



THE ATHENS INSTITUTE FOR EDUCATION AND RESEARCH

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4th Annual International Conference
on Pharmaceutical Sciences
1-4 May 2017, Athens, Greece

Edited by
Gregory T. Papanikos

2017

Abstracts
4th Annual International
Conference on
Pharmaceutical Sciences
1-4 May 2017, Athens, Greece

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TABLE OF CONTENTS

(In Alphabetical Order by Author's Family name)

Preface		9
Conference Program		11
1.	The Burdens of Sitter Mothers at Paediatrics Clinics and the Effect of Hospital Stay on Depression, Anxiety and Stress Levels <i>Ayfer Acikgoz, Dilek Sayik, Semra Songut, Yeliz Kaya & Imdat Koksal</i>	16
2.	Systematic Literature Review: Diabetes Internet-based Spanish Language Health Information <i>Judith Aponte, Karen Tejada & Mariel Acosta-Melo</i>	17
3.	Novel Ion Selective Membrane for Tiotropium bromide and Application to Spiriva Inhalation Powder in Handihaler <i>Amr Badawey, Ali Yehia, Nagiba Hassan & Soad Emad</i>	19
4.	The Anti-Corruption Drug Case: Lessons from the Past <i>Laila J. Badran</i>	20
5.	Spectral Resolution Methods Manipulating Spectrophotometric Data for Quantification of Ternary Mixture of Thioctic acid, Benfotiamine and Cyanocobalamin in Capsules <i>Maryam Bakr, Maha Hegazy, Amr Badawey & Samah Abbas</i>	21
6.	Nanoparticles of Chitosan Derivatives Improve Oral Doxorubicin Bioavailability <i>Yasser Bustanji</i>	22
7.	The Stepwise International Migration of Philippine-educated Nurses and Its Policy Implications on Japan's Recruitment and Retention of Foreign Workers in the Elderly Care Sector <i>Maria Reinaruth (Reina) Carlos (Imaizumi)</i>	23
8.	HIV and Cardiovascular Disease: The Newest Chronic Disease <i>Bruno Cotter</i>	24
9.	Science-Based Evaluation of Propolis and its Constituents on Pseudomonas Aeruginosa <i>Rula Darwish</i>	26

10.	Impact of an Intensive 12-Week Wellness Coaching Program on Self-Care Behaviours among Adult Primary Care Patients with Pre-Diabetes <i>Ramona DeJesus, Robert Jacobson, Kristin Vickers Douglas, Debra Jackson, Patrick Wilson & Jennifer St. Sauver</i>	27
11.	Impact of 1,3,4-Thiadiazine Derivative on Pancreas Islets in Diabetic Rats <i>Irina Gette, Victor Emelyanov, Irina Danilova & Tatyana Bulavintceva</i>	29
12.	Management of Diabetic Nephropathy using Structured DAG Oils in Murine System: A Comparative Assessment of Redox-Regulated Signaling System <i>Mahua Ghosh & Kankana Das</i>	31
13.	Nanodiagnostics: A Future Trend in Clinical Chemistry <i>PD Gupta</i>	32
14.	Nursing Role in Inbound and Outbound Medical Tourism in Saudi Arabia <i>Houaida Helal</i>	33
15.	Perceptions of Regulators towards the Current Pharmacovigilance System in Pakistan <i>Azhar Hussain</i>	34
16.	Medical Tourism in Germany - a Paradigm for a Success Story and How it Works <i>Gabriele Karanis & Panagiotis Karanis</i>	35
17.	The RNA Binding Protein Quaking is a Key Regulator of Endothelial Cell Differentiation, Neovascularization and Angiogenesis through Direct Binding of the 3'UTR of STAT3 <i>Sophia Kelaini</i>	37
18.	Evaluation of Cytotoxicity, Mutagenicity and Antimutagenicity of Methanolic Extract of Aerial Parts of <i>Plumbago Europaea</i> on Balb/c Mice Bone Marrow Cells <i>Ahmad Khalil, Hanan M. Bashaireh & Ahmad A. El-Oqlah</i>	38
19.	Preliminary Results of Developing a Shared Care Model between Oncologists and Primary Physicians for Enhancing Health Care for Cancer Survivors in Korea (SCOPE-K) Project <i>Yeol Kim</i>	39
20.	Surface Evaluation and Optimisation of PP Oxygenator Membranes by Introducing Zeta Potential Analysis <i>Christine Kleffner, Nicolas Kruse, Thomas Saeger, Gerd Braun & Ompe Aime Mudimu</i>	40

21.	Increased risk of Alzheimer's disease in Type 2 Diabetes: Neuroimmune Effects of Dysregulated Peripheral Factors as a Possible Link <i>Andis Klegeris</i>	41
22.	Smart Mobile Organ Perfusion Transportation System <i>Nicolas Kruse, Christine Kleffner, Thomas Saeger, Gerd Braun & Ompe Aime Mudimu</i>	43
23.	Assessment of Women Postpartum Quality of Life after Different Modes of Delivery in Pakistan <i>Madeeha Malik & Zirwa Asim</i>	44
24.	Risk Perception among Persons with Pre-Diabetes, Thailand <i>Khemaradee Masingboon, Saifone Mounkum & Suwannee Mahakayanun</i>	45
25.	United Kingdom and Republic of Ireland Renal Physicians' Experiences of Patients Undergoing Renal Transplants Abroad: A Questionnaire-Based Cross-Sectional Survey <i>Anand Odedra, Steve Green & Rohit Bazaz</i>	47
26.	Biopolimers in Overcoming Carbapenem Analogs Limitations in the Treatment <i>Magdalena Paczkowska, Daria Szymanowska-Powalowska & Judyta Cielecka-Piontek</i>	48
27.	A Structural Analogue of Peptide Apelin-12 in Cardioprotection against Ischemia/Reperfusion Injury <i>Oleg Pisarenko</i>	50
28.	Oocyte Cryopreservation for Fertility Preservation - The Legal Approach <i>Vera Lucia Raposo</i>	52
29.	Qualitative and Qualitative Phytochemical Screening of Medicinal Herbal Ocimum Tulsi Leaves <i>Ketan Ruparelia, Ketu Zeka Zeka, Zainab Ali, Hajara Alfa, Puroi Mali, Randolph Arroo, Nazmin Juma, Unmesh Desai & Martin Grootveld</i>	53
30.	Development of a New High Performance Hollow Fiber for Oxygenators <i>Thomas Saeger, Christine Kleffner, Nicolas Kruse, Gerd Braun & Ompe Aime Mudimu</i>	55
31.	Determining the Use of Herbal Medicine among the Hospitalized Patients of the Physical Therapy and Rehabilitation Unit <i>Asuman Sener, Zeliha Koc & Zeynep Saglam</i>	56

32.	Inhibitory Effect of Aristolochia Maurorum on Antibiotic-resistant MRSA <i>Mayadah Shehadeh</i>	57
33.	Creating a Health and Wellness Paradigm in the "OMICS" Era <i>Robert Sindelar</i>	58
34.	Osteosarcoma during Pregnancy - Case Report <i>Malgorzata Stefaniak</i>	59
35.	Rapid and Simple Colorimetric Biosensor for the Detection of Proteases <i>Ghadeer Suaifan</i>	60
36.	The Effect of Maternal Obesity on Maternal and Neonatal Health <i>Ayten Taspinar & Selva Ozgul</i>	61
37.	Decision Making Model for the Emerging Nanotechnologies <i>Kewal Verma & Audre Dixon</i>	62
38.	Evaluation of Value-based Pricing Models for Cancer Drugs in a Clinical Setting <i>Leslie Wilson & Tracy Lin</i>	63
39.	Examples of Nanoparticles' Toxicity to Susceptible Populations <i>Bing Yan</i>	65

Preface

This book includes the abstracts of all the papers presented at the 4th *Annual International Conference on Pharmaceutical Sciences, 1-4 May 2017*, organized by the Athens Institute for Education and Research (ATINER). In total, 39 papers were submitted by over 50 presenters, coming from 17 different countries (Canada, China, Egypt, Germany, India, Japan, Jordan, Macau, Pakistan, Poland, Russia, Saudi Arabia, South Korea, Thailand, Turkey, UK, and USA). The conference was organized into 12 sessions that included a variety of topic areas including drug delivery systems, nanomedicine and nanobiotechnology, medicinal plant analysis and more. A full conference program can be found beginning on the next page. In accordance with ATINER's Publication Policy, the papers presented during this conference will be considered for inclusion in one of ATINER's many publications.

The purpose of this abstract book is to provide members of ATINER and other academics around the world with a resource through which to discover colleagues and additional research relevant to their own work. This purpose is in congruence with the overall mission of the institute. ATINER was established in 1995 as an independent academic organization with the mission to become a forum where academics and researchers from all over the world could meet to exchange ideas on their research and consider the future developments of their fields of study.

It is our hope that through ATINER's conferences and publications, Athens will become a place where academics and researchers from all over the world regularly meet to discuss the developments of their discipline and present their work. Since 1995, ATINER has organized more than 400 international conferences and has published nearly 200 books. Academically, the institute is organized into seven research divisions and forty research units. Each research unit organizes at least one annual conference and undertakes various small and large research projects.

For each of these events, the involvement of multiple parties is crucial. I would like to thank all the participants, the members of the organizing and academic committees, and most importantly the administration staff of ATINER for putting this conference and its subsequent publications together.

Gregory T. Papanikos
President

FINAL CONFERENCE PROGRAM
4th Annual International Conference on Pharmaceutical Sciences,
1-4 May 2017 Athens, Greece

PROGRAM

Conference Venue: Titania Hotel, 52 Panepistimiou Avenue, Athens, Greece

C O N F E R E N C E P R O G R A M

Monday 1 May 2017

08:00-09:00 Registration and Refreshments

09:00-09:30 (Room D-Mezzanine Floor) Welcome and Opening Address

Gregory T. Papanikos, President, ATINER.

09:30-11:00 Session I (Room C-10th Floor): Recent Trends in Health, Pharmacy & Drug Delivery Systems I

Chair: Ketan Ruparelia, Head, Pharmaceutical Research Unit, ATINER & Research Fellow and Part-time Lecturer, De Montfort University, U.K.

1. *Azhar Hussain, Dean, Department of Pharmacy, Hamdard University, Pakistan. Perceptions of Regulators towards the Current Pharmacovigilance System in Pakistan.
2. *Leslie Wilson, Professor, University of California San Francisco, USA & Tracy Lin, University of California San Francisco, USA. Evaluation of Value-based Pricing Models for Cancer Drugs in a Clinical Setting.
3. *Laila J. Badran, Independent Expert, Jordan. The Anti-Corruption Drug Case: Lessons from the Past.

11:00-12:30 Session II (Room C-10th Floor): Recent Trends in Health, Pharmacy & Drug Delivery Systems II

Chair: Azhar Hussain, Dean, Department of Pharmacy, Hamdard University, Pakistan.

1. Amr Badawey, Professor, Future University in Egypt, Egypt, Ali Yehia, Lecturer, Cairo University, Egypt, Nagiba Hassan, Associate Professor, Cairo University, Egypt & Soad Emad, Teaching Assistant, Future University in Egypt, Egypt. Novel Ion Selective Membrane for Tiotropium bromide and Application to Spiriva Inhalation Powder in Handihaler.
2. Oleg Pisarenko, Head, Laboratory for Myocardial Metabolism, Russian Cardiology Research-and-Production Complex, Russia. A Structural Analogue of Peptide Apelin-12 in Cardioprotection against Ischemia/Reperfusion Injury.

12:30-14:00 Session III (Room C-10th Floor): Emerging Trends in Medicinal Plant Analysis, Pharmaceutical Chemistry and Pharmacognosy I

Chair: Laila J. Badran, Independent Expert, Jordan.

