immunoreactivity in kidney after I/R decreased with gossypin administration. CONCLUSION: I/R-induced apoptotic damage and the inflammatory effect of NF-ƙB in the kidney were suppressed by gossypin administration.

PC095

Determination of the Relationship Between Sperm Morphology and DNA Damage in Different Patient Groups

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AIM: The purpose of present study was to investigate the differences between sperm quality levels and DNA damage in semen samples obtained from healthy individuals (normozoospermic) accepted fertile and in cases of isolated oligozoospermia, isolated asthenozoospermia, isolated teratozoospermia and oligoastenoteratozoospermia, which have an important place in male infertility.
METHODS: The sperm samples from healthy individuals and patients diagnosed as isolated oligozoospermia, isolated asthenozoospermia, isolated teratozoospermia, oligoastheoteratozoospermia in separated groups including 20 individuals who applied to HUMA Tube Baby Center (Kayseri-Turkey) were used. Firstly, the number of sperm samples, mobility and sperm morphology (% normal sperm) were evaluated. The Alkaline Comet Assay method was used to determine DNA damage. The One-way ANOVA and the independent variable Tukey HSD tests were used for the statistical analysis.
RESULTS: While sperm morphologies were the normal range (4% and over) in normozoospermia group, the isolated oligozoospermia and isolated asthenozoospermia groups were at 4% and no significant sperm morphology anomalies were found in these groups. In the isolated teratozoospermia and oligoastenoteratozospermia groups, normal sperm morphologies were at below 4%. Examined with Comet the sperm DNA damage findings were consistent with morphological evaluations. DNA

damage was lower than other groups (tail DNA 1.7%, P<0.05) in control groups, The DNA damage was lower in the isolated oligozoospermia (tail DNA 7.07%) and isolated asthenozoospermia groups (tail DNA 5.8%) than in the other groups (P <0.05). In the isolated teratozoospermia (tail DNA 12.1%) and oligoastenoteratozoospermia groups (tail DNA 10.8%), there was the highest DNA damage (P <0.05). CONCLUSIONS: As a result, we suggest that Alkaline Comet Assay method which is used to determine DNA damage can provide meaningful and valuable information to clinicians if used routinely.

PC096

Comparison of Cortisol Awakening Response, Estradiol and Progesterone Levels Between Normally Cycling and Premenopausal Women

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AIM: Menstrual factors, typically characterized by depression, anxiety and mood disorders, might be associated with hormonal fluctuations in cortisol and ovarian steroids (Gerrish, 2010). The purpose of this research was to investigate and compare the cortisol awakening response (CAR), estradiol and progesterone in normally cyclic and premenopausal women.
METHODS: Group I included healthy normally cycling women (n= 15, 18-30 years old) and Group II included healthy premenopausal women (n= 15, 41-50 years old) with irregular cycles. CAR was assessed by measuring salivary cortisol at 0, 15, 30 and 60 min immediately following awakening at menstrual and premenstrual stages of the menstrual cycle. Additionally, saliva samples taken at 60 min were also compared for progesterone and estradiol levels. Salivary cortisol, estradiol and progesterone were analyzed by ELISA method.
RESULTS: CAR was higher during menstrual and premenstrual stages of menstrual cycle in premenopausal women (p<0.001). Estradiol was significantly elevated during premenstrual stage in premenopausal women (p<0.000), however progesterone was significantly elevated during menstrual stage (p<0.01) in normal cyclic women (p<0.001).
CONCLUSION: Increased CAR in premenopausal woman may result from modulation of hypthalamo-pituitary-adrenal (HPA)axis. The changes in ovarian steroids release during premenopausal period may support the homeostatic balance of person by reorganizing the HPA axis.
Supported by TUBİTAK (Project # 115S949), Türkiye. Reference: Gerrish MKB, Lustyk WG. (2010). Premenstrual syndrome and premenstrual dysphoric disorder: issues of quality of life, stress and exercise, Handbook of Disease Burdens and Quality of Life Measures, pp. 1951–1975.

PC097

Effects of High fructose Corn Syrup Application on Testicular Weight and Oxidant/Antioxidant System - Role of Melatonin

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AIM: The role of melatonin on oxidative damage that occurs in the testis tissues while long time intake of high-fructose corn syrup (HFCS) was investigated.
METHODS: Thirty six male Sprague Dawley rats (150- 200 g) were randomly divided into three groups with each group containing twelve rats. The groups include HFCS, HFCS + Melatonin treatment and control. In the HFCS group, rats was given to the rats at a ratio of 20% of F55 corn syrup in drinking water for 10 weeks. Melatonin treatment was given to the rats at a dose of 10 mg/kg/day orally for the last 6 weeks. At the end of the experiment, the rats were decapitated. Testicular tissue was removed for evaluation of testicular weight and the oxidant / antioxidant system. The results were evaluated by Anova ve posthoc Tukey HSD.
RESULTS: There was no significant difference between groups when testicular weight was compared. Epididymal weights were significantly lower in the melatonin treated group than in the control and HFCS groups (p<0.001). MDA was increased significantly in the HFCS group compared to the control group (p<0.05). Melatonin reduced the MDA level compared to the HFCS group but the difference was not significant. CAT and SOD activities decreased significantly in the HFCS group compared to the control group (respectively; p=0.046, p=0.001). Melatonin increased SOD and CAT activities compared to HFCS group (respectively; p=0.04, p=0.001).
CONCLUSION: Chronic consumption of HFCS caused oxidative stress. Melatonin can reduce testicular damage by reducing oxidative stress.

PC098

Effects of Lipoic Acid on Testicular Cell Damage Induced by Experimental Varicocele Model

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AIM: The varicocele, which occurs in the testicular veins with backflow and causes dilation, causes regression in the development of the testis by progressive testis injury. In our study, we aimed to investigate the effect of alpha-lipoicacid (ALA) by inducing testicular damage with varicocele model in rats.
METHODS: In the study, 36 adult male Wistar albino rats were divided into 4 groups. Group 1:Control (C;n=9), group 2:Sham (S;abdomen was turned off without inducing varicocele model; n=9), group 3:testicular damage with varicocele (VTH;experimental varicocele model was induced;n=9), group 4: testicular damage with varicocele+ALA(VTH+ALA;100 mg/kg/day ALA was given intraperitoneal for 6 weeks after inducing experimental varicocele model;n=9). At the end of the study, rats were sacrificed and blood, testis tissues of the rats were taken for biochemical and histopathological analyzes. Kruskal-Wallis test was used for statistical analyzes. Values of $p<0.05$ were considered statistically significant.
RESULTS: In histopathological evaluations, a statistically significant difference was found between VTH group and control, sham, VTH+ALA groups when testicular tissues are evaluated with Johnsen scores ($p<0.001$,$p<0.001$,$p<0.001$,respectively;). While testicular injury induced by varicocele causes a decrease in the mean Johnsen scores by affecting spermatogenesis, it was seen that ALA treatment increased the Johnsen scores to the levels of control and sham with an increase in Johnsen scores in VTH +ALA group. Plasma TNF-α level was found significantly higher in the VTH group in comparison to other groups($p<0.001$). A statistically significant decrease in the level of TNF-αwas found in the VTH +ALA group compared to VTH group ($p<0.001$,$p<0.01$,respectively;).
CONCLUSION: Results of our study show that testicular tissue damage induced varicocele is similar to the inflammatory response. The administration of ALA, a potent antioxidant and anti-inflammatory agent, had effect in the healing of testicular tissue damage by reducing TNF-α levels and affecting spermatogenesis positively.
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Ethics consent: MKU-No: 2015/8-3

PC099

Duration of Menstruation Differ in Women Undertaking Physical or Mental Activity Based Education

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AIM: In women, the factors affecting length of menstruation are not fully known. Aim of the current study was to compare durations of menstrual cycle and menstruation in students undertaking either theoretical lecture based medical education or physical activity based sport sciences education.
METHODS: A questionnaire, consisting of height, weight, age, lengths of menstrual cycle and menstruation, was filled by 197 students of faculty of medicine and by 193 students in faculty of sport science. Students (n=50) using antidepressants, contraceptives and other drugs were excluded from the study. The data was analyzed by Student's t-test.
RESULTS: Students of faculty of medicine and sport sciences did not differ in terms of height and weight ($P>0.05$) but body mass index was higher in the students of the faculty of medicine. (20.5±0.2 ve 21.1 ±0.2; $P=0.013$). Length of the menstrual cycle was not also different in the students of two faculties (medicine: 29.5±0.3 days and sport sciences: 29.0±0.2 days; $P=0.425$) but duration of menstruation was longer in the students of faculty of medicine (6.0±0.1 and 5.5±0.1 days; $P=0.007$). There were no significant correlations between cycle length, duration of menstruation and body mass index($P>0.05$).
CONCLUSION: In this relatively larger study, longer duration of menstruation in women receiving mental activity based education than those of women receiving physical activity based education could be linked to exercise protocols normally included in the curriculum of faculty of sport sciences. Thus, it might be concluded that existence of exercise programs in the curriculum might cause a half-day decrease in the length of menstruation.

PC100

Autonomous Nervous System Activity Does Not Change During Menstrual Cycle in Young Women

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AIM: Human body is under the control of the autonomous nervous system (ANS) activity throughout the life. However, the changes in the activity of sympathetic and parasympathetic branches of this system are not well documented during the menstrual phases of women. Therefore, the aim of the current study was to assess, by heart-rate variability (HRV) measures, ANS activity during the phases of menstrual cycle in women.
METHODS: Young (age 18-22), normally cycling women (n=28) women volunteered to take part in the current study following ethical board consent. Menstrual cycles were divided into menstrual, follicular, periovulatory, luteal and premenstrual phases according to the literature. In order to calculate HRV, a 5-min electrocardiogram (ECG) was recorded from the participants in each of the phases. ECG data was recorded by Poly-Spectrum (Russia) and HRV was evaluated by Neurosoftsoftware (Russia). Time domain (SDNN, rMSSD, pNN50) and frequency domain (LF, HF and LF/HF) were analyzed by paired t-test. Data was presented as mean±SEM and $p<0.05$ was denoted as statistically significant.
RESULTS: Time domain and frequency domain parameters did not differ between menstrual, follicular, periovulatory, luteal and premenstrual phases ($p>0.05$). Mean values for SDNN, rMSSD, pNN50, LF, HF, LF/HFwere 47.0±1.6, 44.3±2.2, 22.3 ±1.8, 693±49, 790±102, 1.6±0.1, respectively.
CONCLUSION: Data show that autonomic nervous activity, as measured by HRV analyses, does not change throughout the phases of the menstrual cycle in young women. Moreover, the data implies that HRV analyses might confidently be used in women without any significant disturbing effects of phases.

PC101

The Activity and Reproductive Pattern of *Testudo graeca* in Cappadocia Region, Anatolia

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AIM: The Mediterranean tortoises *Testudo graeca* have a wide geographic distribution throughout Palearctic, Oriental and Ethiopian biogeographic realms. They occur under very different climatic and environmental conditions. They are categorized as ‘‘Vulnerable’’ by IUCN (International Union for Conservation of Nature) Red List because they are on the pressures of urbanization, agriculture, industry and pollution. The aim of this study was to determine the activity pattern and to observe certain reproductive behavior of this species in Nevsehir, Cappadocia Region in Anatolia.
METHODS: This study was carried out within 2012-2014 years in Nevsehir, Cappadocia Region in Anatolia. Tortoises were found by walking through the habitat and each sampled individual was sexed using morphological characteristics. 36 pairs were observed and all behaviors of the pairs were recorded. The reasons of their behaviors in mating periods were evaluated according to the knowledge in literature.
RESULTS: There were two active and two inactive seasons during the annual cycle in this area for *Testudo graeca*. The activity was terminated with hibernation between November-March; and was lessen with aestivation between May-September. The first mating period was in spring shortly after hibernation, and the second one was in autumn shortly beforehibernation.
Some females still in hibernaculum were forced to copulate by active males and just woke up females with mud remnant on their shells laid eggs after a few hours from mating in spring. Females lay one or two clutches with up to 8 eggs between April and June.
CONCLUSION: Both early egg laying and/or autumn mating can be explained with the existence of sperm storage and the disassociated reproductive pattern in which mating behavior is not associated with gonadal hormone secretion or spermatogenesis.
In conclusion, the data described here extend our knowledge about the activity and reproductive pattern of *Testudograeca* toanewarea.

PC102

Effect of Stem Cell and Exercise on Some Blood Parameters

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AIM: Stem cell applications is known to be used by many clinics because of its multipotents benefits. However different exercise applications have also different important effects on hematological factors. İn this study we aimed to identify the stem cell and exercise applications on blood-shaped elements.
METHODS: By taking an ethical decision, it was used 30 Spraque Dawley rats (250-280gr/12 weeks) and divided randomly to four groups; Conrol (C),Mesenchymal Stem Cell (MSC), Exercise (E) and Mesenchymal Stem Cell with Exercise (ESC) in this

study. During the experiment some physiological characteristics of all subject were determined daily and swimming exercise was done until exhaust to exercise groups during four week (10 seconds remain still was accepted by exhaust criterion). Mesenchymal stem cell obtained from GENKÖK were used via intramusculaire to the relevant groups. it was taken intracardiac blood for both the thrombotic and erythrocytes parameters after experimental phase. Data were evaluated in computer with ANOVA and student t test, significance level was taken as $p<0.05$. RESULTS: PLT and RDW levels, increases in ESC group according to C and E groups were statistically significant ($p<0.05$). MPV levels, the decreases in ESC were statistically significant according to SC and E groups ($p<0.05$). RBC levels, while the decreases of ESC group according to C, E and SC groups the increases of SC group according to C group were statistically significant ($p<0.05$). HCT levels, the increases of SC applied groups according to C and E were statistically significant ($p<0.05$). MCHC and RDW levels, the decreases of SC group according to E group were statistically significant ($p<0.05$).
CONCLUSION: Especially thrombotic factors must be evaluated because of the exercise program and stem cell application's effects on thrombotic and erythrocyte parameters.
This study was supported by approval of ERU Ethics Committee 14/148 decision and ERU-BAP TYL-2014-5270.