1. Maryam Bakr, Teaching Assistant, Future University in Egypt, Egypt, Maha Hegazy, Associate Professor, Cairo University, Egypt, Amr Badawey, Professor, Future University in Egypt, Egypt & Samah Abbas, Professor, Cairo University, Egypt. Spectral Resolution Methods Manipulating Spectrophotometric Data for Quantification of Ternary Mixture of Thiocetic acid, Benfotiamine and Cyanocobalamin in Capsules.
2. Mayadah Shehadeh, Associate Professor, The University of Jordan, Jordan. Inhibitory Effect of *Aristolochia Maurorum* on Antibiotic-resistant MRSA.

14:00-15:00 Lunch

15:00-17:00 Session IV (Room D-Mezzanine Floor): Novel Technologies

Chair: Robert Sindelar, Professor and Former Dean, Faculty of Pharmaceutical Sciences, The University of British Columbia, Canada.

1. Christine Kleffner, TH Köln, Germany, Nicolas Kruse, TH Köln, Germany, Thomas Saeger, TH Köln, Germany, Gerd Braun, TH Köln, Germany & Ompe Aime Mudimu, TH Köln, Germany. Surface Evaluation and Optimisation of PP Oxygenator Membranes by Introducing Zeta Potential Analysis.
2. Nicolas Kruse, TH Köln, Germany, Christine Kleffner, TH Köln, Germany, Thomas Saeger, TH Köln, Germany, Gerd Braun, TH Köln, Germany & Ompe Aime Mudimu, TH Köln, Germany. Smart Mobile Organ Perfusion Transportation System.
3. Thomas Saeger, TH Köln, Germany, Christine Kleffner, TH Köln, Germany, Nicolas Kruse, TH Köln, Germany, Gerd Braun, TH Köln, Germany & Ompe Aime Mudimu, TH Köln, Germany. Development of a New High Performance Hollow Fiber for Oxygenators.

17:00-19:00 Session V (Room D-Mezzanine Floor): Special Issues in Health Science

Chair: Christine Kleffner, TH Köln, Germany, Nicolas Kruse, TH Köln, Germany.

1. Yeol Kim, Head, Division of Cancer Management Policy, Korean National Cancer Center, South Korea. Preliminary Results of Developing a Shared Care Model between Oncologists and Primary Physicians for Enhancing Health Care for Cancer Survivors in Korea (SCOPE-K) Project.
2. *Vera Lucia Raposo, Assistant Professor, University of Macau, Macau. Oocyte Cryopreservation for Fertility Preservation – The Legal Approach.
3. Ketan Ruparelia, Research Fellow and Part-time Lecturer, De Montfort University, UK, Ketu Zeka Zeka, Research Fellow, De Montfort University, UK, Zainab Ali, Pharmacy Student, De Montfort University, UK, Hajara Alfa, Post Graduate Student, De Montfort University, UK, Purvi Mali, Post Graduate Student, De Montfort University, UK, Randolph Arroo, Reader in Phytochemistry, De Montfort University, UK, Nazmin Juma, Researcher, De Montfort University, UK & Unmesh Desai, Researcher, De Montfort University, UK. Qualitative and Qualitative Phytochemical Screening of Medicinal Herbal Ocimum Tulsi Leaves.

19:00-20:30 Session VI (Room D-Mezzanine Floor): A Small Symposium on Diabetes I

Chair: Andriana Margariti, Head, Medicine Research Unit, ATINER & Lecturer, Centre for Experimental Medicine, Queen's University Belfast, U.K.

1. *Robert Sindelar, Professor and Former Dean, Faculty of Pharmaceutical Sciences, The University of British Columbia, Canada. Creating a Health and Wellness Paradigm in the "OMICS" Era.
2. Ayten Taspinar, Associate Professor, Adnan Menderes University, Turkey & Selva Ozgul, Midwife, Adnan Menderes University, Turkey. The Effect of Maternal Obesity on Maternal and Neonatal Health.
3. Judith Aponte, Associate Professor, Hunter College, The City University of New York, USA, Karen Tejada, Hunter College, The City University of New York, USA & Mariel Acosta-Melo, Hunter College, The City University of New York, USA. Systematic Literature Review: Diabetes Internet-based Spanish Language Health Information.
4. *Andis Klegeris, Associate Professor, University of British Columbia, Canada. Increased risk of Alzheimer's disease in Type 2 Diabetes: Neuroimmune Effects of Dysregulated Peripheral Factors as a Possible Link.
5. Ramona DeJesus, Assistant Professor, Division of Primary Care Internal Medicine, Mayo Clinic, USA, Robert Jacobson, Department of Pediatrics and Adolescent Medicine, Mayo Clinic, USA, Kristin Vickers Douglas, PhD, Department of Psychiatry and Psychology, Mayo Clinic, USA, Debra Jacobson, MS, Division of Biomedical Statistics and Informatics, Mayo Clinic, USA, Patrick Wilson, Department of Health Sciences Research, Mayo Clinic, USA & Jennifer St. Sauver, PhD, Department of Health Sciences Research, Mayo Clinic, USA. Impact of an Intensive 12-Week Wellness Coaching Program on Self-Care Behaviours among Adult Primary Care Patients with Pre-Diabetes.

21:00-23:00 Greek Night and Dinner (Details during registration)

Tuesday 2 May 2017

07:45-11:00 Session VII: An Educational Urban Walk in Modern and Ancient Athens

Chair: Gregory Katsas, Head, Sociology Research Unit, ATINER & Associate Professor, The American College of Greece-Deree College, Greece

Group Discussion on Ancient and Modern Athens.

Visit to the Most Important Historical and Cultural Monuments of the City (be prepared to walk and talk as in the ancient peripatetic school of Aristotle)

(Note: The simple registration fee of the conference does not cover the cost of this session. More details during registration).

11:30-13:00 Session VIII (Room C-Mezzanine Floor): Recent Trends in Health, Pharmacy & Drug Delivery Systems III

Chair: PD Gupta, Adjunct Professor, Manipal University, India.

1. *Ahmad Khalil, Professor, Yarmouk University, Jordan, Hanan M. Bashaireh, Yarmouk University, Jordan & Ahmad A. El-Oqlah, Yarmouk University, Jordan. Evaluation of Cytotoxicity, Mutagenicity and Antimutagenicity of Methanolic Extract of Aerial Parts of *Plumbago Europaea* on Balb/c Mice Bone Marrow Cells.
2. *Madeeha Malik, Director, Department of Pharmacy, Hamdard University, Pakistan. Assessment of Women Postpartum Quality of Life after Different Modes of Delivery in Pakistan.
3. Magdalena Paczkowska, PhD Student, Poznan University of Medical Sciences, Poland, Daria Szymanowska-Powalowska, Assistant Professor, Poznan University of Life Sciences, Poland & Judyta Cielecka-Piontek, Assistant Professor, Poznan University of Medical Sciences, Poland. Biopolymers in Overcoming Carbapenem Analogs Limitations in the Treatment.
4. Rula Darwish, Professor, The University of Jordan, Jordan. Science-Based Evaluation of Propolis and its Constituents on *Pseudomonas Aeruginosa*.
5. Ghadeer Suaifan, Professor, The University of Jordan, Jordan. Rapid and Simple Colorimetric Biosensor for the Detection of Proteases.
6. Yasser Bustanji, Professor, Hamdi Mango Center for Scientific Research, Jordan. Nanoparticles of Chitosan Derivatives Improve Oral Doxorubicin Bioavailability.

13:00-14:00 Lunch

14:00-16:00 Session IX (Room D-Mezzanine Floor): A Panel on Nanomedicine & Nanobiotechnology

Chair: Oleg Pisarenko, Head, Laboratory for Myocardial Metabolism, Russian Cardiology Research-and-Production Complex, Russia.

1. Bing Yan, Professor, Shandong University, China. Examples of Nanoparticles' Toxicity to Susceptible Populations. (HSCBIO)
2. PD Gupta, Adjunct Professor, Manipal University, India. Nanodiagnostics: A Future Trend in Clinical Chemistry. (HSCBIO)
3. *Kewal Verma, Certified Advanced Facilitator, University of Phoenix, President, BCA International, USA & Audré Dixon, Doctorate of Health Administration, University of Phoenix, USA. Decision Making Model for the Emerging Nanotechnologies. (HSCBIO)

16:00-17:00 Session X (Room D-Mezzanine Floor): A Panel on “Medical Tourism: Benefits and Risks”

Chair: Panagiotis Karanis, Academic Member, ATINER & Professor, Faculty of Medicine, Qinghai University, China and Cologne University, Germany.

1. *Houaida Helal Assistant Professor, King Saud bin Abdulaziz University for Health Sciences, Saudi Arabia. Nursing Role in Inbound and Outbound Medical Tourism in Saudi Arabia. (HSCTOU)
2. *Gabriele Karanis, Assistant Professor, Qinghai University Affiliated Hospital, China & Panagiotis Karanis, Professor, Qinghai University Affiliated Hospital, China. Medical Tourism in Germany – A Paradigm for a Success Story and How it Works. (HSCTOU)
3. Anand Odedra, Specialist Registrar, Sheffield Teaching Hospitals, UK, Steve Green, Professor, Sheffield Teaching Hospitals, UK & Rohit Bazaz, Sheffield Teaching Hospitals, UK. United Kingdom and Republic of Ireland Renal Physicians’ Experiences of Patients Undergoing Renal Transplants Abroad: A Questionnaire-Based Cross-Sectional Survey. (HSCTOU)

17:00-18:30 Session XI (Room E-Mezzanine Floor): Health Care Issues

Chair: Wafaa Elarousy, Assistant Professor, King Saud Bin Abdulaziz University for Health Sciences, Saudi Arabia.

1. *Bruno Cotter, Associate Professor, University of California San Diego, USA. HIV and Cardiovascular Disease: The Newest Chronic Disease.
2. Maria Reinart (Reina) Carlos (Imaizumi), Professor, Ryukoku University, Japan. The Stepwise International Migration of Philippine-educated Nurses and Its Policy Implications on Japan’s Recruitment and Retention of Foreign Workers in the Elderly Care Sector.
3. Asuman Sener, Lecturer, Ondokuz Mayıs University, Turkey, Zeliha Koc, Associate Professor, Ondokuz Mayıs University, Turkey & Zeynep Saglam, Lecturer, Ondokuz Mayıs University, Turkey. Determining the Use of Herbal Medicine among the Hospitalized Patients of the Physical Therapy and Rehabilitation Unit.
4. Ayfer Acikgoz, Lecturer - Assistant Professor, Eskisehir Osmangazi University, Turkey, Dilek Sayik, Nurse, Eskisehir State Hospital, Turkey, Semra Songut, Lecturer, Gaziosmanpasa University, Turkey, Yeliz Kaya, Assistant professor, Eskisehir Osmangazi University, Turkey & Imdat Koksall, Lecturer, Gaziosmanpasa University, Turkey. The Burdens of Sitter Mothers at Paediatrics Clinics and the Effect of Hospital Stay on Depression, Anxiety and Stress Levels.
5. Malgorzata Stefaniak, Lecturer / Midwife, Medical University of Warsaw, Poland. Caring for a Pregnant Patient with a Diagnosed Cancer - Case Report.

18:30-20:00 Session XII (Room D-Mezzanine Floor): A Small Symposium on Diabetes II

Chair: Andis Klegeris, Associate Professor, University of British Columbia, Canada.

1. Mahua Ghosh, Assistant Professor, University of Calcutta, India & Kankana Das, Senior Research Fellow, University of Calcutta, India. Management of Diabetic Nephropathy using Structured DAG Oils in Murine System: A Comparative Assessment of Redox-Regulated Signaling System.
2. Khemaradee Masingboon, Lecturer, Burapha University, Thailand, Saifone Mounkum, Lecturer, Burapha University, Thailand & Suwannee Mahakayanun, Assistant Professor, Burapha University, Thailand. Risk Perception among Persons with Pre-Diabetes, Thailand.
3. Irina Gette, Senior Researcher, Ural Federal University named after the first President of Russia B. N. Yeltsin, Russia, Victor Emelyanov, Assistant Professor, Ural Federal University named after the first President of Russia B. N. Yeltsin, Russia, Irina Danilova, Head of the Department of Medical Biochemistry and Biophysics, Ural Federal University named after the first President of Russia B. N. Yeltsin, Russia & Tatyana Bulavintceva, Junior Researcher, Institute of Immunology and Physiology, Russia. Impact of 1,3,4-Thiadiazine Derivative on Pancreas Islets in Diabetic Rats.
4. Sophia Kelaini, Research Fellow, Queen’s University Belfast, UK. The RNA Binding Protein Quaking is a Key Regulator of Endothelial Cell Differentiation, Neovascularization and Angiogenesis through Direct Binding of the 3’UTR of STAT3.