PC103

Six-Month Strength and Proprioception Monitorization of a Male Basketball Player after Reconstructive ACL Surgery

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AIM: Athletes who practice contact sports such as soccer, football and basketball are more susceptible to injure their Anterior Cruciate Ligaments (ACL) due to instantaneous loads on the knee joint. Our main aim was to monitorize the strength and proprioception differences longitudinally. Two parameters have been evaluated mainly; a)isokinetic strength, b)proprioception.
METHODS: The athlete is 23 years old (height: 172cm, weight: 76kg and training age: 13 years). He had a 3rd grade sprain which means a total rupture. For the reconstruction of his ACL, 1/3 part of the tendons of musculus gracilis and musculus semitendinosus have been harvested. Two tendons were looped to create a graft structure. Isokinetic strength values (concentric/concentric) were measured for knee flexion/extension by using Isomed 2000 isokinetic dynamometer (D&R Ferstl GmbH, Hemau, Germany). Both legs were tested in 60 d/sec (5 repetitions), 180 d/sec (10 repetitions) and 240 d/sec (10 repetitions) angular velocities. For proprioception evaluation, a simple angle reproduction test made for 120d knee angle while flex/ex. Measurements were taken within a month interval.
RESULTS: No statistic methods applied due to one participant. Maximum flex/ex torques of injured leg were 63/114 Nm for 60d/sec in the first test and increased to 132/238 Nm in the last test. It showed similar increments for 180 -240 d/sec and for non-injured leg as well. For proprioception evaluation, deviations at first test (during flexion:13, extension:18) decreased to normal level (during flexion:2, extension:1).
CONCLUSION: Low strength values of injured leg flexors could indicate a muscle rehabilitation process of the gracilis and semitendinosus due to tendon harvest.

PC104

Effect of Exercise Training on Nociceptive Response and β-endorphin Concentrations in Rats Under Hypertonic Saline- induced Myalgia

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AIM: The purpose of this study was to investigate the alterations of thermal nociceptive response, and the contribution of extracellular ß-endorphin (BE) concentration in the anterior cingulate cortex (ACC) in sedentary and exercise-trained rats under hypertonic saline (HS) induced myalgia.
METHODS: The study was approved by the Local Ethical Committee of Experimental Animals. Male Wistar rats were assigned to sedentary control (C) or exercise-trained (T) groups. T group was subjected to eight weeks of treadmill exercise, while C group received familiarization exercise. Myalgia was induced by an intramuscular injection into the right gastrocnemius muscle with a dose of 8%. Thermal nociception was measured by a hot plate device, and hind paw withdrawal latencies were recorded. All animals were implemented in a stereotaxic frame with a microdialysis probe positioned in the ACC. The artificial cerebrospinal fluid was pumped at a rate of 2.0 ml/min in awake, freely moving animals. Microdialysate was collected at 30-min intervals for two hours, and BE concentrations were measured in samples. RESULTS: Baseline withdrawal latencies of T and C groups were found to be 12,93, and 6,6 sec, respectively. The difference between the two groups

of latency values was found to be statistically significant ($p<0.001$). HS administration did not alter the withdrawal latencies in C or T group. Baseline BE levels of T group was found to be higher in comparison with C group ($p<0.001$). HS-induced myalgia resulted in a sharp increase in BE levels at the first microdialysate samples of two groups. Although the increase in BE levels following HS in T group was higher, it did not reach statistical significance.
CONCLUSION: Our results suggest that although exercise-training results an increase in nociceptive response and baseline BE release in the ACC, it does not alter the responses following hypertonic saline induced myalgia in rats.

PC105

Exercise and L-tyrosine Supplementation on Penicillin-induced Epileptiform Activity in Rats

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AIM: The aim of this study was to evaluate the effects of treadmill exercise and L-tyrosine reported a strong antioxidant on the frequency and amplitude of epileptiform activity in rats.
METHODS: A total 32 male albino Wistar rats were randomly divided into four groups as: the control (C), exercise (E), L-tyrosine (LT) and L-tyrosine+ exercise group (ELT). L-tyrosine supplementation was applied by gavage (500 mg/kg/day). Exercise and L-tyrosine administration was performed 5 days in a week for 10 weeks. According to specified protocol, the rats were submitted to running exercises at same time of each day for 70 days. The rats were then administered 500 IU penicillin into the left cortex by microinjector, and an electrocorticogram (ECoG) was recorded for three hours by using a Power Lab data acquisition system. The frequency and the amplitude of the ECoG recordings were analyzed as offline. The study was supported as a BAP project by Ondokuz Mayis Universities and was considered ethically appropriate (2016/36; OMU BAP, PYO. YDS.1904.16.003).
RESULTS: L-tyrosine administration more efficiently decreased the frequency of penicillin-induced epileptiform activity. In LT group, the frequency of epileptiform activity significantly decreased in the 70th minute and this remained significant until the end of the experiment ($P<.05$). In the ELT and E group, the frequency of spike decreased significantly in the 80th minute ($P<.05$). There was no statistically difference between the groups in terms of spike amplitude.
CONCLUSION: In the present study, it was investigated the effect of exercise and L-tyrosine supplementation on epileptiform activity. These data may contribute to epilepsy treatment strategies.

PC106

The Relation Between Maximal Fat Oxidation and Maximal Exercise Capacity in Young Male Sedentaries

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AIM: The identification of maximal fat oxidation period is the main point for the exercise prescriptions. The aim of this study is to compare the parameters at maximal fat oxidation and peak levels.
METHODS: Ten sedantery men were participated in this study. The subjects were at age of 28.60±3.27years, BMI 25.61±3.04kg/m2, height 178.43±6.42cm and weight 81.86±13.08kg. Maximal fat oxidation test (fatmax) was performed in the morning after 12hours of fasting, by using a treadmill and indirect calorimeter with an incremental test protocol which increases 1km/h at every 6minutes. In 10days' time, the subjects were took part in maximal exercise test (maxtest) with an increasing protocol of 0.5km/h at every 1minute. By the fatmax test, heart rate (HR), respiratory quotient (RQ) and oxygen consumption (VO2) were detected at maximal fat oxidation period. By maxtest, same parameters' peak levels were detected. Pearson correlation was used for statistical analysis.
RESULTS: By fatmax test, VO2, HR and RQ values at maximal fat oxidation period were 13.67±1.73ml/min/kg, 103.77±18.04beat/min and 0.82±0.04 respectively. These values were %57.6±8.5 of peak HR, %38.9±4.7 of peak VO2 and %69.8±5.7 of peak RQ. There was a positive correlation between peak HR value and HRvalue at maximal fat oxidation period (Pearson 0.675).
CONCLUSION: Maximal fat oxidation is defined as 40-70% of peak VO2 or maximal HR. But our study shows that fat oxidation can occur at lower exercise levels. Especially when the purpose is to control the weight, lower exercise levels can be preferred for the exercise prescriptions. More studies are needed to find out the right exercise periods for losing weight.

PC107

Effects of Pre-seasonal Trainings on Oxidative Stress and Nitric Oxide

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AIM: The nitric oxide (NO) radical reacts with other free radicals to prevent excessive accumulation of free radicals in tissues. While other free oxygen radicals are harmful at all concentrations, NO plays a role in the regulation of blood pressure and many important physiological events at low concentrations. From this point of view, this study was planned to determine the interaction of oxidative stress and NO with pre-season preparatory training.
METHODS: 12 athletes playing basketball at elite level participated voluntarily. The age, weight, and age of the athletes were respectively(1.92±7.02cm, 78.13±3.25kg and 21.1±0.6) years. Venous blood samples were taken from the study group and glutathione(GSH), nitric oxide(NO), malondialdehyde(MDA) levels and superoxide dismutase(SOD) activity were evaluated twice at the beginning and end of the training period.Blood samples were incubated for3-5minutes at room temperature for5-10minutes, then centrifuged at 3500 rpm for 5 minutes and the supernatant plasma was transferred to ependorf tubes and stored at -80°C until the day of analysis.
RESULTS: In the analysis of the obtained data, NO was high before the preparation period(27,55±6,24 U/ mL) and decreased statistically after the preparation period(19,21±4,95 U/mL) ($p<0,05$). In addition, preoperative values of antioxidant parameters were found to be SOD activity (147,79±43,11 U/gHb) and GSH(16,40±5,41 μmol/gHb), and after the preparation period(129,47±35,87 U/gHb) and 15.82±4.95 μmol/gHb), respectively. In addition, it was determined that MDA value, which is a marker of oxidative damage, is before the preparation period(5,86±1,83 nmol/ml) and after the preparation period(11,42±3,23 nmol/ml), and statistically significant decrease is detected($p< 0.05$).
CONCLUSION: As a result, antioxidant systems in the plasma are affected to a certain extent by regular exercise. The method, severity and duration of pre-season training of the athletes are thought to contribute to the correction of the long-term outcome of illuminating the mechanisms of action of antioxidant systems in cellular damage.

PC108

Measurement of Salivary Alpha-amylase Activity in Professional Archers by Two Different Methods

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AIM: Salivary alpha-amylase is a parameter being used in stress physiology to assess, non-invasively, the sympathetic nervous system activity. The aim of current study was to measure salivary alpha-amylase activity by two different methods (namely starch-iodine and chromogen methods) during awakening period and competition stage in professional archers attending a nationwide archery competition.
METHODS: Sixteen to twenty year-old elite male archers (n=7), competing with an Olympic bow and attending to the Turkish indoor championship, participated to the current study. The study protocol was approved by OndokuzMayıs University Clinical Research Ethics Committee (OMU-KAEK 2017/98). Salivary samples were collected immediately following waking up at 0, 30, 45 and 60 min on three sequential days of the championship (ranking, elimination and team shooting). In addition, during ranking and elimination days, salivary samples were collected at 30 and 15 min before shootings, at half-time, and at the end of the shootings. A total of 140 salivary samples were analyzed for alpha-amylase activity by two methods. The data was analyzed by generalized linear model and paired t-test.
RESULTS: There were individual differences in salivary alpha-amylase activity both during awakening period and competition stage. Additionally, in the same individual, there were differences between the days of competition. On the other hand, when mean alpha-amylase graphs were examined, there were no differences in awakening period or competition stage ($P>0.05$). There was a weak but statistically significant positive correlation between alpha-amylase activity (For linear regression: $R2=0.048$; $p<0.05$; For quadratic regression $R2=0.106$; $P<0.01$).
CONCLUSION: Individual and daily differences in alpha-amylase levels suggest that alpha-amylase is sensitive parameter. The weak but significant correlation between two tests is due to the principle of the tests. Starch-iodine test measures starch left following the activity of alpha-amylase, while the chromogen test measures a starch product as a substrate.
This study was supported by İnönüUniversityScientific Research Projects Unit with the number of 2015/82.

PC109

Determination of Substrate Utilisation Rate and Amounts During Low and Moderate Intensity Constant Load Exercise Test

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AIM: The carbohydrate and fat are the dominant substrate oxidized by the muscle for energy production during exercise. The aim of this study was to establish substrate utulisation rate and amount in low and moderate exercise intensities in healthy males.
METHODS: The study protocol was approved by the Local Ethics Committee. Eleven male (age: 20.8±1.9 yr, body mass index: 22.1±2 kg/m2) subjects performed an incremental exercise test (15 W/min) on a cycle ergometer. They randomly performed two constant load exercise tests (30 min), work load associated with anaerobic threshold (AT) (WAT, moderate intensity,) and 25% below AT (W<AT, low intensity) on different days. AT estimated from V-slope method. Substrate utilisation ratio was determined from respiratory quotient (RQ). Fat oxidation (FO) (1.67×O2 uptake – 1.67×CO2 output) and Carbohydrate oxidation (CHO) (4.55xCO2 output – 3.21×O2 uptake) were determined from the equations. Pulmonary gas exchange parameters measured breath-by-breath. The Mann-Whitney U test used to analyse data ($p<0.05$).
RESULTS: O2 uptake and work load were found to be 1.656±0.05 l/min and 97.5±4 W for W<AT, 1.824±0.08 l/min and 130±6 W for WAT and 3.104±0.10 l/min and 220±8 W for maximal exercise, respectively. RQ was 0.91±0.001 (71% CHO vs 29% FO) for W<AT and 0.90±0.001 (67% CHO vs 33% FO) for WAT ($p>0.05$). Amounts of FO and CHO were 0.2282±0.003 gr/min vs 1.5895±0.001 gr/min for W<AT and 0.3459±0.005 gr/min vs 1.9451±0.001 gr/min for WAT ($p<0.05$), respectively. CONCLUSION: Despite similar substrate utilisation rate, FO is 50% higher in moderate exercise intensity. Thus, AT enhance the amount of FO which is important.in clinical medicine.

PC110

Effects of Training Status on Ventilatory Efficiency During Incremental Exercise Test

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AIM: During exercise, minute ventilation (VE) to CO2 output (VCO2) ratio (VE/VCO2) is a valuable tool to assessing ventilatory efficiency. The lowest VE/VCO2 ratio above 34 is a prognostic criteria in patients, reflecting ventilatory inefficiency. There is no study evaluating the effects of training status of the subjects on VE/VCO2 ratio. The aim of this study was to comparatively investigate VE/VCO2 ratio in trained and untrained subjects during exercise.
METHODS: The study protocol was approved by the Local Ethics Committee. Ten trained (age: 19.8±0.4 yr; 46.5±1.17 ml/min/kg VO2peak/body weight) and 10 untrained (age: 21.2±0.6 yr; 35.6±0.6 ml/min/kg VO2peak/body weight) male subjects performed an incremental exercise test (15 W/min) on a cycle ergometer. Ventilatory and pulmonary gas exchange parameters measured breath-by-breath by using metabolic gas analyser system. The Mann-Whitney U test used to analyse data ($p<0.05$).
RESULTS: At the onset of the test, VE/VCO2 ratio was 32±0.6 for the trained and 32±1.6 for the untrained subjects. With increasing work load, VE/VCO2 ratio decreased to its lowest value at the anaerobic threshold 26.5±0.7 for trained and 26±1 for untrained and at the respiratory compensation point 27.5±0.7 for untrained and 26±0.9 for untrained subjects. Beyond the respiratory compensation point, it increased to 30±1.1 for trained and 30±1.3 for untrained subjects. All values were not statistically different between both groups.
CONCLUSION: The lowest VE/VCO2 ratio could be prognostic tool in patients but it cannot be used to evaluate the aerobic fitness status of the subjects, which was found to be similar lowest values in both trained and untrained groups

PC111

The Effects of One Session Upper Extremity Wingate Anaerobıc Power and Capacıty Test (Want) on Hemorheologıcal and Oxıdatıve Parameters

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AIM: The arm ergometry test, known as WAnT is often used for determining anaerobic performance. Although alterations of hemorheology (erythrocyte deformability and aggregation) and oxidative parameters were shown in response to acute exercise, it is unknown whether these are affected by upper extremity WAnT. The aim of this study was to investigate the effects of WAnT on hemorheology, total oxidant/antioxidant status (TOS/TAS), oxidative stress index (OSI).METHODS: The study comprised 14 sedentary healthy men (age 21,86±0,55 years, BMI: 23,71±0,38). Subjects turned the arm pedal at maximal speed against the weighed for percent body weight (%5) at arm-cycle ergometer (Monark 891E, Sweden). Blood was collected before and after exercise. Hemorheological parameters were determined by an ektacytometer. TOS/TAS were measured using commercial kit. Statistical comparisons were analyzed by paired samples t test and Wilcoxon test. $p<0.05$ values were accepted as significant.
RESULTS: Exercise induced decrement of erythrocyte deformability (3.00-30.00 Pa) and aggregation half time (t ½) (before exercise 3.22±0.33, after exercise 2.525±0.29, p=0.003) but increment of aggregation index (AI) (before exercise 56.23±2.26, after exercise 62.03±2.41, p=0.001) and TOS (before exercise 3.99 ±0.28, after exercise 4.81±0.50, p=0.034). The increment observed in AI is concordant with decrement in t1/2, indicate increment of aggregation. TAS and OSI were unaltered.
CONCLUSION: Our results demonstrate that, one session upper extremity WanT has adverse acute effects on circulation by reducing erythrocyte deformability and increasing aggregation in sedantery individulas. This should be kept in mind during WanT. Impairment of hemorheological parameters is in line with increment of TOS and may be explained by the oxidative stress-enhancing effect of exercise.