21:00- 22:30 Dinner (Details during registration)

Wednesday 3 May 2017
Cruise: (Details during registration)
or Mycenae and Epidaurus Visit: (Details during registration)

Thursday 4 May 2017
Delphi Visit: (Details during registration)

Ayfer Acikgoz

Lecturer – Assistant Professor, Eskisehir Osmangazi University, Turkey

Dilek Sayik

Nurse, Eskisehir State Hospital, Turkey

Semra Songut

Lecturer, Gaziosmanpasa University, Turkey

Yeliz Kaya

Assistant Professor, Eskisehir Osmangazi University, Turkey

&

Imdat Koksal

Lecturer, Gaziosmanpasa University, Turkey

The Burdens of Sitter Mothers at Paediatrics Clinics and the Effect of Hospital Stay on Depression, Anxiety and Stress Levels

Purpose: The purpose of this study was to determine the burdens of sitter mothers at paediatrics clinics, and the effect of hospital stay on depression, anxiety and stress levels.

Method: The study was conducted with 285 mothers, who stayed at the paediatrics clinics of Eskisehir State Hospital and Medical Faculty Hospital of Eskisehir Osmangazi University between October – December 2014, and who agreed to take part in the study. The requisite permission was granted from the ethics committee and the institution before conducting the study. Descriptive Information Form and a Depression – Anxiety – Stress scale were used as data collection tools. The data was assessed using the IBM SPSS 17.0 statistics package programme. Mean and percentile distributions, the chi square test, independent sample T test and correlation test were used in the assessment of the data.

Outcomes: There was a statistically significant relationship between the Depression – Anxiety – Stress levels of mothers who stayed as sitters and the presence of a chronic illness in the child (Depression $p=0.000$, Anxiety $p=0.006$, Stress $p=0.096$), the period of the illness of the child (Depression $p=0.000$, Anxiety $p=0.000$, Stress $p=0.000$) and the number of days the mothers stayed in hospital as sitters (Depression $p=0.000$, Anxiety $p=0.000$, Stress $p=0.001$).

Conclusion: It was determined that the mothers who stayed as sitters at paediatrics clinics were at risk from the mental perspective.

Judith Aponte

Associate Professor, Hunter College, The City University of New York,
USA

Karen Tejada

Hunter College, The City University of New York, USA
&

Mariel Acosta-Melo

Hunter College, The City University of New York, USA

Systematic Literature Review: Diabetes Internet-based Spanish Language Health Information

Background: Diabetes is a growing epidemic that is affecting Hispanics in high rates. Globally and among all ethnic groups, Type 1 diabetes mellitus (T1DM) accounts for 5-10% of all diabetes cases, and Type 2 diabetes mellitus (T2DM) accounts for 90-95% of cases. Since most cases of diabetes are of T2DM, diabetes statistics are primarily of people with T2DM. In 2014, 29.1 million people in the United States (U.S.) had diabetes.

Introduction: During 2013, Latinos comprised 17% (54 million) of the total U.S. population and, approximately 12.8% of those U.S. Hispanics had diabetes. A critical and common public health concern for Hispanics is the prevalence of diabetes, which, in 2010, was the seventh leading cause of death in the U.S. overall, and the fifth leading cause of death for Hispanics in the U.S.

The internet has become a place that many health consumers go to access and gather health-related information. Although Hispanics use the internet for health-related informational and educational purposes, there is a lack of information available in the Spanish-language.

Methods: A review was conducted to examine the literature on internet-based, Spanish-language, diabetes focused information. One search was conducted, using three different databases (i.e. CINAHL, MEDLINE, and PubMed). The search used the keywords *diabetes*, *internet*, and *Spanish*, and was based on published articles from January 1, 2005 to June 30, 2016.

Results: Of the 46 articles reviewed, one was a duplicate, and 41 were eliminated. These findings show a lack of data and research on Spanish-language, internet-based diabetes informational and educational sites.

Conclusion: Qualitative and quantitative studies are needed to develop and examine Spanish-language diabetes internet sites and the

health-related impact they have on Hispanics who prefer Spanish-language sites.

Amr Badawey

Professor, Future University in Egypt, Egypt

Ali Yehia

Lecturer, Cairo University, Egypt

Nagiba Hassan

Associate Professor, Cairo University, Egypt

&

Soad Emad

Teaching Assistant, Future University in Egypt, Egypt

Novel Ion Selective Membrane for Tiotropium bromide and Application to Spiriva Inhalation Powder in Handihaler

Electrochemical response characteristics are significantly influenced by membrane components. Type of ion exchanger and ionophore in a plasticized PVC matrix should be evaluated for nernstian responses, detection limits and selectivity. Herein, we developed a novel membrane sensor for Tiotropium bromide (TIO), which is a recently approved anticholinergic bronchodilator by FDA. Three tetraphenyl borate derivatives were evaluated and it was found that tetrakis-[3,5-bis(trifluoro- methyl)phenyl] borate (TFPB) provided optimum nernstian response of monovalent cation with lower detection limit compared to other ion exchangers. Type of plasticizer used in this study was 2-nitrophenyl octyl ether (NPOE), which did not show a significant effect compared to other two types. Selectivity of membrane sensor to TIO in presence of several interfering organic and inorganic cations was enhanced in ionophore based sensor compared to ionophore free one. Generally, Calix[8]arin (CX8) enhanced the selectivity by about one order of magnitude compared to a functionalized β -cyclodextrin. The optimized sensor utilizing TFPB and CX8 in NPOE plasticized PVC sensor provided satisfactory response characterises for TIO in a linear range 1×10^{-2} - 1×10^{-6} M with a detection limit of 1.6×10^{-7} M. The proposed sensor could successfully determine TIO in Spiriva inhalation powder. Results from the proposed potentiometric sensor and a reported RP-HPLC method were statistically compared and no significant difference was obtained.

Laila J. Badran
Independent Expert, Jordan

The Anti-Corruption Drug Case: Lessons from the Past

Raised The Anti-Corruption Drug Case that was considered unique in the History of Ministry of Health (MOH).

In 1984 & 1985 while I was the Director of Drug Quality Control Laboratory (DQCL) at the MOH: Two drugs, (Italian) IV infusion and (British) Injectable Ampoules (after testing), they Failed the Pharmacopoeal specifications and had Major Defects.

The two reports were issued under my supervision ordering for immediate withdrawal of the relevant two batches from the market and proper legal action should be taken.

But being Responsible for these reports, I have faced severe opposition from the Ministry of Health and from the Drug Stores Representatives: I had been replaced by a pharmacist who is not holding DQC specialty; I was isolated in a different irrelevant department in the MOH.

Consequently I took nine days leave, and traveled (on the expense and support of my Late Parents) with the drug samples to Geneva to the official WHO DQC Laboratory, who confirmed our original Reports.

Then I traveled Directly to London to the Drug Manufacturer and gave them the drug samples asking for their report: I have received their apology letter admitting that it was a batch with major defect.

Returning back to Jordan with the striking evidence confirming our original reports I immediately raised the Anti-Corruption Drug Case in the Higher Supreme Court. My famous Lawyer said: your case is a National Case, I will not charge you a penny". After winning the case the legal action was made on the Harmful Medications resulting in protecting our patients from taking defective harmful medications 1986-1987.

Consequently major Administrative Managerial changes resulted in Establishment of new Regulatory System, appointing New Minister of Health, Deputy, Drug Director and appointing me as an Advisor to the Minister of Health for Drug Affairs 1989.

Maryam Bakr

Teaching Assistant, Future University in Egypt, Egypt

Maha Hegazy

Associate Professor, Cairo University, Egypt

Amr Badawey

Professor, Future University in Egypt, Egypt

&

Samah Abbas

Professor, Cairo University, Egypt

**Spectral Resolution Methods Manipulating
Spectrophotometric Data for Quantification of Ternary
Mixture of Thioctic acid, Benfotiamine and
Cyanocobalamin in Capsules**

Different spectrophotometric methods were developed and validated for solving the spectral overlap and determination of thioctic acid (TH), benfotiamine (BEN) and cyanocobalamin (CNCo) in their pure form, laboratory prepared mixtures and in capsules. Cyanocobalamin was determined by first derivative method and the peak amplitude was measured at 564 nm without interference of TH and BEN. First derivative method was also applied for determination of TH, where the peak amplitude was recorded at 384.6 nm. Ratio difference spectrophotometric method was also applied for determination of TH and BEN, where CNCo has no interference. Moreover, TH and BEN were determined by derivative ratio method, where the peak amplitude was recorded at 320 and 286.8 nm, respectively. Ratio subtraction method was successfully applied for determination of BEN at its max without interference of the other co-formulated drugs. Complete validation according to the ICH guidelines was performed. The linearity ranges were 200.00-1800.00, 2.00 -30.00 and 5.00 -200.00 $\mu\text{g}/\text{mL}$ for TH, BEN and CNCo, respectively. The methods were found to be of high accuracy, precision and specificity. No significant difference was obtained upon comparing the obtained results with those obtained by applying a reported method.

Yasser Bustanji

Professor, Hamdi Mango Center for Scientific Research, Jordan

Nanoparticles of Chitosan Derivatives Improve Oral Doxorubicin Bioavailability

Novel chitosan-modified polymeric nanoparticles were developed for oral administration for Doxorubicin. These nanoparticles were developed utilizing the double emulsion solvent evaporation technique for sustained delivery. Chitosan diacetate (CDA) and chitosan triacetate (CTA) polymers were prepared and loaded with various anticancer drugs and then were characterized for particle size using dynamic light scattering as well as transmission electron microscopy and net surface charge using dynamic light scattering. Particles size was below 100 nm in diameter and zeta potential ranged - (25-30). In vitro release of encapsulated drugs was sustained over a period of 14 days. Nanoparticles enhanced cellular accumulation of encapsulated drugs, compared to the free drugs, in vitro in MCF-7 and Caco-II tumor cell lines. Further, chitosan triacetate nanoparticles enhanced oral bioavailability of doxorubicin.

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Maria Reinaruth (Reina) Carlos (Imaizumi)
Professor, Ryukoku University, Japan

The Stepwise International Migration of Philippine-educated Nurses and Its Policy Implications on Japan's Recruitment and Retention of Foreign Workers in the Elderly Care Sector

In aged societies, the issues of employing and retaining foreign-educated health workers to take care of mainly the elderly population has increasingly gained attention and relevance. This presentation hopes to contribute to the literature by taking the case of Philippine-educated (Philippine-born) nurses whose stepwise international migration pattern has impacted on the elderly care sector's labor market in Japan.

The objectives of this presentation are twofold: First, we discuss how and why Philippine-educated nurses engage in stepwise migration, based on fieldwork results in Austria, Australia, Dubai, UK and Singapore. Here, we attempt to theorize on the factors affecting their stepwise migration behavior and explain how nurses distinguish between transit and final destinations over time. Second, we look at the implications of such migration pattern/behavior on the employment of Philippine-educated nurses in Japan, which has created a scheme to accept them as nurses and certified careworkers under a bilateral economic partnership agreement in 2009. Recently also, the Japanese government has ratified a bill allowing foreign careworkers to be employed in the elderly care sector as technical trainees.

It was found out that stepwise migration is a rational decision when destination countries' unpredictable and whimsical recruitment and migration policies towards healthcare workers. Philippine-educated nurses are inclined to take up stepwise migration in order to accumulate various resources in the transit destinations that are deemed useful and as preparation to reach the final destination. Also, in the case of Japan, many Philippine-educated nurses come to work in the elderly care sector as certified careworkers. Given Japan's current immigration and healthcare workforce policies, Japan for them is considered largely as a transit, rather than final destination. The low retention rate of such workers will undoubtedly have important implications on the alleviation of labor shortage in this aged society.