PC112

Comparison of Physical Fitness Level and Sportive Capacity Durations in Children of 6-10 Years Sporting Different Branches

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AIM: It is known that the morphological characteristics of the body and sport-specific athletic performances differ between the categories of different and same sport branches.This situation is important for the orientation of the athletes to the sport branches,the training of the small athletes and the performance of the elite athletes. In our study, it is aimed to compare the physical fitness and sporting ability of four different sports groups and sedentaries.
METHODS: The samples of study were total of 539 student aged 6 to 10 who were educated at Bolu Sports Provincial Directorate from 4 different branches(basketball N=296, football N=49, volleyball N=98, gymnastics N=45)and sedentary volunteers at the same age (N=47).Heath-Carter classification for somatotype determination and eurofit test battery for aptitude tests and Body Mass Index (BMI) for physical fitness parameters were used. SPSS24.00 package program was used for statistical analysis.
RESULTS: The mean age of the subjects participating study was 8,73±1.27. The mean BMI values of subjects were 18±2,58 basketballers, 17.60±2.97 volleyballers, 16.60±0.86 gymnasts, 17±3.02 footballer and 18,05±3.65 sedentaries. Distribution of somatotypes was determined basketballer endomorphic-mesomorphy,volleyballer balanced mesomorphy,gymnasts balanced mesomorphy,footballer endo-mesomorph,sedentaries endomorphic-mesomorphy structure.The total scores from the competence tests were found as 13,98±5,87 basketballers, 10,93±4,48 volleyballers, 14,62±4,55 gymnasts, 7,98±3,91 footballers, 4,64±2,08 sedentaries.
CONCLUSION: BMI, somatotype and fitness of the sports branch is important for the determination of the sport.In our study, these values were compared between the branches, basketball and volleyball groups had a correlation between BMI and ability scores ($P<0,05$). The distribution of somatotypes is compatible with the sports branch made to the literature. As a result, the reference values obtained from this study and the BMI values between the branches will help the experts to evaluate the somatotypes and talent status more accurately. This work was supported by Erciyes University Research Fund project by No. TYL-2016-6496.

PC113

Effect of Acute and Chronic Ellagic Acid Admınistration on Penicillin-induced Epileptiform Activity in Rats

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AIM: Ellagic acid (EA) is a flavonoid which presents in some of fruits and plant including pomegranate, nuts and apples. Aim of this study was to investigate effects of ellagic acid, which has been shown analgesic, antidepressant, antioxidant and anticancer effects, on experimental penicillin-induced epilepsy model electrophysiologically.
METHODS: In this study 94 adult male Wistar rats were used. After the rats were divided two main groups as acute and chronic, each group were separated into different subgroups as sham, control, only EA and 10, 50 and 100 mg/kg doses as EA. All of the substances were administered intraperitoneally except penicillin. When applying substances for 21 days to the chronic study group, in the acute study groups these substances were administered only before the epileptiform activity. Rats were anesthetized with 1.25 g/kg dose urethane intraperitoneally, the left part of the bone on cortex had been removed, and electrodes were placed onto somatomotor area. After recording five-minute basal activity in acute groups, EA was applied. After the 30 minutes administration of EA, intracortical penicillin was injected. In the chronic groups penicillin were applied intracortically and ECoG recording was taken 120 minutes more after the recording of 5 minutes basal activity. Latency time to onset of first spike-wave, spike-wave frequency and amplitude of epileptiform activity were analyzed as data.
RESULTS: There was no epileptiform activity in sham and only EA (non-induced with penicillin) groups. When both acute and chronic groups of 10 mg/kg, 50 mg/kg and 100 mg/kg of EA doses were compared to the control group, significantly increased the latency time to onset of first spike wave ($p<0,05$) and decreased the frequency and amplitude during 120 minutes were found ($p<0,05$).
CONCLUSION: The results of the present study show that administration of ellagic acid has antiepileptic effect in penicillin induced model of epilepsy in rats.

PC114

Heart Rate Variability (HRV) in Both Spontaneously Breathing and Ventilated Mice: Effects of Antiarrhythmics "Amiodarone and D-Sotalol" on ECG and HRV

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AIM: Disturbances of autonomic nervous system may be determined as changes in fluctuations of beat to beat (R-R) interval obtained from electrocardiogram (ECG). The spectral analysis of time series of R-R interval is defined to be heart rate variability(HRV). The question is "might some changes in HRV, reflecting autonomic nervous system activity, be interacted by Amiodarone and D-Sotalol which both are Class III antiarrhythmics possessing K+ channel blocking effects?" Here we assessed the HRV changes in anesthetized mice receiving these drugs.METHODS: Male BALB/c mice(n=48), weighting 20-25g, were anesthetized with Na-Pentobarbital(75 mg/kg,i.p.). And, ECG changes due to Amiodarone(50 mg/kg,i.p.) and D-Sotalol(2 mg/kg,i.p.) were assessed in spontaneous breathing and artificially ventilated animals. Frequency of artificial ventilation was 1.2Hz. Four minutes of ECG records were evaluated for HRV analysis.Frequency bands were adjusted as: VLF:0,00-0,15Hz,LF: 0,15-1,5Hz,HF:1,5-5 Hz. Proportional weight(%) of power spectrum densities(PSD) were evaluated as HRV.
RESULTS: In pre-drug experiments, different HRV was obtained between the ventilated and spontaneously breathing mice:Power of VLF was increased due to artificial ventilation as power of HF decreased but LF component was unchanged.Both antiarrhtythmics changed ECG parameters in spontaneously breathing mice as: Amiodarone shortened RR interval and prolonged PR,QT and QTc intervals, D-Sotalol also shortened RR interval and prolonged QT and QTc intervals.
HRV analysis in spontaneously breathing animals showed that D-Sotalol decreased power of VLF band and increased power of HF band but amiadarone decreased power of LF, increased power of HF band. Effects of D-Sotalol on HRV were disappeared in ventilated mice whereas effects of amiodarone on LF persist but on HF disappeared.
CONCLUSION: Artificial ventilation change HRV in anesthetized mice, obviously.D-Sotalol and Amiodarone changed HRV parameters, differently. Effect of D-Sotalol on HRV are disappeared due to artificial ventilation.As conclusion antiarrhythmics may modulate the HRV parameter via autonomic nervous systems in different mechanisms.

PC115

The Relationship Between Chiari Malformation Type 1 and Sleep Electrophysology

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AIM: Chiari Type 1 Malformation (CM1) is a craniovertebral junction pathology which is commonly observed in neurosurgical practice. CM 1's relation with sleep disorder have been shown in some cases. Furthermore in some surgically treated CM 1 cases, coexisting sleep apnea symptoms have been shown to be improved. The aim of this studys is to evaluate the neurophysiological changes of sleep activity, in CM 1 cases pre and postoperatively and consequently, the effect of treatment on the integrity of central nervous system.
METHODS: A group of voluntiers have been involved in this study (10 CM 1 cases, 8 women, 2 men, Ages 20-50, BMI:22,5-44). The two male voluntieers' had serious obstuctive sleep apnea syndrome. The volunteers sleep electrophysological studies have been performed preoperatively any 2nd month postoperatively. The operation procedures were similiar for all cases. Decompressive posterior craniectomy, C1 laminectomy and duraplasty. The volunteers' polisomnographıc recordings have been performed in Erzurum Regional Research and Training Hospital, Sleep and Electrophysiology Laboratory. The pre and postoperative recorindgs have been evaluated statistically using Paired sample t test.
RESULTS: The results revealed that, after surgical treatment sleep quantity, sleep efficinecy have been improved significantly.($p<0.05$). The durations of NREM stage 3 and REM periods have been significantly prolonged ($p<0.05$). The durations of NREM stage 2 have been shortened significantly ($p<0.05$).
CONCLUSION: There was no significant appearence between pre and postoperative NREM stage 1 durations.

PC116

Effects of Hyperbaric Air Environment on the P3 Response and Behavioral Performance

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AIM: Nitrogen narcosis is the most important factor limiting the depth and safety of diving. The cognitive changes first appear at 3 atmosphere absolute (3 ATA) of pressure. The earliest and most affected frontal lobe executive functions are learning, decision making, attention and concentration, and impaired neuromuscular coordination. The P3 wave is a well-known event-related potential (ERP) that is sensitive to cognitive processes and performance deficits in brain research. The aim of this study is to investigate the possible effects of a hyperbaric air environment in cognitive functions of amateur divers using ERPs.
METHODS: The all-male participants consisted of 12 healthy volunteer amateur divers (age range, 28±5 years). EEG was recorded from the participants while they performed auditory oddball task in hyperbaric chamber during preDive (1 ATA–sea level), deepDive (5 ATA–40 msw) and postDive (1 ATA-sea level) periods. Behavioral performance and P3 measures are compared between hyperbaric air conditions within participants. EEG signal was collected from 9 channels (F3, Fz, F4, C3, Cz, C4, P3, Pz, P4) according to the extended international 10/20 placement system. The differences in P3 amplitude and latency of ERP peaks were statistically analyzed using repeated measures ANOVA.
RESULTS: In deepDive and postDive conditions behavioral performance was significantly impaired (longer reaction times and more inaccurate responses) compared with preDive period. Correspondingly, P3 amplitudes were significantly attenuated (14.0±4.33; 9.7±4.56; 10.8±3.58, $p<0.003$, respectively) and peak latencies were prolonged (310.5±29.9; 339.9±34.7; 334.1±27.8, $p<0.007$, respectively) in deepDive and post Dive compared with preDive periods. However, there was no significant difference between in any measures from the deepDive and the subsequent post Dive periods.
CONCLUSION: Our preliminary findings provide brain electrophysiology data that indicates the transient mild cognitive decline induced by the hyperbaric air environment exposure that is comparable to recreational diving conditions.

PC117

The Role of AM-251 in the Anticonvulsant Effects of Hemopressin on Absence-like Seizures of WAG/ Rij Rat

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AIM: Cannabinoid system has an important role in epilepsy. Genetically epileptic WAG/Rij rats develop spontaneous absence-like seizures after 3 months of age. In this study, WAG/Rij rats were used to examine whether absence seizures are associated with the endogenous CB1 cannabinoid receptors agonist or antagonist hemopressin and synthetic CB1 receptor antagonist, AM-251.
METHODS: Tripolar electrodes were placed on skull to perform ECoG evaluation. Subsequently, following the recovery period, ECoGs were recorded at 09:00 am for 3 hours every day. Subsequently, hemopressin (0.030 and 0.6 μg) and AM-251 (0.125, 0.25 and 0.50μg) or the first or second agent containing 15 minute intervals were administered intracerebroventricularly (i.c.v). The total number, the total duration, the number of spikes per cluster and the amplitude of the spike-wave discharges (SWDs) were calculated offline in every ten minutes.
RESULTS: The doses of hemopressin (0.030 and 0.6 μg) and AM-251 (0.125 and 0.25 μg) reduced the total number, the total duration and the number of spikes per cluster of SWDs, while high dose of AM-251 (0.50 μg) significantly increased all parameters ($p<0.05$). The administration AM-251 (0.50 μg) + hemopressin (0.6 μg) showed the proconvulsant effect as seen in the presence of AM- 251. The administration hemopressin (0.6 μg) + AM- 251 (0.50 μg) showed the anticonvulsant effect as seen in the presence of hemopressin. The administration hemopressin (0.030 μg) + AM-251 (0.125 μg) did not cause any synergic effect.
CONCLUSION: Cannabinoids shows its effects through multiple channel and receptors systems, simultaneously. Therefore, it is difficult to reveal a certain mechanism for its effect on epilepsy. However, it might be concluded that the endogenous cannabinoid peptide ligands hemopressin, inhibited epileptiform activity through the CB1 receptor. This study supported by TUBITAK (Project number: 215S808)

PC118

The Role of CB1 Receptor Agonist ACEA in Inhibitory Effect of Hemopressin AgainstAbsence-like Seizures of WAG/Rij rat

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AIM: Many receptors and systems, including cannabinoid/endocannabinoid system are known to play a role in the pathogenesis of epilepsy. Hemopressin was identified as an endogenous nonapeptide that selectively binds CB1 cannabinoid receptors. In the literature, there is no evidence is available showing the effect of hemopressin on epilepsy. Hence, we aimed to determine possible interaction between the CB1 receptor inverse agonists or agonist hemopressin with the CB1 receptor agonist ACEA using effective and ineffective doses by using electrophysiological recording methods.
METHODS: Tripolar electrodes were placed on skull to perform ECoG evaluation. Following the recovery period, saline (1 μl), dimethyl sulfoxide (1 μl), hemopressin (0.015 and 0.6 μg) and ACEA(1.25 and 7.5 μg) were administered intracerebroventricularly (i.c.v). The total number, the total duration, the number of spikes per cluster and the amplitude of the spike-wave discharges (SWDs) were calculated offline in every ten minutes.
RESULTS: The administration doses of hemopressin (0.6 μg); ACEA(7.5 μg) reduced the total number, the total duration and the number of spikes per cluster of SWDs ($p<0.05$), without changing the amplitude. The administration non effective doses of hemopressin (0.015 μg) and ACEA(1.25 μg) together did not alter the all parameters ($p>0.05$).
CONCLUSIONS: These results indicate that the endocannabinoid system plays a role in the formation of absence seizures. Hemopressin behaves like a CB1 receptor agonist in absence-like epilepsy. Further studies are required to elucidate the certain mechanism of these effects.
This study supported by TUBITAK (Project number: 215S808)

PC119

The Role of CB1 Receptor Agonist ACEA in the Proconvulsan Effect of Hemopressin on the Penicillin-induced Epileptiform Activity

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AIM: Cannabinoid system plays a pivotal role in generation of epileptic seizures modulation which is mainly mediated through the cannabinoid CB1 receptor. Hemopressin is the first peptide ligand described for the CB1 cannabinoid receptor. The effects of hemopressin and CB1 receptor agonist (ACEA) and their interaction on the penicillin-induced epileptiform activity were studied.
METHODS: In this study, 42 Wistar albino male rats weighing 180-250 g were divided into 6 groups (n=7). For the electrocorticogram (ECoG) recording during experiments, the recording electrodes were placed into the skull of rats under urethane anesthetize and connected to the PowerLab data acquisition system. Epileptiform activity was induced with penicillin (500 IU, i.c.) injection. Hemopressin (0.030 and 0.6 µg) intracerebroventricularly (i.c.v.) and ACEA (2.5 and 7.5 µg) (i.c.v.) were administered 30 min after penicillin and recorded for the following 180 minutes.
RESULTS:Hemopressin (0.6 µg), increased the spike frequency whereas ACEA(7.5 µg) reduced the spike frequency of epileptiform activity without changing amplitude ($p<0.05$). The administration of hemopressin (0.030 µg) + ACEA (2.5 µg) non-effective dose of hemopressin (0.030 µg) + non-effective dose of ACEA(2.5 µg) did not alter either the spike frequency or amplitude of penicillin-induced epileptiform activity ($p>0.05$). The administration of effective dose of hemopressin (0.6 µg) and effective dose of ACEA (7.5 µg) together blocked the proconvulsant effect of hemopressin ($p<0.05$).
CONCLUSION: The results of the present study provide electrophysiologic evidence for the role of hemopressin on the modulation of epileptiform activity in penicillin-induced epileptiform activity.