Note: Certified careworker is a term used for those who passed the national licensure examination, which consists of three parts – personal care, housekeeping and nursing care.

Bruno Cotter

Associate Professor, University of California San Diego, USA

HIV and Cardiovascular Disease: The Newest Chronic Disease

Cardiovascular disease, and particularly coronary heart disease (CHD), is an emerging area of concern in the HIV population. Soon after the introduction of potent antiretroviral therapy (ART), concerns were raised about a possible increased risk of coronary heart disease. HIV infection has become a chronic disease in countries in which effective combination ART (cART) has been available since the mid-1990s. Contemporary studies have shown that in HIV-infected patients, rates of acute myocardial infarction are up to twice as high as in the non-infected patients in Western countries. Recent reports have also found that chronic inflammation, immune activation and antiretroviral drugs play a more dominant role in HIV-related CHD compared with CHD in the general population. Whether cART, and in particular protease inhibitors (PI), increases the risk for CHD has been extensively debated over the past decade. However, cART and the PI risk-benefit ratio remains positive, as the increase in life expectancy conferred by cART far outweighs the associated risks for myocardial infarction.

Importantly, cardiovascular risk should also be evaluated in HIV-infected children because vertically infected individuals have been exposed long-term to both HIV and cART. Therefore, the risk for premature atherosclerosis in adulthood among HIV-infected children requires further investigation to develop adequate strategies of prevention.

The HIV epidemic infection has had a devastating effect on health care provision, resources and life expectancy in Africa and other underdeveloped countries. The introduction of ART has also dramatically improved life expectancy of many of these patients. However, many underdeveloped countries are a long way from providing a comprehensive prevention program, as well as effective antiretroviral therapy for all infected with HIV. Very little research emphasis has been placed on the influence of HIV on heart disease. However, the expected improved survival related to progressively more patients being treated with cART will be an ideal platform for researchers in underdeveloped countries to study the various aspects of cardiovascular disease in HIV-infected patients, both in those who are cART naïve and in those who are treated with cART.

Available data suggest the presence of an accelerated process of coronary atherosclerosis in the HIV-infected population due to multiple factors, including a higher prevalence of conventional risk factors, emerging new risk factors (chronic inflammation, immune activation) and the role of cART. Evaluating new strategies to prevent CHD in HIV-infected patients is a major concern. It will be crucial for cardiovascular clinicians to become fully engaged in the care of HIV-infected patients. In addition, the expertise, knowledge and engagement of cardiovascular investigators, as well as their collaboration with HIV investigators and researchers will be critical to further advancing the field of HIV-related cardiovascular disease.

Rula Darwish

Professor, The University of Jordan, Jordan

Science-Based Evaluation of Propolis and its Constituents on *Pseudomonas Aeruginosa*

Pseudomonas aeruginosa (*P. aeruginosa*) is the most common infective pathogen of burns and is a frequent cause of nosocomial infections. Multidrug-resistant *P. aeruginosa* infections are increasing worldwide. Thus, the prevalence of bacterial resistance to conventional antibiotics has prompted an intensive search for new therapeutic agents. Propolis and its compounds have been the focus of many works due to their multifactorial activities, but only some of them have been substantiated by experimental evidence. It is traditionally acknowledged to exert antimicrobial activity. Its composition is highly variable, depending on the plant species and on the season of collection. Moreover literature survey showed instances of improved efficacies of bee products when they are combined with antibiotics.

The present study was carried out to evaluate the antibacterial activity of Jordanian propolis, collected from two locations with two different dominant floras pine and oak trees, and three isolated flavonoids (pinobanksin-3-O-acetate, pinocembrin and chrysin). In addition, the effect of combining propolis ethanolic extracts and selected antibiotics (Amoxicillin, Ampicillin, gentamicin and Cefalexin) against *P. aeruginosa* was also investigated. Zones of inhibition and minimum inhibitory concentrations (MICs) were determined on clinically isolated multiresistant and standard ATCC 27853 *P.aeruginosa* strains.

Crude propolis from pine showed higher antibacterial activity than oak against the tested bacteria. Only pinobanksin-3-O-acetate and pinocembrin exhibited some anti-pseudomonad effect. Chrysin was inactive as antipseudomonal.

In conclusion, our results demonstrated enhanced activity between propolis and gentamicin against *P. aeruginosa*. This is the first study to report enhanced effects of the combination of Jordanian propolis with gentamicin against *P. aeruginosa*. Further studies are needed to determine the underlying mechanism of action. It is the first report that shows in vitro antibacterial activity of isolated flavonoids from Jordanian propolis against standard and resistant strains of *P. aeruginosa*. Overall, results of this study highlight the important role of propolis from botanical source on the antibacterial activity of antibiotics and suggest possibility of concomitant use of the tested antibiotics with propolis in combating *P. Aeruginosa*. In addition, propolis-antibiotics administration may not impair their antimicrobial activity.

Ramona DeJesus

Assistant Professor, Division of Primary Care Internal Medicine, Mayo Clinic, USA

Robert Jacobson

Department of Pediatrics and Adolescent Medicine, Mayo Clinic, USA

Kristin Vickers Douglas

PhD, Department of Psychiatry and Psychology, Mayo Clinic, USA

Debra Jacobson

MS, Division of Biomedical Statistics and Informatics, Mayo Clinic, USA

Patrick Wilson

Department of Health Sciences Research, Mayo Clinic, USA

&

Jennifer St. Sauver

PhD, Department of Health Sciences Research, Mayo Clinic, USA

Impact of an Intensive 12-Week Wellness Coaching Program on Self-Care Behaviours among Adult Primary Care Patients with Pre-Diabetes

Background: Thirty seven percent of US adults 20 years and above have pre-diabetes; about 70% are expected to develop diabetes within 10 years. Progression can be prevented or delayed through positive lifestyle interventions. The challenge is to enable individuals to initiate and maintain healthy lifestyle changes. Wellness coaching offers a one-on-one focused self-management support program to health education that enhances patient motivation and guides them towards behavioral change. While its benefit in diabetes management is widely reported, its role in patients with pre-diabetes has not been widely explored.

Method: This prospective study assessed whether an individualized 12 week wellness coaching intervention for primary care patients with pre-diabetes will improve self-care behaviors as measured by self-reported changes in physical activity level and food choices. Five hundred sixty adult patients 18 years and older with pre-diabetes, who met study inclusion criteria were invited to participate in 12 weeks wellness coaching sessions delivered by certified coaches. Responses from questionnaires at baseline, 6 weeks and 12 weeks were analyzed.

Results: Of 168 consented patients, 99 completed at least one coaching session. Majority of participants were elderly, female, overweight or obese; 50% were retired. At baseline, 50% did not engage in any stretching exercise or had <60 minutes aerobic exercise per week (walking, swimming, biking). While confidence level in ability to make healthy eating choices was moderately high (7 on scale of 1-9), reported

success in doing so was only rated 5.5. At 6 and 12 weeks, average stretching time per week significantly increased from 26.5 minutes to 48.6 and 63.9 minutes respectively; average aerobic exercise time also significantly increased both at 6 and 12 weeks from 117 minutes to 166 and 199 minutes respectively. Success in making healthy eating choices increased from baseline to 6.7 and 7 at 6 and 12 weeks, a significantly statistical improvement. The significant effects on both exercise and eating behavior persisted even after adjusting for age, sex and baseline glucose/A1c values.

Conclusions: A 12 week wellness coaching among adult primary care patients with pre-diabetes resulted in significant improvement in both self-reported physical activity level and food choices. Wellness coaching was independently associated with increase in activity and healthy eating behaviors.

Irina Gette

Senior Researcher, Ural Federal University named after the first President
of Russia B. N. Yeltsin, Russia

Victor Emelyanov

Assistant Professor, Ural Federal University named after the first President
of Russia B. N. Yeltsin, Russia

Irina Danilova

Head of the Department of Medical Biochemistry and Biophysics, Ural
Federal University named after the first President of Russia B. N. Yeltsin,
Russia

&

Tatyana Bulavintceva

Junior Researcher, Institute of Immunology and Physiology, Russia

**Impact of 1,3,4-Thiadiazine Derivative on Pancreas Islets in
Diabetic Rats**

Diabetes is a worldwide metabolic disorder that requires multiple therapeutic approaches and stimulates research focused on more efficient antidiabetic drugs. The potential of a possible antidiabetic drug can be considered to be antiglycative, antioxidant and β -cell protecting. Previously, we have identified in silico that a representative of 1,3,4-thiadiazines the compound L-17 combines antioxidant and antiglycative properties which were confirmed in vitro and in vivo. However, it is unclear whether L-17 can also contribute to the protection of β -cells in the pancreatic islets of alloxanised diabetic rats.

Four groups of 5 Wistar rats weighing 220-250 g were formed: control, L-17, alloxan diabetes, alloxan diabetes plus L-17. Type 1 diabetes mellitus was modeled by alloxan administration (100 mg/kg per day intraperitoneally, 3 days, total dose 300 mg/kg). An aqueous solution of L-17 was administered intramuscularly (40 mg/kg per day, 3 injections simultaneously with alloxan, and 12 injections in total for 4 weeks). The tests of plasma glucose, glycated hemoglobin in erythrocytes, tissue and plasma fructosamine, the histological and morphometric investigation of the pancreas were made.

L-17 had no effect on the number, neither size of the pancreatic islets nor the content of β -cells in healthy animals. We revealed that injections of L-17 to diabetic rats decreased glucose, glycated hemoglobin and fructosamine levels as compared to the same indicators of untreated diabetic rats. The total number of cells increased in the islets after L-17 injections to diabetic rats, but the number of islets and the proportion of β -cells remained as in the diabetic rats.

Therefore, L-17 ameliorates hyperglycemia without affecting the β -cell survival in alloxanised diabetic rats. Further studies of islet cell composition, insulin and insulin-like growth factor expression are necessary to explain the anti-diabetic effect of the 1,3,4-thiadiazine derivative.

Mahua Ghosh

Assistant Professor, University of Calcutta, India

&

Kankana Das

Senior Research Fellow, University of Calcutta, India

Management of Diabetic Nephropathy using Structured DAG Oils in Murine System: A Comparative Assessment of Redox-Regulated Signaling System

Diabetes mellitus is a group of metabolic diseases characterized by chronic hyperglycemia with instabilities in carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action or both. With the increasing prevalence of diabetes consistently there is an urge for proper effective prevention. The present study was carried out to investigate whether the capric acid (Cp) and caprylic acid (Cy)-diacylglycerol (DAG) oil (Cp-DAG or Cy-DAG), two novel structurally formulated lipids, plays any beneficial role in renal pathophysiology in diabetic rats. Streptozotocin (STZ) induced diabetic rats were taken to conduct the study. STZ exposure increased renal damage associated serum markers (urea and creatinine) as well as NO production in the kidney tissue. Moreover, the same exposure enhanced the reactive oxygen species (ROS) generation and lipid peroxidation following the reduction of reduced glutathione (GSH) levels and antioxidant enzyme activities. Hyperglycemia-associated renal pathophysiology also activated the redox-regulated stress response pathways (involving phosphorylation and dephosphorylation of p38, ERK1/2 MAPKs and NF- κ B) and increased the pro-inflammatory cytokines burden which in turn led to renal inflammation. However, supplementation with Cy-DAG oil better counteracted on STZ-treated oxidative stress-mediated renal damage in comparison to the Cp-DAG oil and could act as significantly better therapeutic dietary supplement in preventing renal dysfunction in diabetic nephropathy.

PD Gupta

Adjunct Professor, Manipal University, India

Nanodiagnostics: A Future Trend in Clinical Chemistry

Health care can be managed more effectively, if the diagnostic methods are rapid, sensitive, specific, stable, inexpensive, user's friendly, accurate and painless. DNA and RNA based diagnosis may not reveal the right information for certain diseases. Identification and quantification of proteins and their folding mechanism are very important in diagnosis of diseases. Generally, small quantities of proteins that escape from detection are responsible for the diseases. Nanotechnology has revolutionized medical laboratory diagnosis. Now researchers are investigating how to get devices a million times smaller than the length of an ant to communicate with one another to form nanonetworks. And they are using a different take on "cellular" communication - namely how bacteria communicate with one another - to find a solution.

By nanotechniques protein can be quantified which can aid in the diagnosis of many diseases. We have developed a new simple one step protein estimation method by using eosin dye to measure proteins at nano level concentration without involvement of any sophisticated instruments. This technique is used for estimation of protein in urine (micro albumin). Total number (510) of samples were analyzed; out of this 383 turn out to be normal with Dip Stick Method whereas, 435 turn out to be normal with Eosin Y Method, thus 52 patients were saved for undergoing un-necessary dialysis.

We are trying to use this method for many more applications.

Houaida Helal

Assistant Professor, King Saud bin Abdulaziz University for Health
Sciences, Saudi Arabia

**Nursing Role in Inbound and Outbound Medical Tourism
in Saudi Arabia**

Medical tourism involves patients actively seeking low-cost medical care not available in their native country. It does not include accidents or illnesses that require medical treatment while abroad, but to travel to a foreign country to seek specific care.

Saudi Arabia has developed a five-year plan to encourage medical tourists to seek treatment in its government and private hospitals, but there has been little input from the private sector to engage in a public-private partnership.

According to the Medical Tourism Index (TMI) the Kingdom ranks 37th among the most desired countries to receive medical care. Canada ranks first in global ranking followed in order by the United Kingdom, Israel, Singapore and India.

Although Saudi medical visas remain the primary obstacle to receiving a steady flow of foreign patients, services are available to any individual already in the country on a Haj, Umrah or work visa.

Saudi Arabia has a national healthcare system in which the government provides healthcare services through a number of government agencies. But making the Medical Tourism business a priority in the future might not be as easy, because reputation in the industry is something that takes years to develop. Still, the government's spending in medical technology and state of the art facilities can someday represent real competition to other countries in the area.

The nurses as an essential member in medical team can play a significant role in helping the patients and clients in their decision for medical tourism. The different roles of the nurse will be discussed in relation to medical tourism either inbound or outbound type.

Azhar Hussain

Dean, Department of Pharmacy, Hamdard University, Pakistan

Perceptions of Regulators towards the Current Pharmacovigilance System in Pakistan

Introduction: Pharmacovigilance programs need strong links with regulators to ensure that authorities are well briefed on safety issues in everyday practice that may be relevant to future regulatory action.

Aim: The aim of the present study is to assess the perception of regulators towards the current pharmacovigilance system in Pakistan.

Method: A qualitative study design was used and data was collected using the structured interview guide based on IPAT. All the professionals (n=35) working in regulatory bodies having relevance to pharmacovigilance system were included and selected through snowball sampling technique. Data analysis was carried out by using SPSS version 17. Assessment of the medicine safety system was carried out by using the method provided in the IPAT manual.

Results: The results showed that majority of the respondents perceived that the structural, process and outcome indicators are not being met by the Pharmacovigilance set up of Pakistan. The physical assessment of system highlighted the scores of 37 % and 8.3 for structural and process indicators respectively whereas the outcome indicators score was 18%. Among the perceived barriers, 57% (n=20) perceived that lack of awareness/education/training is the major barrier to the establishment of pharmacovigilance system. Sixty percent respondents (n=21) highlighted initiation of training and awareness programs as the best possible solution for the establishment of effective pharmacovigilance system.

Conclusion: The present study concluded that the pharmacovigilance system of Pakistan is lacking on front of the structural, process and outcome indicators, which are the hallmark of an effective pharmacovigilance system.

Gabriele Karanis

Assistant Professor, Qinghai University Affiliated Hospital, China

&

Panagiotis Karanis

Professor, Qinghai University Affiliated Hospital, China

Medical Tourism in Germany - A Paradigm for a Success Story and How it Works

The German medical system has a good reputation abroad. As a result, hospitals have the opportunity to develop a lucrative market: the treatment of wealthy foreign patients.

The patients come especially from Western and Eastern Europe, the Gulf States and from Russia. The business with medical tourism in Germany is constantly increasing, 4 to 12 percent per year during the last 10 years, as it has been recorded by a researcher group of the department of "Medizintourismus" in the University Bonn-Rhein-Sieg (Juszczak J, 2016: 251.000 internationale Medizintouristen kamen 2014 nach Deutschland. Pressemitteilung vom 27.01.2016, Hochschule Bonn-Rhein-Sieg, FB Wirtschaftswissenschaften, Sankt Augustin.).

More than 200.000 people come from abroad every year to be treated in German clinics and medical practices. Almost half of them are treated in the hospitals.

With medical tourism the German medical system earns about 1.2 million euros per year (Juszczak J, 2013), and more can be added by hotel overnight stays, shopping of foreign patients and their accompanists, transports and so on. The direct economic effect of the medical tourists is estimated at 150 million euros per year.

The reasons for medical tourists to choose Germany as destination are diverse.

For patients from Arab and Eastern European countries:

The technical know-how in the home countries is behind or underdeveloped, or the hospitals' facilities and technologies are not sufficient to perform highly complex surgery, and German medicine has an excellent expertise and reputation in certain disciplines.

Western European patients like the British, the French, the Belgians and especially the Dutch have been traveling to Germany for many years because in their home countries waiting-lists are long for "planned medical interventions". The business model "hips for the Dutch" has become a significant source of income for some hospitals in the German border regions of North Rhine-Westphalia.

To acquire patients from abroad and to fulfill their individual

demands, it is necessary to be well prepared:

The "Network for Better Medical Care", for example, was established in Berlin in 2005, the International Medical Service (IMS) in Freiburg more than 10 years ago, to acquire patients from abroad. Some hospitals have adapted their comfort on specialized wards in such way that they can meet the special needs and desires of the wealthy health tourists: bilingual sisters, interpreters, luxurious room service, respect for and space to celebrate religion and culture, special parking spaces, international office, individual catering, network of transport and lodging (hotels) and service providers for e.g. entertainment for the foreign patients and accompanists, international marketing strategies in the global competition about the distribution of health tourists (e.g. Medical Tourism Guides) and so on. Approximately every 10th hospital in Germany is dedicated to the business with health tourism.

Germany is Europe's number one of the destinations for medical tourists.

Sophia Kelaini

Research Fellow, Queen's University Belfast, UK

The RNA Binding Protein Quaking is a Key Regulator of Endothelial Cell Differentiation, Neovascularization and Angiogenesis through Direct Binding of the 3'UTR of STAT3

The capability to derive endothelial cell (ECs) from induced Pluripotent Stem (iPS) cells holds huge therapeutic potential for diabetes. Objective- This study elucidates the precise role of the RNA-binding protein Quaking isoform 5 (QKI-5) during EC differentiation from both mouse and human iPS cells and dissects how RNA-binding proteins can improve differentiation efficiency towards cell therapy for important vascular diseases such as diabetes. iPS cells represent an attractive cellular approach for regenerative medicine today since they can be used to generate patient-specific therapeutic cells towards autologous cell therapy. In this study, using the model of iPS cells differentiation towards ECs, the QKI-5 was found to be an important regulator of STAT3 stabilisation and VEGFR2 activation during the EC differentiation process. QKI-5 was induced during EC differentiation, resulting in stabilisation of STAT3 expression and modulation of VEGFR2 transcriptional activation as well as VEGF secretion through direct binding to the 3' UTR of STAT3. Importantly, iPS-ECs overexpressing QKI-5 significantly improved angiogenesis and neovascularization and blood flow recovery in experimental hind limb ischemia. Notably, human iPS cells overexpressing QKI-5, induced angiogenesis on Matrigel plug assays in vivo only seven days after subcutaneous injection in SCID mice. These results highlight a clear functional benefit of QKI-5 in neovascularization, blood flow recovery and angiogenesis. They, thus, provide support to the growing consensus that elucidation of the molecular mechanisms underlying EC differentiation will ultimately advance stem cell regenerative therapy and eventually make the treatment of vascular diseases such as diabetes a reality.

Ahmad Khalil

Professor, Yarmouk University, Jordan

Hanan M. Bashaireh

Yarmouk University, Jordan

&

Ahmad A. El-Oqlah

Yarmouk University, Jordan

Evaluation of Cytotoxicity, Mutagenicity and Antimutagenicity of Methanolic Extract of Aerial Parts of *Plumbago Europaea* on Balb/c Mice Bone Marrow Cells

Plumbago europaea L. is a perennial herb belonging to the family Plumbaginaceae that lives in the Mediterranean area including Jordan. It is reported to have a tremendous therapeutic potential. Herbal medicine may cause damage to genetic material, which may lead to an increased risk of cancer and other diseases. Hence, it becomes important to assess cytogenotoxicity of herbal medicines. The present study was conducted, for the first time, to evaluate the in vivo genotoxic effects of methanolic extracts of aerial parts of *P. europaea* on male mice bone marrow cells using chromosomal aberration test and micronucleus assay. The intraperitoneal LD50 of the dimethyl sulfoxide (DMSO) solution of the extract was determined to be 58.33mg/kg body weight. Mitomycin C (MMC, 2mg/kg b. w.) and DMSO (0.5%) served as positive and negative controls, respectively. Cytotoxicity and mutagenicity were measured at 14.6, 29.2, 58.33 and 87.5mg/kg b. w, given for 7 constitutive days, and expressed as mitotic index (MI) and percent aberrant cells (%Abc). Antimutagenicity was followed by administration of 2mg MMC/kg in the beginning of the first or the last 24h of applying 14.6mg/kg of the extract daily for 7days. The selected doses of the extract elevated MI and increased percentage of aberrant bone marrow cells compared to the negative control. However, at a dose of 14.6mg/kg the extract was enough to reduce significantly the toxic effects induced by MMC. Thus, it can be concluded that the *P. europaea* extract by itself is mutagenic, but can be antimutagenic agent probably at small doses since it modulated the mutagenicity of MMC in mice in vivo and may contribute to the wide therapeutic properties claimed by folk medicine and it's safe at low doses.

Yeol Kim

Head, Division of Cancer Management Policy, Korean National Cancer
Center, South Korea

**Preliminary Results of Developing a Shared Care Model
between Oncologists and Primary Physicians for
Enhancing Health Care for Cancer Survivors in Korea
(SCOPE-K) Project**

Introduction: The number of cancer survivors rapidly increased. However cancer survivors did not take appropriate comprehensive health care, which would include not only cancer treatment, but also management of physical and psychological symptoms, health promotion and secondary cancer prevention.

Methods: A shared care model was tested by oncologists and primary care physicians in a National Cancer Center and volunteering primary physicians in a community of Goyang city from Oct. to Nov. 2013. Stomach, colon and breast cancer patients who finished active treatments participated in the project. Firstly, Pre-screening was performed in oncologists' clinic. If cancer survivors have any problem besides oncologic care, oncologists recommend a visit to a primary physician in same hospital or in the community. The problem of cancer survivors, quality of life and satisfaction level of care were examined using a structured questionnaire.

Results: Total 234 cancer survivors (male 45.3%, stomach cancer survivors 53.2%, colon cancer survivors 25.1%, breast cancer survivors 21.7%) completed the prescreening. Among them, 95 cancer survivors (40.6%) have one or more needs for cancer survivorship care; 42.1% check in suffering from physical symptoms, 27.0% check in suffering from psychological symptoms, 40.6% want to receive counseling on life style modification after cancer treatment. Only 53 cancer survivors (55.8%) visited the cancer survivorship clinic in the same hospital. Only two cancer survivors visited the primary physician's clinics in the community. Most of the respondents cited low reliability of primary physician in the community as the main reason. The participation rate is higher in female, stomach cancer survivors, and having many problems. Most of participants are satisfied in the shared care..