PC120

The Role of NMDA Receptor Blocker Memamtine in the Effect of P2X7 Receptors on Penicillin-induced Epileptiform Activity

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AIM: Calcium ion channels have a significant role in epilepsy pathogenesis. When P2X7 receptors are stimulated, they cause calcium ions to enter the neuron. In addition, P2X7 receptor activation causes glutamate release resulting the stimulation of NMDA receptors. The relationship between P2X7 receptors and NMDA receptors was investigated in penicillin induced epileptiform activity.
METHODS: 16-18 weeks old Wistar male rats (n=42) were anesthetized with 1.25 g/kg urethane and tripolar electrodes were placed in their skulls through surgical procedure. Two holes were opened for intracortical (i.c.) and intracerebroventricular (i.c.v.) injection. 500 IU Penicillin-G potassium (i.c.) was injected and epileptiform activity was formed. İnterictal spike and wave discharges were observed through Powerlab Chart-7 software. P2X7 receptor selective antagonist A-438079 (20µg; i.c.v.), P2X7 receptor agonist BzATP (100 µg; i.c.v.), NMDA receptor blocker memantine (5 mg/kg; intraperitoneal), or their combinations were applied 30 minutes after spike activity.
RESULTS: A-438079 and memantine significantly decreased spike frequency in 50 min after their application ($p<0.05$), BzATP increased spike frequency in 20 min ($p<0.01$). A-438079 + memantine decreased spike frequency in 30 min ($p<0.05$), BzATP + memantine, did not affect either spike frequency or amplitude ($p>0.05$).
CONCLUSION: Memantine and P2X7 receptor antagonist A-438079 showed more anticonvulsant effect than their own effects. On the other hand, memantine suppressed prokonvulsan effect of BzATP. Therefore, it might be suggested that epileptic activity is reduced because of memantine blocks the NMDA receptor, then it prevents glutamate from binding to the NMDA receptor. Further studies are needed to determine molecular mechanism of these effects.

PC121

Effects of Different Doses of Propolis in Rats Which Were Formed Cold Stress on Anxiety to Investigate Sympathetic Skin Response and Elevated T Maze

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AIM: Propolis has been shown to have anti-microbial (1), antioxidant (2), anti-tumor (3), anxiolytic (4-6) and anti-inflammatory (2) effects. However, no studies on the anxiogenic effect of propolis have been found in the literature. In this study, we aimed to investigate the anxiety effects of different doses of propolis in cold stressed rats with sympathetic skin response (electrodermal activity) and elevated T maze.
METHODS: The control group was given propolis i.p. to the animals at low dose (PRO-10 mg / kg), medium dose (PRO-30 mg / kg) and high dose propolis groups (PRO-50 mg / kg). Twenty minutes after the injection, the anxiety scores of the rats were assessed by the elevated T maze and then the electrodermal activities (EDA) were measured.
RESULTS: Percentage of time spent on open circuit and open arm entry (ACGS) was lower in the low and medium dose groups ($p < 0,05$) compared to the control group and increased in the high dose group. The increase of AKG shows that anxiety and sympathetic activation decrease and anxiolytic effect. EDA is lower in control in the low, medium and high dose groups. When the experimental groups were evaluated among themselves, EDA was found to be lower in the high dose propolis group (tonic: $p < 0,05$; phasic: $p < 0,05$) and high in the low and medium doses ($p < 0,05$). The increase in anxiety-free tonic EDA and the increase in phasic EDA measured by stimulation showed an increase in anxiety.
CONCLUSION: According to the results obtained with EDA and T maze methods, low and medium dose propolis anxiety effect, whereas high dose propolis showed anxiolytic effect. The anxiety related responses of propolis is deduced that depend on its dose-related effect.

PC122

Intra-hippocampal L-thyroxine Infusion Precludes Synaptic Component of Depotentiation Following a Depotentiating Stimulus Given Short After a Tetanus

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AIM: Long-term potentiation (LTP) and long-term depression (LTD) are enduring changes in synaptic strength underlying of information storage in the central nervous system. The reversal of synaptic strength from the potentiated state to pre-LTP levels has been termed “depotentiation” and may provide a mechanism of preventing the saturation of the synaptic potentiation and increase the efficiency and the capacity of the information storage of the neuronal networks. It was showed that T4 can play a role in the modulation of bidirectional synaptic plasticity and can promote LTD over LTP via the integrin αvβ3 receptor.
METHODS: Field potentials composing of a field excitatory postsynaptic potential (fEPSP) and a population spike (PS) were recorded from dentate gyrus. Depotentiation was induced by delivering LFS (1Hz, 900 pulse) after HFS.
RESULTS: The synaptic component of plasticity, measured by the slope of the fEPSP, was potentiated by 143.0±12.9% of baseline 5-min after HFS and completely depotentiated by LFS to baseline levels (101.2±8.2% of baseline; $P = 0.015$), within 60 min after HFS in the saline group. In experiments in which T4 was infused before HFS, an attenuated induction of fEPSP-LTP (114.7±13.3%) was observed, although fEPSP slope was declined below baseline values (66.5 ± 13.6%; $P = 0.030$). In experiments in which T4 was infused after HFS, the fEPSP slope was potentiated by 128.6±15.3% of baseline 5-min after HFS and depotentiated by LFS to baseline levels (105.7±8.8% of baseline; $P=0.015$), The PS amplitude, the non-synaptic component of plasticity, was only significantly depotentiated by 101.5±17.1% of baseline (from 174.3±13.8% of baseline; $P=0.009$) in experiments in which T4 was infused before HFS.
CONCLUSION: The suppressive effect of T4 seems to be dependent on its application after amplification of synaptic strength and has ability to express depotentiation form of synaptic plasticity is reduced in experimental models of dysthyroidism

PC123

The Interdisciplinary Role of Sleep and Electrophysiology Laboratory " Patient and Physician Satisfaction "

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AIM: The purpose of this study is to expose a laboratory of the electrophysiological signal recording that the highly patient satisfaction and the services given to multiple medical branches according to diagnosis, treatment, prognosis and medical researches.
METHODS: The records belonging to our laboratory which has completed the estabilishment and development levels and has actively given service for last 3 years have been evaluated in regard to diagnosis, treatment prognosis, medical research service and patient-physician satisfaction. Medical branches benefitted from our laboratory were as follows: " Neurology, Ear Nose Throat, Dentistry, Psychiatry, Pulmonology, Cardiology, Pediatric Neurology, Internal Medicine, Neurosurgery, Endocrinology, Nephrology, Rheumatology." The patient groups diagnosed and treated in our laboratory were as follows: "Obesity, Morbid Obesity, REM Behavior Disorder, Sleep Disordered Breathing (Cenral Sleep Apnea Syndrome, Obstructive Sleep Apnea Syndrome), Restless Leg Syndrome, Rhythm Disorders, Epileptic Disorders,Insomnia and Headache, Hypersomnia, Narcolepsy, Secondary Hypertension". Specific research topics whose physiopathologic mechanisms have been wanted to be understand and which had been connected to sleep electrophsiology are as follows: " Body Mass Index, Obesity, Type II Diabetes Mellitus, Metabolic Syndrome, Mastication, Bruxism, Chiari Malformation, Bipolar Disorder, Anorexia Nervosa, Pediatric and Adult Narcolepsy, Migraine, İnsomnia, Adult Systemic and Pulmonary Hypertension, Pediatric Pulmonary Hypertension".
RESULTS: Studies in the laboratory have been published: "Europian Sleep Search Society-2014, World Sleep-2015, Sleep Spindles 2016."Our laboratory contains a physician room where our patients directly can apply to and can tell their sleep time complaints to the doctor; so the patients can become well-informed about each step of a specific test: "overnight sleep test". The results of the analysis are sahered with both the patients and the physicians.
CONCLUSION: Interpretation and understanding electrophysiologycal signals correctly show us interactions of body systems with sleep phsiology and disorders as a new area for patients and physicians, and integrated theraupetic approaches of these disorders.

PC124

Spinal Reflexes in Restless Legs Syndrome

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AIM: Restless Legs Syndrome (RLS) occurs at rest especially at night. It is a situation that causes the need to act with an unpleasant sensation in the legs. RLS of pathophysiology is not fully understood. This study is investigated to the role of presynaptic inhibition of the spinal cord in RLS.
METHODS: Case group (RLS patients; n=14) and control groups (n=14). Case group were administered International RLS Rating Scale. Subjects that is normal electrophysiological exeminations were performed H-reflex (Ht) examinations on soleus muscle.The Ht response was conditioned by stimulation of the common peroneal nerve (CPN) (Hc).The test and conditional stimulus interactions were maintained between 10 ms, 20 ms, 30 ms, 40 ms and 50 ms. At each interstimulus interval, repeated measures analysis was performed with% Hc / Ht. And than case and control groups Hc / Ht values were compared at the same intervals.
RESULTS: The mean score of the International HSS Assessment Scale of the case group was 28. In the control group, there was a significant decrease in the Hc values within the interstimulus interval of 10 ms and 20 ms in the repeated measurement values. In the case group there was no significant decrease at any interval. Significant differences were found in hc / ht ratios at 10 ms ($p = 0.03$) and 20 ms ($p = 0.03$) for the same interval intervals for the case and control groups.
CONCLUSION: In the control group, the decrease in h reflexes conditioned with peroneal nerve stimulation at 10 ms and 20 ms have been evaluated in favor of presynaptic inhibition. There was no decrease in the case group. This suggests that there is no presynaptic inhibition.This may be due to decreased dopaminergic effect in RLS. There is need for more comprehensive studies this topic.

PC125

Effects of Acute and Chronic Administration of Agomelatine on Oxidative Stress Parameters in Mice

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AIM: Agomelatine is a new antidepressant acts both as a melatonin-receptor agonist with high affinity and serotonin receptor antagonist with low sensitive. This study was designed to investigate whether agomelatine has antioxidant effects like melatonin. Oxidative stress parameters were evaluated following acute and chronic agomelatine treatment in male mice.
METHODS: Adult male Balb/C mice, weighing 30–35g, were obtained from Firat University Experimental Research Center (Elazig, Turkey). Mice received acute (for 1 day) and chronic (for 15 days) intraperitoneal injections of agomelatine (10 mg/kg) and vehicle (n=8 each groups). At the end of the experiment, glutathione (GSH), nicotinamide adenine dinucleotide phosphate (NADPH), catalase (CAT) and superoxide dismutase (SOD) enzyme activity were measured by ELISA in serum sample. All data were analyzed by using unpaired t test, $P<0.05$ defining statistical significance.
RESULTS: In the acute agomelatine treatment group blood levels of GSH, CAT and SOD were 452.1±16.8 mg/L, 38.0±3.2 ng/mL, 2.1±0.3 ng/mL and these levels were significantly lower than in the acute vehicle group which were 625.5±32.7 mg/L, 76.0±8.6 ng/mL, 4.4±0.6 ng/mL, respectively ($p<0.005$). Also in chronic agomelatine treatment group blood levels of GSH, CAT and SOD were 538.5±21.8 mg/L, 48.2 ±6.3 ng/mL, 2.8±0.6 ng/mL and these levels were significantly lower than in the acute vehicle group which were 714.9±32.6 mg/L, 69.6±3.9 ng/mL, 3.4±0.3 ng/mL, respectively ($p<0.01$). However, in acute agomelatine groups (673.8±45.1 pg/mL) and chronic agomelatine group (716.4±39.3 pg/mL), NADPH level did not differ to the vehicle groups (801.8±99.3 pg/mL and 869.9±35.1 pg/mL).
CONCLUSION: Data from this study demonstrated that both acute and chronic administration of agomelatine causes alterations in oxidative stress parameters in healthy mice.This study was supported by TUBITAK Project # 115S290.

PC126

Effects of Anesthesia and Blood Sampling Techniques on Plasma Glucose and Insulin Levels in Rats

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AIM: Blood is routinely sampled from laboratory animals in most of the scientific research, and commonly applied techniques require anesthesia. Anesthetics used or blood sampling techniques can confound the results, but those effects are not known precisely. The aim of this study was to investigate the effects of ketamine-xylazine and isoflurane anesthesia, besides tail incision and cardiac blood sampling methods on plasma glucose and insulin levels in rats.
METHODS: 15 minutes after giving intraperitoneal ketamine-xylazine (90 mg/kg ketamine/5-10 mg/kg xylazine) (n=11) or sevoflurane inhalation anesthesia (5% as O2 flow 0.9) (n=12) blood samples were taken from male Wistar rats with tail incision. After 90 minutes, blood samples were taken again from both tail incision and cardiac puncture. Glucose levels in blood samples were measured by test strips and insulin levels were measured by ELISA.
RESULTS: In both groups, plasma glucose levels measured at 90th minute were higher than 15th minute ($P<0.0001$). This difference was observed in both blood samples taken from tail and the heart ($P<0.01$) but blood glucose levels were higher in blood samples taken from heart ($P<0.0001$). Plasma glucose levels were higher in ketamine-xylazine group than in sevoflurane group ($P<0.05$). There was no difference in insulin levels measured at 15th minute between groups, while insulin levels increased in both groups at 90th minute ($P<0.0001$) and it was observed that glucose was higher in the ketamine-xylazine group ($P<0.05$).
CONCLUSION: Ketamine-xylazine anesthesia increased plasma glucose and insulin levels more than sevoflurane anesthesia. In addition, it was observed that plasma glucose level measured by cardiac puncture, which is one of the frequently used methods of blood collection, was higher than that of blood from the tail. For this reason, it is necessary to be careful about selected anesthesia and blood collection methods especially in animal studies where metabolic parameters are examined.