Conclusion: Many of cancer survivors suffer from physical and psychological symptoms and they are in need of comprehensive care. Shared care between oncologists and primary physicians in a hospital is feasible based on the preliminary experience.

Christine Kleffner
TH Köln, Germany
Nicolas Kruse
TH Köln, Germany
Thomas Saeger
TH Köln, Germany
Gerd Braun
TH Köln, Germany
&
Ompe Aime Mudimu
TH Köln, Germany

Surface Evaluation and Optimisation of PP Oxygenator Membranes by Introducing Zeta Potential Analysis

Typically, there are two types of membranes used in oxygenators to treat acute respiratory distress syndrome (ARDS). Polymethylpentene (PMP) membranes are completely impermeable for plasma, which is why they can be applied for long-term treatment. However, because of their dense character they suffer from low oxygen flux. High membrane areas and therefore high costs as well as large blood volumes are required. In contrast, Polypropylene (PP) membranes combine a high flux, a small surface area, low costs and small blood volumes. However, depending on operation conditions, the maximum treatment time of the patient is limited to a couple of hours caused by plasma leakage.

The surface properties of the PP membrane change over time resulting in a state, where the liquid is no longer repelled by surface tension from entering the pores. This effect is known as membrane wetting. In this case, the efficiency of the whole module is significantly reduced by blocked hollow fibers until it shows no function at all.

This study investigates the surface properties of existing PP membranes used for oxygenators to identify optimization possibilities in terms of surface modifications. The zeta potential analysis allows a systematical investigation of the limiting parameters aiming the development of membrane surface improvements. Based on the results surface treatment techniques are tested to increase the contact angle that characterizes hydrophobicity and therefore the tendency to plasma leakage. The aim of this work is to enhance the performance of PP membranes to ensure a reliable long-term treatment with oxygenators.

Andis Klegeris

Associate Professor, University of British Columbia, Canada

Increased risk of Alzheimer's disease in Type 2 Diabetes: Neuroimmune Effects of Dysregulated Peripheral Factors as a Possible Link

Alzheimer's disease (AD) is the most prevalent form of dementia worldwide. The hallmark features of AD include abnormal deposition of aggregated proteins, excessive neuronal death in specific brain regions and chronic neuroinflammation. Non-neuronal brain cells, such as microglia and astrocytes, support neuronal health under physiological conditions but become adversely activated in AD brains. Persistent dysregulation and harmful activation of microglia and astrocytes can result in chronic neuroinflammation, which can be damaging to surrounding cells including neurons responsible for cognitive functions and can give rise to the clinical signs of AD. Currently, there are no effective treatment options for AD; therefore, elucidating AD risk factors to delay or prevent this debilitating disease is an emerging area of research.

Recent epidemiological evidence points to type 2 diabetes mellitus (T2DM) as a significant and increasingly widespread AD risk factor. Lifestyle changes may prevent T2DM and, by extension, lead to a reduction in the prevalence of AD. A number of studies have already elucidated the effects of T2DM on the health of neurons. Since T2DM is characterized by a peripheral pro-inflammatory state, we hypothesized that neuroinflammatory mechanisms could be at least partially responsible for the observed link between T2DM and AD. More specifically, we studied the effects of high glucose levels and of metabolic hormones that have reduced functionality in T2DM on the neuroinflammatory response of microglia and astrocytes. We focused on insulin as well as the incretin hormones glucagon like peptide (GLP)-1 and glucose dependent insulinotropic polypeptide (GIP) as candidate signalling molecules that may regulate neuroinflammatory processes. We confirm that high glucose levels increase susceptibility of neuronal cells to injury caused by AD-related agents, such as hydrogen peroxide and fibrillar amyloid beta-42 protein (A β 42).

In addition, we demonstrate that high glucose levels upregulate secretion of the pro-inflammatory interleukin (IL)-6 and IL-8 by human U-118 MG astrocytoma cells and primary human astrocytes. Furthermore, we demonstrate that both microglia and astrocytes express insulin and incretin receptors. Finally, we demonstrate that the

three metabolic hormones studied selectively regulate specific non-neuronal cell functions. We propose that insulin could have anti-inflammatory properties in the brain and may protect against microglia-mediated neurotoxicity, while GLP-1 and GIP exhibit anti-apoptotic, antioxidant and trophic effects on microglia. Thus, we have discovered that insulin, GLP-1, GIP and high glucose regulate specific aspects of neuroinflammation, which can be the mechanistic link between T2DM and the increased risk of AD. Neuroimmune mechanisms can therefore be targeted for development of future AD treatment options.

Nicolas Kruse
TH Köln, Germany
Christine Kleffner
TH Köln, Germany
Thomas Saeger
TH Köln, Germany
Gerd Braun
TH Köln, Germany
&
Ompe Aime Mudimu
TH Köln, Germany

Smart Mobile Organ Perfusion Transportation System

During the last decades the demand on donated organs increased continually while the availability of high quality organs does not satisfy this demand. To fill this gap we are developing a new advanced transport system that realizes the transportation and therefore the transplantation of not top-rated organs.

Our research at the TH Köln investigates the mobile organ perfusion for transportation of human organs for transplantation. The aim of this research is the development of a compact light weight transport device which is capable to measure and control all important transportation conditions to which the organ is exposed as well as its vital parameters (e.g. temperature, oxygen consumption, partial pressure of oxygen, pH value, flow rate). This allows specifying for example temperature gradients that include the warm up phase after transportation without moving the organ several times to different containers and ensures a precise control of the heating rates to prevent damage to the organ.

With the availability of these sensors the oxygenation can be controlled adaptively to the current requirements. The collected vital data during the transport can be a substantial help to evaluate the organ quality at the time of arrival. This high level of automation reduces the demand for special trained human resources significant.

The described functionality of the portable transportation device must be supplied independent from external energy sources to maintain a high mobility. To achieve this requirement is one of the major challenges in this work.

Madeeha Malik

Director, Pharmacy Department, Hamdard University, Pakistan

&

Zirwa Asim

M.Phil Scholar, Hamdard Institute of Pharmaceutical Sciences,
Hamdard University, Pakistan

Assessment of Women Postpartum Quality of Life after Different Modes of Delivery in Pakistan

Introduction: Postpartum problems like poor physical and mental health leads to poor postpartum quality of life and depression in women, which has a devastating effect on the health related quality of life of mother, newborn and her family. **Aim:** The aim of the present study is to evaluate women postpartum quality of life after different modes of delivery in twin cities of Pakistan. **Method:** A descriptive cross-sectional study has been designed to evaluate women postpartum quality of life and depression after different modes of delivery in Pakistan. Pre-validated tool, Short Form Health Survey (SF-36) was used for data collection from a sample of 382 women in the postpartum period (6-8 weeks, 10-12 weeks, 14-16 weeks, 9 months, 15 months) conveniently selected from Immunization centers in healthcare facilities in twin cities of Pakistan. After data collection, data was coded and analyzed statistically. **Results:** The results highlighted that most of the respondents 195 (51%) were of the view that their health was fair. Nearly 186 (48.7%) respondents feel full of life and 126 (33%) had a lot of energy most of the time. Most of the respondents 173 (45.3%) feel worn out a little of time while 162 (42.4%) respondents feel tired all of the time. **Conclusion:** The results highlighted that women undergoing normal vaginal delivery (NVD) had overall better postpartum quality of life as compared to women having cesarean sections (CS) in all domains of health related quality of life.

Khemaradee Masingboon

Lecturer, Burapha University, Thailand

Saifone Moungkum

Lecturer, Burapha University, Thailand

&

Suwannee Mahakayanun

Assistant Professor, Burapha University, Thailand

**Risk Perception among Persons with Pre-Diabetes,
Thailand**

Purpose: Currently, Thailand faces with the increasing number of pre-diabetes which will develop to be diabetes in the next few years. Risk perception is an important factor of self-protective behavior that could reduce the progression of a disease. Little is known how individuals with pre-diabetes perceived their risk of diabetes development. This study aimed to examine risk perception of developing diabetes mellitus and its associating factors among Thai people with pre-diabetes living in semi-urban district of Chonburi, Thailand.

Methods: Guided by the Risk Perception Attitude Framework (RPA). A cross-sectional study was conducted in 219 Thai people with pre-diabetes (FPG = 100-125 mg %). Samples were recruited by simple random sampling from five health-promoting hospitals located in semi-urban district Chonburi, Thailand. Self-report questionnaires were used to assess the associations between knowledge of diabetes mellitus, current BMI, current behavioral practices, and risk perception of diabetes. The outcome measures included the Risk Perception Survey for Developing Diabetes (RPS-DD), the Knowledge of Diabetes Mellitus, and the Health Behavioral Practice questionnaire.

Results: Findings revealed that more than 50% of respondents aged higher than 45 years. 50% of them were overweight (BMI > 25 kg/m²) and more than 40% of respondents had family history of diabetes and hypertension. Most of them reported high scores on optimistic bias for not developing diabetes. In addition, 48.4% of them believed that they had low chance of getting diabetes in the next few years. With bivariate analyses, only knowledge of diabetes and optimistic bias were significant negatively associated with diabetes risk perception ($p < .01$). There were no significant relationship between current BMI, current health practice and diabetes risk perception among this population.

Conclusions: Results indicated that Thai individuals with pre-diabetes perceived themselves at low risk for getting diabetes.

Increasing their awareness of developing diabetes by improving knowledge of diabetes and diabetes prevention is recommended, thereby, it can reduce the incidence of future diabetes.

Anand Odedra

Specialist Registrar, Sheffield Teaching Hospitals, UK

Steve Green

Professor, Sheffield Teaching Hospitals, UK

&

Rohit Bazaz

Sheffield Teaching Hospitals, UK

United Kingdom and Republic of Ireland Renal Physicians' Experiences of Patients Undergoing Renal Transplants Abroad: A Questionnaire-Based Cross-Sectional Survey

Background: Due to ongoing poor availability of organs, increasingly patients from developed countries are reported to be travelling abroad for renal transplants. We aimed to assess the extent and characteristics of this trend across the UK and Republic of Ireland.

Methods: A questionnaire-based cross-sectional survey; 397 renal consultants from 33 hospitals with renal units across the UK and the Republic of Ireland were contacted through email and 62 replied (16%).

Results: Fifty-seven out of 62 (93%) renal consultants managed transplant patients, and of these 36 out of 57 (63%) had managed at least one patient who had undergone a transplant abroad. The most popular reason reported for doing this was being on the UK or Republic of Ireland transplant list but seeking a shorter wait. Respondents reported commencement by overseas doctors of appropriate routine post-transplant prophylaxis with the following medications in all cases they had encountered as follows: co-trimoxazole 12%, isoniazid 3%, anti-fungals 0%, and Cytomegalovirus prophylaxis or treatment 0%. Forty-four percent of renal consultants reported having some prior warning of a patient undergoing a renal transplant abroad.

Conclusions: Renal transplant tourism has become widely established in the UK and the Republic of Ireland, and care for these patients is often suboptimal. Furthermore, the opportunity exists for pre-transplant counseling.

Magdalena Paczkowska

PhD Student, Poznan University of Medical Sciences, Poland

Daria Szymanowska-Powalowska

Assistant Professor, Poznan University of Life Sciences, Poland

&

Judyta Cielecka-Piontek

Assistant Professor, Poznan University of Medical Sciences, Poland

Biopolymers in Overcoming Carbapenem Analogs Limitations in the Treatment

The unsatisfactory effectiveness of chemotherapy in the treatment of severe bacterial infections is one of the greatest challenges facing clinicians of various specialties today. An assessment of the effectiveness of antibiotic therapies against bacterial infections defines as the post-antibiotic era. That dramatic state of affairs results from increasing microbial resistance, slow progress in the introduction of new and more effective chemotherapeutics for clinical use and decreased human immunity.

The aim of the work is to study systems consist of polymers (derivatives of poloxamer, hydroxypropylmethylcellulose, cyclodextrins) and selected carbapenem analogs (imipenem, doripenem, tebipenem pivoxil) in order to determine the possibility of modifying the solubility and antimicrobial activity against certain bacterial species demonstrated by those chemotherapeutics as well as increasing their permeability through biological membranes simulating gastrointestinal permeation.

The first part of this work focus on the identification of the chemotherapeutic-biopolymer systems by using spectroscopic (FT-IR, Raman) and thermal (DSC) analysis. Changes in concentration of selected carbapenem analogs during the evaluation of their dissolution and permeability studies were determined with UHPLC-DAD methods.

In vitro dissolution studies of carbapenem analogs were performed according to European Pharmacopoeia [1]. As the acceptor solution, artificial gastric juice (pH 1.2) and phosphate buffer (pH 6.8) stimulating gastrointestinal environmental was used. The sharps of dissolution curves were compared.

The permeability of studied systems through artificial membrane was studied by using parallel artificial membranes permeability assay system (PAMPA). Apparent permeability coefficients (P_{app}) were calculated.

Modification of the antibacterial activity of the carbapenem analogs after their introduced into systems of biopolymers was established by

measurement of MIC values (minimal concentration of drugs that inhibited strain growth) during microbiological testing based on a well-diffusion method. The bacterial strains analyzed with MIC analysis assay included ATCC reference strains and clinical ones isolated by the Institute of Laboratory Medicine at Poznan, Poland.

Based on the results obtained in the present study, it was found that the presence of poloxamer, hydroxypropylmethylcellulose, cyclodextrins significantly influence on carbapenem analogs solubility. As it was expected the passive diffusion of drugs, with/without the presence of excipients during permeability studies, was different but it was also connected with pH acceptor solution. Moreover, it was found that the formation of a carbapenem analogs system with excipients has a profoundly positive effect on their bactericidal activity.

Acknowledgements: This study was supported by grant from the National Science Centre (Preludium 2015/17/N/NZ7/00937).

[1] European Pharmacopoeia 6.0, *Dissolution test for solid dosage forms*, p. 266-275.

Oleg Pisarenko

Head, Laboratory for Myocardial Metabolism, Russian Cardiology
Research-and-Production Complex, Russia

**A Structural Analogue of Peptide Apelin-12 in
Cardioprotection against Ischemia/Reperfusion Injury**

Background. Chemically modified peptide apelin-12 [MeArg¹,NLe¹⁰]-A12 (AI) with enhanced resistance to degradation by proteolytic enzymes is able to protect the heart against myocardial ischemia and reperfusion. This study was designed to explore effects of AI on myocardial energy state, antioxidant enzyme activities and reactive oxygen species (ROS) formation in ex vivo and in vivo models of myocardial ischemia/reperfusion (I/R) injury.

Methods. Peptide AI was synthesized by the automatic solid phase method using Fmoc technology purified by preparative HPLC and identified by ¹H-NMR spectroscopy and mass spectrometry. Isolated perfused working rat hearts subjected to global ischemia and anaesthetized rats exposed to LAD coronary artery occlusion were used. Myocardial infarct size, the contractile function intensity and cardiac output were used as indices of I/R injury.

Results. Preischemic infusion of AI improved recovery of cardiac function and myocardial energy state, and enhanced the activity of Cu,Zn superoxide dismutase (Cu,Zn SOD), catalase (CAT), and glutathione peroxidase (GSH-Px) in reperfused hearts. These effects were combined with reduction in ROS and malondialdehyde (MDA) formation during reperfusion. Intravenous injection of peptide AI at the onset of reperfusion significantly limited infarct size and decreased the plasma activity of CK-MB and LDH at the end of reperfusion compared with control. Additionally, complete recovery of Cu,Zn SOD, CAT, and GSH-Px activities, a decrease in MDA and ROS formation, and a better restoration of energy metabolism were observed in the area at risk (AAR) during reperfusion. Administration of specific inhibitors of MEK1/2, PI3K, PKC, NO synthase (NOS) or the mitochondrial ATP-sensitive K⁺channels (mitoK_{ATP}) (UO126, LY294002, chelerythrine, L-NAME or 5-hydroxydecanoate, respectively) reduced protective efficacy of AI in both models of I/R injury. This was evidenced by abrogation of infarct size limitation, deterioration of cardiac function recovery, and attenuation of metabolic restoration and sarcolemmal integrity.

Conclusions. Cardioprotection with peptide AI is mediated by signaling via PI3K and MEK1/2, the upstream kinases of the RISK

pathway, and prosurvival kinase PKC with activation of downstream targets, NOS and mitoK_{ATP}. Mechanisms of AI action include the upregulation of cardiac antioxidant defense systems and attenuation of lipid peroxidation.

Vera Lucia Raposo

Assistant Professor, University of Macau, Macau

Oocyte Cryopreservation for Fertility Preservation - The Legal Approach

In most western societies men and women are currently choosing to have children later in life, but at risk of facing age-related infertility problems, namely in what regards females, whose fertile period is quite limited in time.

This scenario gave rise to an increasing interest by reproductive techniques and connected procedures, such as oocyte cryopreservation for fertility preservation. This technique is based in the biological process of female ovulation, but promotes it artificially and afterwards preserves the oocytes for future reproductive use.

This scientific achievement is far from consensual and many underline the risks that it may involve for the health of both the mother and the future child, and even argue with more ethical concerns, such as the subversion of reproductive human timings. The recent news that some companies are offering paid oocyte cryopreservation treatments to their female employees increased the discussion regarding this issue.

However, in nowadays society oocyte cryopreservation is a useful mechanism to allow women to cope with the potential conflict between professional and family demands and thus it is a way to fulfill their reproductive rights.

Our paper will clarify the juridical framework of oocyte cryopreservation, analyze its risks and benefits and provide a final legal assessment of this practice.

Ketan Ruparelia

Research Fellow and Part-time Lecturer, De Montfort University, UK

Keti Zeka Zeka

Research Fellow, De Montfort University, UK

Zainab Ali

Pharmacy Student, De Montfort University, UK

Hajara Alfa

Post Graduate Student, De Montfort University, UK

Purvi Mali

Post Graduate Student, De Montfort University, UK

Randolph Arroo

Reader in Phytochemistry, De Montfort University, UK

Nazmin Juma

Researcher, De Montfort University, UK

Unmesh Desai

Researcher, De Montfort University, UK

&

Martin Grootveld

Professor, De Montfort University, UK

Qualitative and Qualitative Phytochemical Screening of Medicinal Herbal Ocimum Tulsi Leaves

The drastic changes in human life style and food habits over the last century have led to various chronic diseases. Diabetes mellitus is one such disease that is causing serious problems to human health in all parts of the world. Diabetes Mellitus is a metabolic disorder characterized by high blood glucose levels due to defect in insulin secretion, insulin action or both. Poor control of the condition can result in long-term complication such as diabetic nephropathy, neuropathy, retinopathy, hypertension, dyslipidaemia and cardiovascular disease, which can lead to a heart attack or stroke. Scientific reports revealed that diabetes cannot be cured completely. Current therapy for diabetes is centred around controlling blood sugar levels to keep them in the normal range. However, diabetes is often associated with dyslipidaemia and oxidative stress, which contributes to the damage caused to organs. Therefore, to adequately control diabetes, blood lipid levels and oxidative stress need to be controlled alongside blood glucose. The modern systems of medicine have not shown any significant effect for the treatment of the disease. There are also concerns about the cost and safety in long-term use for some of these drugs. Hence focus has been turned towards traditional system of

medicine. Medicinal plants play an important role in management of diabetes mellitus. During the past few years many bioactive drugs have been isolated from plants. Herbal medicines have shown good clinical practice in the therapy of diabetic mellitus.

The genus *Ocimum* is of the basil family Lamiaceae, which contains approximately 150 species of aromatic plants that are found mainly in the tropical regions of the world. Many of these species have extensive medicinal applications in indigenous medicinal systems of countries in Asia, Africa and South America. Lamiaceae is one of the holiest and sacred herbs grown in India. This plant is known to possess antiseptic, analgesic, anti-inflammatory, antimicrobial, antistress, Immunomodulatory, hypoglycaemic, hypotensive and antioxidant properties. Among these species are *Ocimum sanctum* L. or *Ocimum tenuiflorum* L., also known as Tulsi or Holybasil, an aromatic plant. There are two sub- types of *Ocimum sanctum* called Krishna tulsi, which is the black-purple variety, and the white Vana tulsi. It is widely used in Ayurveda and Siddha system of medicine to cure various ailments.

The dried powder of Tulsi was placed in the thimble of Soxhlet apparatus, distilled water employed as a solvent. The extract was concentrated using Rotavapor. Then the extract was dried in a digital water bath till a dark green residue was obtained. The percentage yield was 10%w/w. The test residue and powder was subjected to phytochemical analysis to find out the presence of phytochemical constituents and compared. The phytochemical tests employed for alkaloids and tannins, Cardiac glycosides, saponins, terpenoids and flavonoids. The latter are known for their strong antioxidant properties.

Here reported investigation carried out to determine the qualitative and quantitative analysis of phytochemical screening and possible chemical components including assessment of antioxidant properties. The analytical techniques employed for chemical investigation comprised Atomic Absorption Spectroscopy, Thin Layer Chromatography, Mass Spectroscopy, Infrared spectrophotometry, UV and Visible spectroscopy, High Pressure Liquid Chromatography, Nuclear Magnetic Resonance and scanning electron microscope. *Ocimum sanctum* L. leaves analysis of hydro alcoholic extract revealed mainly Eugenol, an important phytochemical bioactive compound of Ayurvedic and other marketed herbal formulations. This study is currently in progress.

Thomas Saeger
TH Köln, Germany
Christine Kleffner
TH Köln, Germany
Nicolas Kruse
TH Köln, Germany
Gerd Braun
TH Köln, Germany
&
Ompe Aime Mudimu
TH Köln, Germany

Development of a New High Performance Hollow Fiber for Oxygenators

Background: ECMO systems are mainly used in hospitals to treat patients with acute respiratory distress syndrome (ARDS). Even more challenging is the treatment of infants with ECMO therapy. One of the major problems is the priming volume of the oxygenator. The research group of the TH Köln runs a research project named MemO2 to develop a new hollow fiber. This new hollow fiber has a much thinner outer diameter, which allows reducing the priming volume. Due to the lower priming volumes a better tolerance of the treatment is expected.

Method: Development of a new hollow fiber with the melt spinning and cold stretching method, which is tested in a new constructed oxygenator test housing. Comparison of the different oxygen saturation and carbon dioxide elimination rates through different gas-blood flows. Identifying problems causing abnormal pressure gradient and plasma leakage by using different membrane materials during blood testing.

Based on defined limits for the gas-side pressure drop and the shearing rate, which take effect on the blood, new fiber dimensions are found.

Results: The calculations are showing which hollow fiber diameters are possible in theory. The TH Köln research group tested several settings within a testing bench. The tests show a tendency, the thinner the hollow fibers are, the better gas transfer can be reached.

Conclusion: The better gas transfer means that the Priming volume is not only reduced by the geometrical effect, but furthermore the total surface area of the membrane can be minimized. As a result, less blood comes into contact with less external surface.

Asuman Sener

Lecturer, Ondokuz Mayıs University, Turkey

Zeliha Koc

Associate Professor, Ondokuz Mayıs University, Turkey

Zeynep Saglam

Lecturer, Ondokuz Mayıs University, Turkey

Determining the Use of Herbal Medicine among the Hospitalized Patients of the Physical Therapy and Rehabilitation Unit

Aim: This descriptive study aims to determine the use of herbal medicine methods by inpatient patients of a physical therapy and rehabilitation unit.

Material and Method: The research was realized with the participation of 207 patients between 2 March and 1 September 2014. After needed consents were taken, data were collected via a questionnaire form having 37 questions on sociodemographic and clinical features of patients and their use of herbal medicine methods and analyzed by Percentage, Chi-square, and Fisher's exact tests.