PC127

Effects of Alpha Lipoic Acid Learning Behaviors and Histological Examinationon Brain Tissue on Diabetic rats

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BACKGROUND-AIM: Neuropathy due to diabetic complications leads to deterioration of cognitive functions caused by structural and functional impairments in brain tissue. We aimed to elucidate the mechanism of neuropathy in streptozotocin (STZ) induced diabetic rats and to investigate the effects of the use of Alfa Lipoic Acid (ALA) on brain tissue from biochemical histological and physiological aspects.
MATERIALS / METHODS: Four Wistar albino male rat controls, STZ, ALA and STZ+ALA, were divided into four groups.50 mg/kg a single dose of STZ was administered intraperitoneally to induce diabetes, and after 72 hours, rats with a blood glucose level above 200 mg/dl were divided into diabetic groups.ALA was orally administered daily for six weeks at 100 mg/kg / day. Cognitive functions were evaluated by MWM during the last week of treatment. Brain tissues of the sacrificed rats were divided into hippocampus, cortex, hypothalamus and striatal structures for histological and oxidant-antioxidant parameters.
RESULTS: The changes in cognitive functions assessed by Moris Water Maze (MWM) were deteriorated according to the control and ALA groups in the STZ group, whereas the results were improved according to the STZ group in the STZ+ALA group ($p<0.05$). According to histological histopathologic findings of light and electron microscopic findings, some of the light microscopic and ultrastructural damage and degeneration findings in STZ group were significantly decreased in STZ+ALA group. Total antioxidant levels in ALA group were increased compared to diabetic groups. In diabetic group, oxidant level is statistically higher than control and ALA groups.
CONCLUSION: The oxidant-antioxidant balance in the rat brain tissue caused by STZ induced diabetes mellitus causes cognitive dysfunction due to structural deterioration in nerve cells. Although ALA has no effect on blood glucose levels in diabetic rats, it has been effective in antioxidant and neuroprotective effect and correction of cell damage and cognitive functions in brain tissue.

PC128

The Effect of Carvacrol on Viability/Apoptosis Rate of Isolated Langerhans Islets In Vitro

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AIM: Pancreatic islet transplantation is an alternative treatment of insulin replacement therapy in diabetes mellitus, but the islets are exposed to many chemical, mechanical damages, and oxidative stress before transplantation. Many antioxidant agents werestudied to protect the islets in tissue culture before. Carvacrol is an essential oil which has antimicrobial, antifungal, analgesic, antioxidant and antiinflammatory properties.The aim of this study was to investigate the possible protective effects of carvacrolagainst cellular injury on isolated pancreas islets in tissue culture for 48 hours.
METHODS: The pancreatic islets isolated from 3-4 months-old-female wistar albino rats and seperated 6 groups. Control, DMSO and 4 carvacrol groups(incubated within 0,1-1-10-100 µg/mL carvacrol containing medium at tissue culture for 48 hours). The examples of islets (0., 24.,48. hours) were examined with fluorescein diacetate and propidium iodide mixture stains for viability. The glucose stimulation of insulin secretion (GSIS) was examined 3 times (0., 24.,48. hours) for each groups. A number of islets were stored at -80°C for western blot analysis to examine caspase-3 activity as an apoptosis marker. Samples were subjected to gel electrophoresis and transferred in to nitrocellulose membranes. Immunoblotting was performed using antibodies against caspase-3 and β-actin and then secondary antibodies. ANOVA was used for statistical evaluation of the difference between groups and variance analysis was used for repetetive measurments.$P<0.05$ was considered as significant.
RESULTS: We found that carvacrol treatment(at 1 and 10 µg/mL) protected islets for 48 hours in tissue culture but not istatistically significant. High dose of carvacrol(100 µg/mL) was toxic for the islets.
CONCLUSION: We conclude that carvacrol is toxic for the isolated islets in tissue culture at high doses but et low doses there is no difference with control.
This project was supported by Hacettepe University Scientific Research ProjectUnit (Project Number: 8/49.

PC129

The Effects of the Adropin Hormone on Orexigenic and Anorexigenic Neurons

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AIM: The neuropeptide Y (NPY)/agouti-related protein (AGRP) neurons, and the proopiomelanocortin (POMC)/ cocaine and amphetamine related transcript (CART) neurons in the arcuate nucleus of the hypothalamus have key roles in the regulation of energy balance. Activation of the NPY/AGRP neurons has an orexigenic effect, promoting food intake, whereas the POMC/CART neurons have the opposite anorexigenic effect. Adropin is a recently identified protein encoded by the energy homeostasis-associated gene identified during an investigation of obese insulin resistant mice as a novel factor linking with metabolic homeostasis. In this study, we investigated the effects of adropine hormones on orexigenic and anorexigenic neurons at different doses.
METHODS: A total of 40 Wistar albino rats (8 months old, male) have been used in this study. The animals have randomly been separated into 4 groups as the 1st group being control group, 2nd group being Group sham, 3rd Group being 4µg/kg Adropin (intraperitoneally) and 4th Group being 40µg/kg Adropin (intraperitoneally). Animals were sacrificed 10 days after adropin administered and their hypothalamus was collected. Expression levels of NPY/AGRP and POMC/CART neurons in the arcuate nucleus on the hypothalamus were determined by immunohistochemical histological scoring.
RESULTS: When compared with the control group; Adropin administration increased the expression levels of AgRP and NPY neurons and decreased the expression level of POMC neurons.
CONCLUSION: This study shows that adropine hormone has effects on feeding behavior at the level of hypothalamus.
This study has been supported by Ataturk University BAP (Projects no:2015/39-2015/281).

PC130

Obesity: A Problem That Grows Like an Avalanche

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AIM: To examine the hospital charts related to age, gender and eating habits of our over-weight outpatients in order to pinpoint the factors that may be linked to obesity.
METHODS: After receiving approval from our hospital administration, we have collected hospital charts related to age, gender and eating habits of the outpatients of Sports Physiology clinic between November 2015 and October 2016 from the hospital information technology office. There were 2115 outpatients during that period 1514 of which were females and 601 males. Young group was examined as under 7 years and 11-17 years' age group. Adults were divided into five groups in five year blocks. When we split these numbers according with their ages we noted the following: 114 females and 23 males aged between 25 to 30; 156 females and 32 males aged between 30 to 35 years; 207 females and 25 males aged between 35 to 40; 189 females and 48 males aged between 40 and 45; 131 females and 44 males aged between 45 to 50; 108 females and 41 males aged between 50 to 55; 58 females and 10 males aged between 55 to 60; and 45 females and 15 males over the age of 60. The groups that contained 35-40 and 40- 45 years had the highest density of obesity.
RESULTS: When examining the causes for obesity, we have noted that the most common factor for obesity was irregular eating habits such as missing a meal.
CONCLUSION: Obesity is increasing in Turkey as in the rest of the world. Although it is well-established that obesity is caused by multi-factorial factors, our study indicated that the most common reason for obesity is the irregular eating habits. Providing this information to patients and their families will increase awareness in the fight against obesity.

PC131

The Effect of Treadmill Exercise Training on Depression and Anxiety-like Behaviors in Obese Male Rats

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AIM: The aim of this study was to investigate the effects of treadmill exercise training on obesity-induced depression and anxiety in high fat diet (HFD) induced male rats.
METHODS: Spraque-Dawley male rats were randomly divided into 4 groups after they were weaned:control, exercise, obese and obese+exercise. Obese groups were fed with HFD until the 16th week and then exercise groups were given exercise for 6 weeks. Forced swimming test (FST) and tail suspension test (TST) for depression model and light/ dark test (LDT) and open field test (OFT) for anxiety model were conducted in the rats.
RESULTS: Immobility time (floating) was reduced significantly in obese + exercise group compared to obese group in FST ($p<0.05$). In TST, a decrease in the immobility duration was observed in the obese + exercise group, but it was not statistically significant when compared to obese group. In LDT, the time spent in the light area was increased significantly in the obese + exercise group were compared to the obese group ($p <0.05$). In OFT, the number of rearing and crossed lines was increased significantly in the obese+exercise group were compared to the obese group ($p <0.05$).
CONCLUSION: Based on the results of this study, it has been shown that exercise is likely to have a beneficial effect on anxiety and depressive behaviors due to obesity induced by HFD. The results of this study provide new insights into the effects of exercise on obesity-related behavioral changes. Exercise has healing effects on obesity-induced anxiety and depression.
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PC132

The Effect of Hesperidin and Quercetin on Some Proinflammatory Cytokines in Diabetic Rats

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AIM: Diabetes mellitus (DM) is a common metabolic disease accompanied by inflammation. Hesperidin and quercetin are anti-inflammatory properties flavonoids. In the present study, it was aimed to investigate the effects of oral hesperidin and quercetin administration on immunomodulator and some biochemical values in experimental diabetic rats.
METHODS: In the study, 40 male Wistar rats weighing 200-250 g were used. The rats were divided into 4 groups (n = 10). Groups were formed as control (K), diabetes mellitus (DM), DM + hesperidin (HES, 100 mg/kg) and DM + quercetin (Q, 100 mg/kg). The aqueous suspensions of Q and HES were administered via oral gavage for 15 days. The Project was approved by Ethics Committee (protocol 03-1/2016). At the end of the study, serum tumor necrosis factor (TNF-α), interleukin-6 (IL-6) levels were measured with ELISA. In addition, body weight, serum MDA, GSH, HDL-C, LDL-C, insulin and glucose levels were assessed. SPSS 13.0 statistical program was used for data analysis, distribution of variables was used Kolmogorov-Smirnov test and ANOVA test was used for comparison of groups. $P<0.05$ was considered significant.
RESULTS: Serum TNF-α levels were found reduce in the DM group ($p <0.05$) compared to the control group, and high in the DM + HES and DM + Q groups when compared to the DM group ($p <0.05$). When compared with the control group, serum IL-6 of the DM group was low. Serum GSH levels were not statistically significant both of DM + HES and DM + Q groups compared to DM group ($p> 0.05$). Serum glucose and LDL-C levels were significantly lower groups of DM + HES and DM + Q compared to the DM group ($p <0.05$).
CONCLUSION: The data of this study showed that hesperidin and quercetin may be effectively involved in regulation of glucose metabolism in diabetic rats.

PC133

Seasonal Vitamin D Levels of Persons Admitted to Family Medicine

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AIM: The major role of vitamin D in the body is maintaining calcium, phosphate levels by regulating intestinal absorption and it also has pro-apoptotic, anti-inflammatory and immunomodulatory effects. Over a billion people are vitamin D deficient or insufficient in the world population. We aimed to determine the prevalence of vitamin D deficiency and to evaluate the vitamin D levels of patients who admitted to family medicine according to age, sex and season.
METHODS: Vitamin D levels of persons who admitted to Family Medicine between 2012 and 2017 were retrospectively studied. SPSS 20 (Mann-Whitney U, Kruskal-Wallis and Pearson's Chi-Square Test) was used for data analysis and p-values <0.05 were considered statistically significant.
RESULTS: Data of total 4227 patients (80.44% female, 19.56% male) were analyzed. Vitamin D levels is considered as; <10 ng/mL severe deficiency, <20 ng/mL deficiency, <20-30 ng/mL insufficiency, >30 ng/mL sufficient and >150 ng / mL intoxication. Vitamin D levels were as follows: 24.56% ≤10 ng/ mL, 31.89% between 10 ng/mL and 20 ng/mL, 22.03% between 20 ng/mL and 30 ng/mL, 21.53% >30 ng/mL and 0.57% >150 ng/mL in our findings. Vitamin D levels were found low in 77.5% of females and 82.3% of males. The percentage of persons with sufficient vitamin D levels in post-winter and autumn seasons was 19.1% and 26.1%, respectively (p<0.001).
CONCLUSION: As a result, 80.9% in the post-winter and 73.9% in autumn period vitamin D levels were below the normal levels. Our results show that vitamin D levels are significantly lower in our population.

PC134

Investigation of the Serum Visfatin, Fetuin A and Eotaxin Levels in Patients with Type 2 Diabetes Mellitus

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AIM: Some adipokines secreted from adipose tissue have been found associated with obesity, insulin resistance and type 2 diabetes. One of these adipokines is visfatin. Eotaxin is produced by the immune system cells and may be related to insulin resistance and diabetes. Fetuin A is secreted from the liver that it may be associated with these diseases. However, the results of the research are not enough to explain the relationship of these diseases with visfatin, eotaxin and fetuin A. in this study we examined the possible relationship these parameters both diabetes and between them.
METHODS: The study was carried out in 30 T2DM patients with varying ages between 47-83 and 20 healthy volunteers control subjects. According to the body mass index 30 patients were divided into two groups; non-obese diabetic patients with 18.50<BMI <24.99kg/m2 (n=6) and the other group obese diabetic patients with BMI≥25kg/m2 (n=24). In blood samples taken after fasting for about 12 hours BUN, creatinine, AST, ALT, fasting serum glucose, HbA1c, fasting serum insulin, TG, total cholesterol, HDL-C, LDL-C levels and serum visfatin, eotaxin and fetuin A levels were measured by ELISA method. Mann-Witney U test obtained for comparisons between groups of data, Spearman's test were used for correlation analysis.
RESULTS: Serum visfatin levels are higher than controls in both obese and non-obese diabetic patients, the differences between the patient and control groups were statistically significant (p<0.05). Serum eotaxin levels in both diabetic groups were significantly higher than their controls (p<0.001, p<0.05). A significant positive correlation were determined between serum visfatin and eotaxin levels in obese controls (p <0.05). There were no significant differences between patient and control groups in terms of serum fetuin A levels.
CONCLUSION: Our results have shown that visfatin, eotaxin and fetuin A may play a role in pathogenesis of the obesity and type 2 diabetes.

PC135

Cytokines and Biochemical Parameters in rats Challenged Neonatally with Lipopolysaccharide and Fed Long-term with Fat-based diet

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AIM: High-fat diets are reported to increase leakage of the intestinal microbial motifs into the circulation and to cause log-term low grade inflammation. Aim of this study was to immunize the rat pups against bacterial motif of Escherichia coli (i.e.

lipopolysaccharide), a common intestinal bacterium, and to investigate the effects of high fat (HF) feeding on biochemical parameters and cytokines.
METHODS: Rat pups (Spraque-Ddawley; female, n=32; male, n=32) were injected (i.p.) either 50 µg/kg Escherichia coli cell wall constituent (lipopolysaccharide, LPS) or saline solution in the postnatal days 7, 13, 19. Following weaning, they were divided into two groups and were either offered standart chow or high fat diet (%10 animal fat, %1 cholesterol and %2 sugar into the standart diet) until day 150. All animals were decapitated, organs (liver, thymus and kidney) were weighed and blood samples were removed for TNF-alpha, IL-1 beta, CRP, IFN-gamma, IL-4, triglyceride, VLDL and cholesterol analyses. Cytokine concentrations were measured by enzyme immunoassay. Data were analyzed by General Linearized Models (GLM) and an alpha level of $p<0.05$ was accepted as significant.
RESULTS: Liver, thymus and kidney weights were higher in males and in HF groups ($p<0.05$). Cholesterol, VLDL and triglycerides levels were higher in females and in HF groups ($p<0.05$). Serum concentrations of TNF-alpha, IFN-gamma and IL-1 beta did not differ between the groups ($p>0.05$). Serum concentrations of IL-4 was higher in females and MCP-1 was higher in males and CRP was higher in LPS groups ($p<0.05$).
CONCLUSION: indicate that (İ) HF successfully increased organ weight, blood cholesterol and triglyceride levels, that (ii) early life bacterial immune challenge affected CRP, and that (iii) sexually dimorphic effect is observed on IL-4, MCP-1, cholesterol and triglyceride.
This study was supported by TÜBİTAKSBAG (project #111S440),Turkey.

PC136

The Influence of Pentabrominated Diphenylether 99 on Progesterone Secretion by Bovine Luteal Cells

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AIM: This study was set up to investigate the influence of pentabrominated diphenylether 99 (PBDE 99) known as an endocrine disrupting compounds and used as a flame retardant, on luteal progesterone secretion in cows.
METHODS: Luteal cells isolated from midluteal luteal corpora lutea by enzymatic process, seeded to 6-well plate as $3x10^4$ cells/well. After the first 24 hours, the medium was replaced with every 48 hours with fresh medium containing the doses of PBDE 99 at 0, 0.1, 0.3, 1, 3 µM and incubated until 120 hours. Progesterone was measured from the collected media at hour 96 and 120. Data were assessed by one-way ANOVA with repeated measures and Tukey.
RESULTS: Doses of PBDE 99 at 0.1 and 0.3 µM significantly increased progesterone secretion at 96 hours of incubation ($p<0.001$). At the same incubation time, 3 µM PBDE 99 significantly reduced progesterone synthesis ($p<0.001$). While the highest progesterone production was observed at 0.1 µM, doses of 1 and 3 µM significantly suppressed the progesterone secretion at hour 120 ($p<0.001$). At 0.3, 1 and 3 µM doses of PBDE 99, the level of progesterone significantly decreased at hour 120 as compared to hour 96 ($p<0.05$).
CONCLUSION: In the present study, it was shown that steroidogenesis of bovine luteal cells in midluteal phase was disrupted by stimulating effect of PBDE 99 on progesterone production in low doses (0.1 and 0.3 µM) even this effect reduced in time and suppressing progesterone synthesis in high doses (1 and 3 µM). Consequently, it is thought that these negative effects of PBDE 99 may disrupt the estrus cycle and cause of serious reproduction problems.
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PC137

Investigation of Effects of High-calorie Diet on Vascular Functions, Using a "Postoclusive Reactive Hyperemia-laser Doppler Flow Technique" in ARat Model

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AIM: Since obesity causes many health problems, it became one of the most important diseases in this century. One of those health problems is atherosclerosis which causes vascular stenosis. However, it is not clear whether obesity causes any changes in vascular function, even before the development of atherosclerosis. In the study, we investigate possible effects of obesity on vascular functions using "Postoclusive Reactive hyperemia-Laser Doppler Flow Technique (PORH-LDFT)".
METHODS: 6 male, 20 weeks old, Wistar albino rats were fed with high fat-carbohydrate mixture for 20 weeks to make them obese. We excluded the rates from the study whose body mass index (BMI) were not 30. 9 rats were fed with standard diet, and

accepted as a control group. In anesthetized rats, right front foot brachial arteries have been subjected to temporary occlusion for 2 minutes with the help of a sleeve. Occlusion responses of the two groups, caused by reactive hyperemia, were obtained using PORH-LDFT method and analyzed statistically by Mann Whitney U test.
RESULTS: There was no statistical difference in terms of resting flow (control group: 93.9±52.5, obese group: 59.1±21.2, p=0.157), peak flow (control group: 271±147, obese group: 264±151, p=0.906) and POHR index (control group: 1.66±0.45, obese group: 2.46±1.34, p=0.289), between two groups.
CONCLUSION: Based on the results of this study, we did not observe any difference in response on the veins of the high-calorie diet fed rats. These results suggest that, atherosclerosis must occur to be formed functional changes in vascular tissue.

PC138

Ghrelin-Induced Alteration of Fatty Acid Profile in Adipose Tissue of Septic Rats

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AIM: Energy demands increase during the initial phase of sepsis and is mainly provided by lipid mobilization and oxidation. Lipolysis is elevated in septic patients. In clinical studies exogenous ghrelin increases plasma glucose and free fatty acids. Administration of ghrelin increases adipogenesis and lipogenesis, but decreases lipolysis. We aimed to show the effects of ghrelin on fatty acids in adipose tissue of rats treated with Lipopolysaccharides (LPS) during sepsis.
METHODS: This study was conducted at the Istanbul University Experimental Research Center. Male Wistar albino rats 200-250g were separated into four groups; Control (n=8), LPS (5 mg/kg), (n=8) Ghrelin (10 nmol/kg i.v.) (n=8), and LPS+Ghrelin (n=8). The rats were sacrificed 24 h after the 1st injection, adipose tissue was removed for analysing fatty acids. After methyl esters of fatty acids were exracted n-hexane, these methyl esters were separated by gas chromatography and measured via the flame-ionization detection system (Shimadzu GC 2010). The calculation of fatty acids were accounted as percent of each fatty acid in sum of fatty acids with using GC Solution 2,3 Software Program. Statistical significances between the groups were tested with one-way ANOVA and Tukey tests.
RESULTS: There was no significance Myristic acid levels in groups ($p>0.05$). Although Palmitic and Arashidonic acids were increased in Ghrelin and LPS groups, it was closer to controls in Ghrelin+LPS group ($p<0.05$). According to the total saturated fatty acids, there were decreaments in Ghrelin and Ghrelin + LPS groups. In experimental groups of total monounsaturated fatty acids were decrased. Polyunsaturated fatty acids were increased in experimental groups compared to controls ($p<0.05$).
CONCLUSION: Ghrelin administration did not have the protective effect on fatty acids, total saturated and unsaturated fatty acid profiles except palmitic and arachidonic acid in septic animals, and Ghrelin treatment did change substantially fatty acids profile composition compared to control rats.

PC139

Beneficial Effects of Melatonin on Energy Metabolism in Septic Lung Tissue

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AIM: Melatonin, which is secreted by the pineal gland, is well known for being a potent free-radical scavenger, powerful antioxidant, and as a regulator of mitochondrial bioenergetic function. There are scarce studies about the effects of melatonin on energy metabolism in lung tissue during sepsis. We aimed to researched the impacts of melatonin on energy levels in lung of septic rats.
METHODS: The study was approved by Istanbul University Local Ethics Committee for We divided Male, Wistar Albino rats into 4 groups, control (n=8), lipopolysaccharide (LPS) (n=8) melatonin (n=8), melatonin + LPS (n=8). The LPS group received i.p. 20 mg/kg, as a single dose. The melatonin group received a total of 30 mg/kg in 3 i.p. doses of 10 mg/kg Melatonin was injected i.p. 30 min

before and after the 2nd and 4th hours of LPS injection. Creatine, creatine phosphate, adenosine triphosphate (ATP), adenosine diphosphate (ADP), and adenosine monophosphate (AMP) levels were investigated using high performance liquid chromatography (HPLC) in lung tissue. Overall statistical significances between the groups were tested with one-way ANOVA or Tukey tests.
RESULTS: In Melatonin+LPS group, Creatine levels was decreased compared to other goups ($P<0.01$). Creatine phosphate levels were decreased in LPS group compared with the control group ($P <0.05$). There were no signicifancy AMP levels among experimental groups ($P>0.05$). In Melatonin+LPS group, ADP levels was increased compared to other groups ($P<0.01$). In addition, In Melatonin+LPS group, ATP values (3,11 µmol/g); were increased compared with the LPS group (1,05 µmol/g) ($P < 0.05$).
CONCLUSION: Our findings showed melatonin treatment protected energy levels in lung tissue by increasing aerobic energy production

PC140

Usage of Alpha-amylase Measurement Methods in Saliva Analyses

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AIM: Salivary alpha-amylase enzyme is a biomarker used to measure sympathetic nervous system activity. The aim of current study was to compare the available alpha amylase methods for its measurement in the saliva.
METHODS: In this study, starch iodine test, chromogen substrate CNPG3 (2 chloro-4-nitrophenly-alpha-D-maltotriosid) test and dinitrosalicylic acid (DNS) test were established to measure alpha-amylase in saliva. However, the DNS test was not used in the current study as it involved impractical steps involved, e.g. boiling, and as the standard curve generated was not able to detect alpha-amylase in the samples. Starch iodine and CNPG3 tests were compared to each other in terms of incubation time, optical range and duration of color development, dynamic range, number of steps, dilution level, total duration of test, optical density and cost.
RESULTS: The optical range was between 0-4,000 and the color formation was quick in the starch iodine method while optical range was between 0-0,800 and color formation was slower in the CNPG3 method. When dynamic ranges were examined, starch-iodine was in the range of 0.05-3 IU and CNPG3 was in the range of 3-16 IU. The stages of tests were similar and included an average of 6 steps. In the starch-iodine method, saliva was diluted 4000x while CNPG3 method it was diluted 5x. The total duration of the test was 2 hours in the starch-iodine method and 3 hours in the CNPG3 method. The color formed by starch-iodine method was read at 580 nm spectrophotometer and the cost per sample was 1.81 TL. In the CNPG3 method, the color was read at 405 nm and the cost per sample was 5.09 TL.
CONCLUSION: Starch iodine and CNPG3 tests are cheap, easy and quick to run and both seems to be suitable for measuring alpha-amylase activity in the saliva.
This study was supported by İnönü University Scientific Research Projects Unit with the number of 2015/82.

PC141

Oxidative Status and Varicocele: The Effect of Lipoate

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AIM: Varicocele is the most common cause of male infertility which notably can be restored with surgical intervention. Even though there is sparse knowledge as to pathophysiology of varicocele, testicular hypoxia, abnormal heat regulation and increased oxidative stress are accounted. Especially, reactive oxygen radicals have been shown to cause infertility through diminishing spermatogenesis. Transforming growth factor-beta(TGF-β) is known to regulate numerous physiological functions including testicular development and spermatogenesis. This study is aimed to investigate effect of alpha-lipoic acid(ALA) on TGF-β and antioxidant system in a rat model of varicocele.
METHODS: Total of 24 male Wistar rats were divided as 8 rats in groups: sham(S), varicocele(V), varicocele plus ALA(V+ALA). Laparotomy was performed without creating a varicocele model in S group. Varicocele was created in Vgroup by imitating 'nutcracker phenomenon'. In V+ALA group, varicocele was created by imitating nutcracker phenomenon followed by administration of 100 mg/kg ALA for 8 weeks by oral gavage. At the end of experiment, rats were sacrificed, and blood, testicular tissues were obtained for biochemical analyses. TGF-β, total oxidant status(TOS) and total antioxidant status(TAS) were estimated. The oxidative stress index(OSI) was calculated from TAS and TOS results.
RESULTS: In comparison to other groups, TAS was found to be decreased while TOS and OSI were

significantly increased in V group (respectively; $p<0.05$, $p<0.001$). Compared to the V group, TAS was remarkably increased whereas TOS, OSI were found to be significantly decreased in V+ALA group (respectively;$p<0.05$, $p<0.001$). TGF- β level in Vgroup was found to be significantly decreased as compared to S group ($p<0.01$). TGF-β level in V+ALA group was found to be significantly increased in comparison to V group ($p<0.01$).
CONCLUSION: Because of sparse amount of experimental varicocele studies, present study is going to contribute future researches by both its model and approach to pathophysiology of varicocele. Moreover, it suggests that ALA may be beneficial for infertility resulted from varicocele-induced oxidative stress with its antioxidant effect.

PC142

Relationship Between Academic Successes of Physiologyand Pathology Courses

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AIM: The goal of medical education isto train a physician who can provide qualified healthcare service, who can effectively understand and manage the confronted situations, whocan fulfill the assumed tasks inaqualified manner and whohas the necessary knowledge, skills, attitudes and set of values for these. An integrated education approach hasbeen adopted by most ofthe medical faculties toachieve this goal. We cansummarize the integrated education system asa system designed roughly from cell to tissue, from normal to abnormal, and finally toclinical conditions. In system, physiology and pathology educations arethe associated courses with each other onthe way from normal to abnormal. In this study, it was aimed to investigate the relationship between the academic successes of physiology and pathology courses in Baskent University Faculty of Medicine (BUFM).
METHODS: In our study, physiology and pathology grades of committee exams of all students(n=76) who started to study at BUFM inthe2013-2014 education year wereevaluated in a system based manner and whether there is arelationship between them was investigated. In the specified period oftime, the students whoquitted BUFM orcame with undergraduatetransfer were excluded from the study. Inthe statistical evaluation, since the study was conducted on population,populationcorrelation coefficient(ρ) was calculated forthe relationship between thesuccess percentages.
RESULTS: In our research; a moderate level of correlation wasfound between the success percentages ofphysiology and pathology courses inthe committees ofNeuroendocrine(ρ=0,341),Circulation-Respiration (ρ=0,335) and Digestive Metabolism (ρ=0,318) whereas low correlation that is atnegligible level was found inthecommittees ofmovement(ρ=0,177) and urogenitalsystem (ρ=0,009).
CONCLUSION: Medicalfaculty education is quite adynamic process and efforts arebeing madeto improve the quality ofeducation and meeting the emerging needs. With thisstudy, in addition to obtaining a quantitative data regarding the contribution of integration of physiology and pathology in theeducation and training systemof BUFM, butalso the results are considered to guide the researchers working on the relevant courses aswellas the educators working on the subjects of improving curriculum.

PC143

Do You Model Yourself: Solid Organ Modelling Using Three-dimensional Printing Technology

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AIM: Historical existence of simulation in medical education has been highly affected by the technological developments. One of them may be the physical modeling of human/patient organs using three-dimensional (3D) modeling software programs. It has been suggested that any 3D activity has positive impact on medical students' abilities of mental imagery and therefore their academic successes. Additionally, recent 3D modeling software programs empowered with functional computations are accepted as the valuable tool for physicians in choosing the best treatment modality. With this project we aimed to develop a platform for active medical education and physiological simulations. This presentation discusses the results and the constituents of 3D anatomical model production platform that we developed.
METHODS: Anonymized patient radiographies used in this study were obtained from open access web sites. Borders of the anatomic structures in tomographic slices were segmented and the surface meshes were created using "TT3D-BMMP" software. Surface visualizations were performed in shareware programs of "Gmsh", "Blender" and "Sculptris" and the physical models were manufactured using "Raise N2" 3D printer.
RESULTS: Several organs such as femur, humerus, clavicula bones, kidney and heart were segmented in

various resolutions using TT3D-BMMP and solid models were physically manufactured. The models were then evaluated by comparing with radiographic images and pictures found in anatomy atlases by means of shape and scaling.
CONCLUSION: As a medical student we may apparently conclude that a real platform for active education was set up. Although our subjective conclusions are encouraging, our future works will aim to relate the outputs of the project with the academic success by objective methods. Besides having an active educational tool, the products of the running platform will gradually riches our anatomic maquette stock. We believe also that this platform is important due to its potential to create various multi-discipliner collaborations.

PC144

Effect of Learning Stysles To Physiology Education

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AIM: Learning styles are generally perceived as invidual characteristic and preferences group that exhibit learning environment of one student is how perceive in terms of psychological, it is how interact with environment and how react. As one of the main dimensions of the learning style has 3 dimension of learning style. These are physical (kinesthetic), auditory and visual styles. In this study, we aim that specify learning styles of Süleyman Demirel University, School of Medicine (SDUSM) term II students.
METHODS: Our study was approved by Clinical Studies Ethical Board. We used BİG-16 questionnaire to evaluate learning styles of the students. The validity and the reability studies of BİG -16 survey was done. BİG -16 is survey that comprise of 48 item and represent 3 subgroup (visual, auditory, physical). Inventory contain of choices and scores that "Absolutely Agree = 2, Agree =1, İndecisive = 0, Disagree =-1, Absolutely Disagree = -2". This disagree and absolutely disagree negative answers show that the style is not prefered by student and student reject in case of the style belonging which learning style.
RESULTS: One hundred ninety-six person (n:196) participated in our study from SDUMF Term 2 students. According to BİG-16 questionnaire, students have learning styles which nondominant style 20 (% 10.2), physical 17 (%8.67), auditory 36 (%8.67), visual 91 (%46.43), physical and visual 7 (% 3.57), auditory and visual 13 (% 6.63), physical and auditory 6 (% 3.06), reacting visual 3 (% 1.53), reacting auditory 1 (% 0.51), reacting physical 2 (% 1.02).
CONCLUSION: We determined with this inventory in evaluting of term II students predominantly include visual and auditory learning styles. In the direction of this information, we think about that will may contribute more be effectiveness for education with increasing of visual and auditory materials using in physiology education.

PC145

Evaluation of Physiology Education with Critical Incident Technique

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AIM:Adaptation of learners with the course is an important component of the learning process. This study was to investigate by Critical Incident Technique (CET) the positive or negative opinions of physiology education of term two Students the Suleyman Demirel University (SDU) School of Medicine.
METHODS: In this study, 155 students was 61(39.4%) male and was 94(60.6%) female.The average age of participants were found 20,63±1,12 for men and 20,15±,73 for female. In our study, CET inventory was used for student views. In our study, the answers were primarily classified as positive and negative. The research team obtained core expressions for descriptive coding from the groups in order to reduce the data. Core expressions were re-grouped as factors for image codes. Note-taking was done at the same time. The general opinion of the study team were noted when the coding was done.
RESULTS: In this study the students were remarked (n=39;25.16%);the characteristics of the teaching staff such as reaching the teaching staff, the approaches of the teaching staff, and evaluation of feedbacks by teaching staff. Also, they were emphasized applications such as practical applications in the training programme, quiz applications through the learning management system, discussion topics with the forums, and getting feedback are expressed as positive opinions. Opinions such as reports scoring, crowded practice, inadequacy of training materials were reported as a negative (n=48;30.96%).
CONCLUSION: Various revisions were planned according to the opinions of the students in physiology course.We believe that these revisions can be increased the effectiveness of the physiology education.
Suggestions:

1.The integration of the training program can contribute to by incorporating the practices of the physiology course into occupational skill applications
2.The Learning Management System can be used more effectively for educational activities
3.Student numbers can be reduce in practical practice
4.Students can be directed to different educational materials

PC146

E-Applications in Physiology Education

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AIM: Medical educators are turning to online applications for both time and convenience. Our study was to investigate the importance of electronic applications in physiology education for the students of Suleyman Demirel University (SDU) Medical School.
METHODS: In interactive physiology training; 174 students enrolled in the physiology course. In this study, we implemented different modules of the learning management system (LMS), Moodle based, were used in the physiology education for continuous training. They have had constant entry for their educational course loads such as course presentations, additional visuals, video and discussion forums for every committee. Dialogs for particular subject matters were design between instructors-faculty members and students in the discussion forum as questions and answers. One of the handy applications is that the LMS offers smart phone apps to users that students could install it and learn updated assignments and tasks instantly delivered on their mobile phones.
RESULTS: Through the interactive physiology training; 77.2% of the students who downloaded teaching materials from the LMS system. A total 339 attendances in four committee took quizzes before the committee exams. The grade averages for four quizzes of the short exam preparations were 45.9, 22.30 62.25 and 70.23 out of 100 scale. The mean value of them was 50.17.Twenty four topics were introduced into the system for discussions, and there were fifty seven entries made by students in the form of questions and answers. After the completion, we received 251 feedbacks from the attendees over the system.
CONCLUSION: In our findings, the LMS offers continuous education without any distinct classrooms or place that student can have continuous access for training and materials even on their mobile phones. By implementation of these modern communication tools such as LMS, the educational quality and effectiveness can be improved tremendously for our department and community.

PC147

The Importance of Lecture Attendance for Academic Success in the Medical Physiology

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AIM: In the evolving world, technological developments offer enormous sources of education. Even popular online video platforms include a variety of medical physiology-themed educational materials. Thus, the technology evokes a question: is there still a need for in-class lectures for learning essentials of the medical physiology?
METHODS: To clarify this inquiry, we examined three interim exam scores of our 2nd year medical students, and compared the academic success of whom attended the lectures with of unattended students.
RESULTS: The analyses were performed in two main cohorts: students who took the course first time (n= 150) and who repeated the course due to failure (n= 85). The median of the overall success rate, which is the ratio of the correct answers to the total number of questions, was 68% (Q1-Q4= 59-77%) and 64% (Q1-Q4= 52-73%), respectively (Mann-Whitney test; $p< 0.001$). The median attendance rate was 53% (Q1-Q4= 36-77%) and 77% (Q1-Q4= 16-53%), respectively (Mann-Whitney test; $p< 0.001$). We tested whether scores of the attended students differ from that of the unattended ones. In first-time takers, for all three of the interim exams, attendance to a lecture was found to be related to higher correct answers in questions relevant to the attended lecture (Mann-Whitney test; each $p< 0.001$). Similar, but relatively weaker significance was noted in the repeat takers (Mann-Whitney test; $p= 0.002$, $p= 0.001$, and $p= 0.03$). Furthermore, we questioned if the attendance correlatively increases the exam scores. Strikingly, there was a strong correlation in first-time takers (Spearman's correlation, $r= 0.251$, $p= 0.002$), and weaker, but reliable in repeat takers (Spearman's correlation, $r= 0.223$, $p= 0.041$).
CONCLUSION: These results robustly emphasize the importance of lecture attendance and precisely display that the students should be strongly encouraged to attend lectures to take advantage of merits of in-class physiology education.

PC148

The Relation Between Physiology Learning Medium and Course Success in Medical Students of the Mustafa Kemal University

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AIM: The knowledge and skills acquired during the basic medical education have great importance since they contribute to the ability of comprehension of pathologies and good clinical applications. From this point of view, we assessed the learning medium which practitioner candidates prefer for the physiology class and the relation with their course success.
METHODS: A Likert-like questionnaire was applied before the interim exam to 207 (83 female and 124 male) 2nd term students who were educating in the Medical School of the Mustafa Kemal University. The lecture attendance, learning mediums and perception about the sufficiency of preferred learning mediums were asked in the questionnaire, and the answers were compared with the exam scores. The success criterion was designated as 60 points and above, which is the lowest passing grade. The statistical analyses were performed by using SPSS v19 software. The comparisons between the groups were done by Chi-square and Mann-Whitney U tests.
RESULTS: Only 17.4% of students (n=23) who attended 1-4 hours of the total 37 hours of lectures were successful whereas the success rate was 63.3% in students (n=30) who attended >32 hours (p=0.01). A ratio of 52.3% of students who have complied the attendance regulations of the university, and only %27.6 of students who have not complied were successful (p<0.001). With regard to the learning mediums, only %33 of students who assume that the course can be grasped without attending, but by using the sources such as textbooks, lecture notes, lecture voice record and internet were successful.
CONCLUSION: The results of our study suggest that attending to the lectures improve the success and without lecture attendance, using mediums such as lecture notes and voice records may be insufficient for achieving the success.

PC149

Investigation of Effects of Dimethyl Sulphoxide on Smooth Muscle Contractions in Rat Tissues in Isolated Organ Baths

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AIM: Dimethyl sulphoxide (DMSO is often used as an organic chemical solvent in many experimental investigation.Therefore, the amount of DMSO used as vehicle in studies investigating the possible effects of dissolved substances in DMSO is important. It was aimed to determine at what concentration the potential effects of DMSO appeared in the uterus, aorta, trachea, stomach and bladder tissues obtained from rats.
METHODS: Tissues obtained from adult female Wistar rats were used in this study. Ring strips from aorta and trachea and longitudinal strips from uterus,stomach and bladder were prepared for experiments.All strips were placed in a jacked tissue bath containing Krebs solution at 37oC constantly bubbled with 95% O2 and 5% CO2 Strips were allowed to equlibrate under 1.5g tension and isometric contractions were recorded.Equilibrating period for 30mins, contractions were induced by phenylephrine (aorta),acethylcholine (bladder, stomach and trachea) and oxytocin (myometrium). Control contractions were recorded for 10min and increasing concentrations of DMSO (1ul/ml, 2ul/ml,5ul/ml, 10ul/ml, 20ul/ml and 40ul/ml) were cumulatively added to the tissue bath for 10 mins periods.The amplitudes of contractions were determined as mean±SEM.
RESULTS: The amplitudes of contractions induced by phenylephrine in aorta were significantly decreased after 20ul/ml and 40ul/ml DMSO treatment (p<0.01 and p<0.001, respectively).There was no significant change in tracheal contractions.The amplitudes of myometrial contractions induced by oxytocin were inhibited after application of DMSO at 20ul/ml and 40ul/ml (p<0.05 and p<0.01 respectively,).Similarly, bladder contractions were decreased at 40ul/ml of DMSO (p<0.001) and gastric contractions were significantly inhibited after treatment of 20ul/ml and 40ul/ml (p<0.01 and p<0.001, respectively).
CONCLUSION: The findings of present study demonstrate that DMSO concentration is important in isolated organ bath studies where DMSO is used as a solvent.It should be taken into consideration that higher amounts of DMSO, especially at a concentration of 10µl/ml, may inhibit smooth muscle contraction.

PC150

APC Gene Expression Levels in Tumor and Adjacent Normal Tissues of Colorectal Cancer Patients

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AIM: Colorectal cancer is the third most common cancer type in the world and is the fourth leading cause of cancer-related death worldwide. Approximately 1.24 million people are diagnosed of colorectal cancer, and 610 000 people die from colorectal cancer each year. The APC protein which is involved in Wnt/β-catenin signaling pathways, plays an important role in the development of colorectal cancer. The mutation occurring in this gene causes the Wnt/β-catenin signaling pathway to be continuously active, resulting in cancer. The aim of this study is to investigate the altered expression level of the APC gene in tumor and adjacent normal tissue samples of colorectal cancer individuals.
METHODS: Forty-seven colorectal cancer patients were included in this study and the tumor tissue and adjacent normal tissue were collected from these patients during the surgical operation. APC gene expression levels were detected by quantitative Real-Time PCR in the tumor and adjacent normal tissues of colorectal cancer patients.
RESULTS: APC gene expression was found to be 3.78 fold-increased in normal tissue, when tumor tissue and normal tissue of colorectal cancer patients were compared in terms of APC gene expression levels (p=0.001, 95% confidence interval=1,00-3,14).
CONCLUSION: As a result of the study, it is thought that the decrease of APC gene expression in tumor tissue samples causes the development of colorectal cancer.
This study was supported by Istanbul University Scientific Research Projects Unit (Project No: 20707).

PC151

Analysis of Relationship Between Dioxin-Like and Estrogenic Bioactivity and Genotoxic Changes in Mammary Epithelial Cells with Nutritional Habits of Breastfeeding Mothers

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AIM: Organochlorinated chemicals are persistent pollutants that pose a threat to the environment and human health. The aim of this study was to investigate the bioactivity of dioxin-like and estrogenic chemical substances in the mother's milk and the genotoxicity of the mammary epithelial cells obtained from the milk and a possible relationship with nutritional habits of breastfeeding mothers.
METHODS: Milk samples were collected from 200 healthy lactating mothers living in Istanbul. Study was approved by the local ethics committee. Mothers were asked to fill a questionnaire form including personal information, medical records and nutritional behavior. Alkali Comet Assay method was used to detect DNA damage. 5 ml of milk sample was used in dioxin extraction using nitrogen evaporator. 5 ml of milk sample was used for extraction of estrogenic chemicals with the aid of nitrogen evaporator. Bioactivity of dioxin-like and estrogenic chemicals was measured by the reporter gene assay method. Cells (transfected MCF-7 (MELN) and hepatoma cells) containing the luciferase gene in the respective promoter region were exposed to extracts for 24 hours, and dioxin-like and estrogen bioactivity were determined by luminometric measurement. ETA correlation test was used for statistical analysis of the data.
RESULTS: It was determined that there was a significant relationship between the consumption of fish and red-meat for the mothers and dioxin-like and estrogenic bioactivity in milk samples (Eta CC=0.125; 0.119, respectively). There was a significant correlation between consumption of red-meat and barbecued food with genotoxicity findings (Eta CC=0.175; 0.133).
CONCLUSION: It was observed that the amount of dioxin-like and estrogenic activity in milk samples of the mothers consuming more fish and red-meat on a weekly basis were higher. Higher DNA damage was detected in the mammary epithelial cells of mothers consuming more barbecued food.
This study was supported by TUBITAK (Project # 113S115).

PC152

Super Grandma; Active and Productive Women at 84 Years Operating in The Physiological Conditions of The Systems

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AIM: The reserve capacity for the functioning of organs in healthy populations is decreasing from the age of 30. Within this reduced capacity, the systems in the healthy geriatric age group are working under physiological conditions(2). With the expected life span, the world population is aging faster than the previous fifty years(5). Our aim is to find an answer to the question of how to be healthy and activate in old ages in terms physiology.
METHODS: 84 years old,who has a normal physiological findings of a patient was referred to the Department of Internal Medicine of the KTO Karatay University Medical Faculty Medicana Hospital for the examination of a productive and active female patient was used.
RESULTS: As a result of pulmonary function test, a forced expiratory volume(FEV1)/ forced vital capacity(FVC) ratio revealed %73 and result of an echocardiography, an ejection fraction revealed %70. TA:130/80 Nb:78 /min, KVS S1 S2 normal, respiratory system determined that both lungs were equally admitted and other systemic findings were normal, BMI: determined to be 28 kg / cm2. The patient still actively acted as a lifestyle and there was no significant pathology in her story and examination.
CONCLUSION: Considering that the FEV1 / FVC ratio in the first line dropped by approximately 0.2% per year in 70% of patients by the age of 40-45 years, the ratio of FEV1 / FVC was 73%, with systolic and diastolic blood pressure with respect to age and no change in the ejection fraction (3,4) is directly proportional to active and productivity. In the future, "Healthy Life Behavior Scale II" (1) can be used as an example to find an answer to the question "How can be physiologically normal and healthy old age?"

PC153

Examination of Carbonic Anhydrase 6 Enzyme Activity in The Serum of Students Smokers and Nonsmokers in Ağrı İbrahim Çeçen University Department of Nursing

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AIM: Smoking is a big issue in not only our country but also entire the world. The importance of this habit is getting increase, because cigarette do harm people who are passive smokers besides the smokers. Carbonic anhydrase (CA, EC 4.2.1.1), which is commonly found in mammalian tissues, is known as a very important enzyme that regulates CO2 levels in living organisms. In this study, we aimed to determine the smoking frequency and serum CA 6 enzyme levels of nursing students who will become members of occupational health discipline.
METHODS: In our research, we create a group from Agri Ibrahim Cecen University's 111 nursing students who accepted to participate in this study in between 2016 and 2017 academic year. We took the serum samples for investigate purposes the level of CA 6 enzymes with questionnaires of demographic characteristics and smoking prevalence under the observation of the students.
RESULTS: In this study, 54 (48.65%) of the students were female, 57 (51.35%) were male and the age range was 18-24. The number of non-smoking students (A) was 58 (52.25%), the number of female (AK) in this group was 38 (34.23%) and the number of male (AE) was 20 (18.02%). There are 24(%21,62) passive smoker students (B), also there are 9 (%8,11) passive smoker female (BK) and 15 (%13,51) male (BE). There are 29 (%26,13) smoker students (C), also there are 7 (%6,31) smoker female (CK) and 22 (%19,82) male (CE). Specific activity values were determined as follows: AE; 0.646 EU/mg protein, BE; 0.601 EU/mg protein, CE; 0.545 EU/mg, AK; 0.605 EU/mg protein, BK; 0.584 EU/mg protein, CK; 0.420 EU/mg protein.
CONCLUSION: We found that smoking and exposure to cigarette smoke rates were higher in especially male students. CA 6 enzyme activity had a low level in smoker compared to nonsmokers.

PC154

Evaluation of Hemodynamıc Instabılıtıy in a Forensic Case

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AIM: All of the factors affecting the blood movement and blood pressure are expressed as "hemodynamic factors". The decrease in blood pressure give concerns about distal organ perfusion and tissue oxygenation. It is aimed to evaluate hemodynamic parameters such as blood pressure, heart rate, hemoglobin (Hb) and hematocrit (Htc) level on a case applied to the hospital.
METHODS: A 47-year-old male who was admitted to the University Hospital as a result of a hunting rifle injury. A physical hazard assessment was conducted in the direction of physical examination and laboratory results and a forensic report was prepared.
RESULTS: The patient was found to have open fractures in bilateral femur diaphysis and skin, subcutaneous, muscle defects in both popliteal regions and the right thigh. In laboratory tests; Hb level of 12 g/dl in the first application and in follow-up; blood pressure of 94/66 mm /Hg, pulse rate of 98/ min, Hb level and Htc level were found to be 8.3 g/dl and 24.3%, respectively. After 90 min. of this measurement, 6 units of erythrocyte and 6 units of plasma transfusion were made due to Hb level and Htc value were found 5.6 g/dl and 16.8%, respectively.
CONCLUSION: It was stated that it was a life threatening wound in the judicial report for the case. In the guide used for related applications; there is no explanation as to what may be the clinical statement indicating more than 20% blood loss, When the life threat is assessed; the evaluation of physiological parameters such as blood pressure, pulse rate, hemoglobin and hematocrit values should not be ignored.

PC155

Effect of Coelomic Fluid on Wound Healing in Streptozotocin-induced Diabetic Rats

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AIM: The wound is an important health problem, especially in diabetic people. Wound healing is a complex process involving steps. In this study, we aimed to investigate the effects of coelomic fluid on wound healing in diabetic rats.
METHODS: In this study, 50 male average weights of 300-350 g Wistar albino rats were performed. The rats were randomly divided into 5 groups. Rats were created diabetes by streptozotocin. On the 10th day of streptozotocin application, full thickness skin incisions were made in the dorsal region of the other groups except control group. Rats that were wounded were treated topically. Blood and tissue samples were taken on the 7th day. MDA, SOD, CAT and GSH-Px levels in blood were measured by ELISA method. Levels of VEGF, IL-1, TNFα, and neopterin in tissue were determined by PCR. Edema, macrophage, fibroblast and epithelialization scores were determined histopathologically. Statistical analysis was assessed by Kruskal-Wallis and Mann Whitney-U tests. Statistical significance was accepted as $p<0.05$.
RESULTS: MDA values of coelomic groups were lower while SOD, CAT and GPx values were higher than other groups ($p<0.05$). VEGF values of the coelomic group were observed to be higher than the other groups ($p<0.05$). IL-1, TNFα, and neopterin levels of the coelomic group were lower than the sham group ($p<0.05$). In terms of wound healing scores that are revealed histopathologic evaluations, epithelialization and fibroblast of coelomic group were higher than the other groups ($p<0.05$). Histopathologic evaluations, epithelialization and fibroblast of coelomic group were higher than the other groups ($p<0.05$). Coelomic groups in terms of macrophage and edema was found lower than sham group.
CONCLUSION: According to the data obtained from biochemical and histopathological studies, it has shown that coelomic fluids provides significant improvements on wound healing. The advance works should be to this support.

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Effect of Caffeic Acid Phenethyl Ester on OSI Levels in Experimental Periodontitis in Rats

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AIM: Periodontitis is chronic inflammatuar disease and characterized by gingival inflammation and alveolar bone loss (1). If periodontitis is not treated, the tooth will be loss by destruction of supporting tissues of the tooth (2). Recently, antioxidants are frequently used in the treatment of periodontitis.

Caffeic acid phenethyl ester (CAFE) is an active component of propolis and has antioxidant (3) and antiinflammatory (4) properties. Also, it has been shown that CAPE has protective effect against the tissue destruciton due to oxidative stress.(OSİ) (5,6). In this study, we evaluated the effect of CAPE on OSİ levels in experimental periodontitis (EP) in rats. METHODS: Ethical confirmation was obtained for the study (PAUHADYEK-2016/18).Thirty male Sprague-Dawley rats were divided into three groups as control, Experimental Periodontitis (EP) and EP treated with CAPE (EP-CAPE). First, periodontitis was induced by endotoxin and rats in the CAPE-Ped group were treated with a daily single dose of 10 mmol/kg/ daybody weight CAPE intraperitoneally for 28 consecutive days. Before sacrification, blood was collected in their hearts for analyze of TAS (total antioxidant status), TOS (total oxidant status) and OSI was calculated by their ratio. Differences between independent groups were analyzed by Kruskal Wallis Variance Analysis. When the difference between 3 groups was significant, Mann Whitney U test with Bonferroni Correction was used for host poc analysis. RESULTS: OSI level was found statistically higher in EP group than EP-CAPE and control groups. However, it was not found statistically significant difference between EP-CAFE and control groups. CONCLUSION: This study reveals that CAPE treatment inhibits the increase of OSI level in EP in rats.

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Effects of JWH-018, A New Synthetic Cannabinoid on Hemodynamics, Histopathology and Behavior of Rats

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AIM: In this study; it was aimed to investigate the effects of synthetic cannabinoid, JWH-018, which is an important part of substance abuse problem, on hemodynamics, behavior and on lung, liver and kidney tissues after 14 days of administration in healthy rats.
METHODS: After the approval of Manisa CBU Animal Experiments Local Ethics Committee obtained, study groups were formed as; Control group (dissolver 14 days, ip) and Experimental Group (JWH-018, ip) (total n = 16 rats). In all groups; Blood pressure, body temperature and heart rate were measured. Also; Open Field Test (OFT) and Elevated Plus Maze Test (EPMT) were applied. Statistical analysis was performed using the Mann Whitney U method with the SPSS 15.0 program. Routine HE, NOS and TUNEL immunohistochemistry were performed in the tissues of the recipients and value of $p<0.05$ was considered significant.
RESULTS: There was no statistical difference between the results obtained; the heart rate and body temperature in the experimental group were relatively high. Also in the experimental group, central square, peripheral square, peripherial rectification, peripheral period in OFT; In EPMT, open time, closed time, passing from the center, rising in closed-circuit and looking down time were found to be high. Histologic evaluation; extension, edema, cell degeneration and structural disorders were observed in all three tissues, and morphometric scoring was significantly different from control. Oxidative stress markers iNOS and eNOS marked cells significant increased and it was observed that, this was accompanied by TUNEL-marked apoptotic cells ($p<0.05$).
CONCLUSION: We concluded that; even after a short period of application of the cannabinoids JWH-018 at the tissue level, it will illuminate the studies on substance dependence of causing damage through oxidative stress and apoptosis mechanisms.

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Attention Performance is not Decreased in the Health Professionals Throughout Their Night-shifts

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AIM: Night-shifts in health professionals may reduce attention and this, in turn, may be deleterious especially for their patients. Therefore, the aim of the current study was to clarify, in three consequtive days, whether nurses with two different shift programs perform less in attention tests than day-time working age-matched postgraduate students.
METHODS: An attention test, which measured the time spent in finding the sequential numbers from 1 to 25 dispersed on a sheet of A4 paper, was performed every mornings (08:00-09:00 h) and afternoons (16:00-17:00) for three days in post-graduate students (n=10; Control) who had day-time work. On the same days, nurses, who had 24 h resting periods between their shift, were divided into two groups as having night shift followed by day-time work (n=10; Shift A) or having day-time work followed by night-shift

(n=10; Shift B). The nurses completed the same attention test before and after their work periods which coincided with same hours of the day as outlined for post-graduate student. The data was compared by ANOVA or paired t-test.
RESULTS: There were no statistically significant differences between the groups at any time-point of measurements. Mean duration of attention test was 32.2±1.5, 29.1±1.3 and 30.5±1.4 seconds respectively for Control, Shift A and Shift B groups (P>0.05).
CONCLUSION: The results were unexpected to us and suggest that attention performance was not decreased by the night shifts in the health professionals. This might be due to counterbalancing the effects of tiredness by increased alertness towards the ill.

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Investigation of the Effect of Shiga-toxin on Rat Serum Carbonic Anhydrase Enzyme

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AIM: The aim of this study was to investigate the changes in serum carbonic anhydrase (CA) enzyme activity in rats exposed to Shiga-toxin administered Rutin (Quercetin 3-rutinoside) for protective purposes.
METHODS: 32 male Sprague Dawley rats weighing 250-300 g were used in the study. Four groups (Control, Shiga-toxin (Stx; 100 ng/kg), R50+Stx (50 mg/kg Rutin+100 ng/kg Stx), and R100+Stx (100 mg/ kg Rutin + 100 ng/kg Stx)) were formed in each group, 8 rats. Serum CA enzyme activity levels were measured. CA activity was determined by the esterase method which follows the formation of 4-nitrophenylacetate to 4-nitrophenol at 348 nm.
RESULTS: Specific activity values were determined for serum CA enzyme at four different experimental groups. Groups were determined as follows: Control group 0.229 ± 0.011 EU/mg protein, Stx group 0.151 ± 0.004 EU/mg protein, R50 + Stx group 0.161 ± 0.007 EU/mg protein, and R100 + Stx group 0.183 ± 0.009 EU/mg protein.
CONCLUSION: As a result, the activity of the serum carbonic anhydrase enzyme was determined to be mostly inhibited in Stx group among all applications. It has been observed that the Rutin, especially the high dose, inhibits the reduction of carbonic anhydrase enzyme activity, thus normalizing metabolism.
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Investigation of Some Uracil Derivatives on Glutathione Reductase, Carbonic Anhydrase I and II Enzymes

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AIM: Both glutathione reductase (GR) and carbonic anhydrase (CA) inhibitor studies have recently become very popular due to antimalarial and antitancer activities. It was aimed in this study to purify human GR, CA I and CA II enzymes from human blood and investigate in vitro inhibitory effects of uracil derivatives such as orotic acid, 6-methyluracil, 6-Amino 1,3-Dimethyluracil, 5,6-Diamino 1,3-Dimethyluracil, and 2-thiouracil.
METHODS: hGR, hCA I and hCA II enzymes were purified using affinity chromatography from erythrocytes from the Ataturk University Research Hospital Blood Center.. The amount of NADPH as substrate was determined by absorbance reduction at 340 nm to determine GR activity. CA activity was determined by the esterase method which follows the formation of 4-nitrophenylacetate to 4-nitrophenol at 348 nm. In this work, % Activity - [Inhibitor] graphs for uracil derivatives tested on purified GR, CA I and II enzymes were drawn. IC50 values were calculated.
RESULTS: The enzymes GR, CA I and II of human erythrocytes were purified using affinity chromatography. The IC50 values of the substances mentioned on the purified enzymes ranged from 0.085 to 57.76 µM.
CONCLUSION: In vitro inhibition effects of these uracil derivatives tested on hGR, hCA I and hCA II enzymes were investigated. As a result of this study, 6-Amino 1,3-dimethyluracil antiglucose, anticancer and anti-inflammatory agent, which are identified as the most effective inhibitor, have been identified.