Findings: Of study participant patients, 76.8% were female, 98.1% were married, 34.3% were primary school graduate, and 99% had social insurances. It was determined 96.1% of patients were satisfied with the current medical treatment; 33.3% were suggested complementary and alternative treatment methods by relatives; 28.5% thought both medical treatments and complementary and alternative treatment methods were effective; 4.3% found herbal drugs as safe; 91.3% thought there might be possible side effects of herbal drugs when interacted with other drugs; and only 1.4% believed that herbal drugs were more effective than other drugs and utilized some herbs such as linden (52.2%), lemon (48.3%), garlic (17.9%), mint (16.4%), daisy (10.1%), and ginger (9.7%). Use of herbal medicine by patients differed in terms of marital status, social insurance, family structure, satisfaction with the current medical treatment, considering herbal drugs as safe, and considering herbal drugs as safer than other drugs.

Conclusion: In this study, although the majority of patients did not find herbal drugs as safe and thought of probable side effects in case of interaction with other drugs, approximately half of them (48%) utilized herbal drugs during medical treatment. We therefore suggest that use of herbal medicine by patients should be determined and patients should be informed about the advantages and disadvantages of these treatments in an unprejudiced way.

Mayadah Shehadeh

Associate Professor, The University of Jordan, Jordan

Inhibitory Effect of *Aristolochia Maurorum* on Antibiotic-resistant MRSA

Staphylococcus aureus (*S. aureus*) is frequently part of the skin mucous membranes of humans. However, certain strains that can cause infections are becoming resistant to antibiotics. Methicillin-resistant *S. aureus* (MRSA) is one that has become resistant to most antibiotics. MRSA strains are most often found associated with institutions such as hospitals. Literature is raising the alarm that MRSA is becoming increasingly prevalent in community-acquired infections.

The susceptibility of bacterial isolates to *Aristolochia maurorum* extracts as well as isolated aristolochic acid was screened using disc diffusion method. Broth microdilution method was used to determine minimum inhibitory concentrations (MICs) of plant extracts and seven antibiotics representing different classes. Inhibitory effect of the combination of *A. maurorum* extracts and the isolated alkaloids with half MIC of the selected antibiotics was investigated.

A. maurorum aerial parts methanol extract was found to be the most potent against *S. aureus* and MRSA compared to the roots and leaves in *disc diffusion method*. However, all tested extracts were able to induce growth inhibitory effect when combined with half MIC concentration of antibiotics. MRSA was more susceptible to antibiotic effect when combined with plant extracts with inhibitory effect ranging from 60-90%.

Results of this study suggest potential therapeutic implications of methanol extracts of *A. maurorum* in the treatment of MRSA infections.

Robert Sindelar

Professor and Former Dean, The University of British Columbia,
Canada

**Creating a Health and Wellness Paradigm in the “OMICS”
Era**

Healthcare systems worldwide are currently in a state of creative disruption and stress. There is a revolution occurring due to extremely rapid technological advances that enable detailed molecular profiling of individuals to achieve more precise diagnoses of disease and to more accurately match therapies to the individual. This is being driven by new and rapidly developing “omic” technologies such as genomics, proteomics, metabolomics, etc. On the other hand, the healthcare system is under increasing strain as health-related spending reaches unsustainable levels due in large part to an aging population. Thus, it is imperative to move from an acute care and treatment of frail elderly paradigm to a health and wellness paradigm that fosters healthy aging. Healthy ageing is the process of optimizing opportunities for health, participation and well being in order to enhance quality of life as people age.

Today, we intervene late, when the patient exhibits symptoms of disease. Under the new paradigm, we may intervene much earlier in the natural cycle of diseases, years before they strike their victims. We must now develop a much more preemptive approach that manages disease over its entire life cycle, from identifying an individual's susceptibility to a disease, to prevention, early diagnosis, reduction of complications, and smarter therapies. “Omic” technologies are paving the way to make this future a reality and are capable of providing definitive molecular-level, person-specific data while increasingly becoming more accurate, comprehensive, and inexpensive. Examples are genomic analyses to characterize the DNA in our cells, proteomic and metabolomic analyses of molecules in our blood and other biosamples, and microbiomic analyses of the microbes coexisting with our bodies.

This presentation will introduce a discussion of today's concepts of healthy aging and the impact “omic” sciences will play in making this future a reality.

Malgorzata Stefaniak

Lecturer/Midwife, Medical University of Warsaw, Poland

Osteosarcoma during Pregnancy - Case Report

In Poland, sarcomas represent about 1% of all cancer diseases. Every year about 800 new cases are diagnosed. Osteosarcoma is the most frequently recognized primary malignant bone tumor.

Osteosarcomas are diagnosed more frequently in children and adolescent males, whereas in pregnant women they are extremely rare. We present a case of a 29-year-old pregnant woman with a highly diverse osteosarcoma. A patient who was in 23rd week of pregnancy was treated with multiple doses of chemotherapy while fetal health was being monitored.

The plan for a therapeutic process included inducing a pregnancy solution at the moment of the fetus reaching maturity, then continuing oncological treatment.

According to the established protocol of treatment in 34 week pregnancy was completed via cesarean section. The woman gave birth to a daughter in good condition. Surgical treatment was conducted after delivery until complete post-pregnancy healing. There was no reduction of dose or quantity of planned and conducted courses of chemotherapy due to pregnancy.

The paper offers an analysis of diagnosis and therapy of pregnant women with osteosarcoma based on own experience and on the basis of a relevant literature.

Ghadeer Suaifan

Professor, The University of Jordan, Jordan

Rapid and Simple Colorimetric Biosensor for the Detection of Proteases

Rapid and simple colorimetric biosensor for the detection of protease using magnetic-nanoparticles was developed. The designed biosensor was based on the use of a specific synthetic peptide substrate labeled with magnetic-nanoparticles and then covalently attached to a gold sensing platform. This interaction masks the golden color of the sensor and turns it black. Upon proteolysis, colorimetric change would be observable by the naked eye with an increase in the golden surface visible concomitants with the increase in the protease concentrations. The developed biosensor was capable of detection proteases in buffer and spiked samples with a very low detection limit. This portable biosensor license the development of a cost-effective lab-on-a-chip device and so it is suitable for point-of-care diagnostic application.

Ayten Taspinar

Associate Professor, Adnan Menderes University, Turkey

&

Selva Ozgul

Midwife, Adnan Menderes University, Turkey

The Effect of Maternal Obesity on Maternal and Neonatal Health

The aim was to investigate the effect of maternal obesity on maternal and neonatal health. The study was made as case-control study between the dates March 2015 – August 2016 in woman after childbirth service of İskenderun State Hospital in Turkey. The woman in testing were separated into two groups as normal weight according to before pregnant body mass index (control group n=144) and obese (case group n= 142) and the study was completed with 286 women in total. Data were collected with Data Collection Form and Edinburgh Postpartum Depression scale. Data collection forms were completed with method face to face meeting with puerperant, some data were completed with taking from patient files and with telephone meeting after 6 weeks later from birth. Complementary statistics were used for data analysis, chi square test and student t-test.

It was determined that the average of obese women is higher than women of control group about age, pregnancy, count of living child and average of obese women is lower than women of control group about education level, average of birthday week ($p<0,05$). It was determined that women of obese group is living process higher rate about pregnancy, early and late term complications after birth according to control group ($p<0,05$). There is no difference between groups about risk of depression after birth the end of 6 weeks ($p>0,05$). Caesarean rate is high for newborns of both groups of women. There is no statistics difference about birth forms, starting breastfeed of newborns in first half hour, concerning complication of new birth ($p>0,05$). It was determined 1 and 5 minutes Apgar score of new birth of obese women are lower ($p<0,05$). As a result, problems of obese women occur at a higher rate according to women with normal kilos in terms of antenatal and postpartum. We advise examination from preconceptional period for women who are expecting a baby, as well as making service training and advising for obese women.

Kewal Verma

Certified Advanced Facilitator, University of Phoenix, President, BCA
International, USA

&

Audré Dixon

Doctorate of Health Administration, University of Phoenix, USA

Decision Making Model for the Emerging Nanotechnologies

Among the reasons for difficulty in decision making for the emerging technologies like nanotechnology is the evolving nature of the new technology, new materials, limited or unavailability of the historic and current data, private and protected nature of the data, product knowledge to monitor and control potential toxic exposure, and other untested or unavailable data on the environment and health effects (Phillips, Bahadori, Barry, Bus, Gant, Mostowy, Smith, Willuhn, & Zimmer, 2009). The demand for lighter material in healthcare for prosthetics, the automotive and aerospace industries search for Nanomaterial. The pharmaceutical industries are challenged with the increase of systematic diseases to provide soluble drug delivery targeting affected tissue, organs, or cells. Investors are seeking opportunities to find the hidden niche in the nanotechnology markets. The ultimatum to meet these industry demands, provide opportunities to investors, newly created nanotechnology industries, and industries looking to expand in other markets. In such complex and ambiguous environment, with limited understanding or predictability for the known and unknown effects of the emerging technology on environment and health, development of the framework for a decision-making model would be an imperative. Successful and appropriate decision-making model may come from the leadership insight and governance, stakeholder alliances, sharing of the unknowns, problems, solutions, and advancements. The work presented in the paper is based on a qualitative modified Delphi study by Dr. Audré Dixon for her doctoral degree in Doctor of Health Administration at the University of Phoenix Online.

Leslie Wilson

Professor, University of California San Francisco, USA

&

Tracy Lin

University of California San Francisco, USA

Evaluation of Value-based Pricing Models for Cancer Drugs in a Clinical Setting

Background: Spending on cancer drugs has risen ten-fold and costs are often passed on to patients. Currently, there are several value frameworks available to assess if the high costs of these drugs are warranted based on their value to the patient. In addition, incremental cost effectiveness ratios (ICER), the 'gold standard' measure of value, directly assign a dollar value to the amount of utility that a patient can receive from a drug. Despite the variety of methods of assigning value to cancer medications, there is no consensus on which method, if any, should be used when determining cancer drug value. Individual institutions must therefore choose how they want to utilize value frameworks in their healthcare systems.

Objective: To (a) determine the availability of cost-effectiveness studies for 11 new cancer medications for the UCSF Medical Center's formulary (b) determine other available frameworks for assessing value and evaluate their utility in a clinical managed care setting (c) construct a model of decision-making and supply chain movement incorporating value, cost-effectiveness, and patient-centeredness.

Methods: The investigators performed literature searches to determine the availability of cost-effectiveness analyses and other value frameworks for the aforementioned 11 new cancer medications that could help the Medication Outcomes Center (MOC) of UCSF's Medical Center assign value to cancer drugs. In addition, six clinicians filled out the ASCO Value Framework to determine the value of the frameworks and correlation of framework scores with cost effectiveness analyses results. Finally, the investigators built a model that incorporates value into the patient-physician and UCSF health care system decision-making process and pricing of oncology medications.

Results: The investigators found three value frameworks can potentially be used for cancer drugs: the American Society of Clinical Oncology (ASCO) Value Framework, the

National Comprehensive Cancer Network (NCCN) Evidence Blocks, and Memorial Sloan Kettering's Drug Abacus. ASCO's Value Framework was the most developed and patient-centered of these

frameworks; therefore, it was used in our validity assessment. Scores for evaluation of nivolumab/ipilimumab combination vs. either drug ranged from 13 to 42, with the greatest variation in toxicity, which ranged from -20 to 20. The framework scores did not specify a comparator. Ten of 11 cancer drugs had at least one cost-effectiveness study published, showing good availability. We suggested formation of a high-cost oncology subcommittee to begin collecting value-based data and assessing patterns. Furthermore, the model also suggests incorporating value into the supply chain of the medication by having manufacturers assign rebates that reflect the value of the medications to the patients. We also suggest that insurers adopt value-based copays for patients rather than a fixed pricing scheme that is determined by the manufacturer.

Conclusions: Although the ASCO framework was the best framework for clinical use, it does not provide reliable scores across clinicians and needs more guidelines based on assessment of scoring patterns across drugs. To reduce variability, clearer instructions and more specific guidelines must be implemented on an institutional basis. ICER scores are available as an accurate value framework and can be a validity check on newer frameworks. The creation of an institutional high-cost oncology subcommittee is necessary in order to assess and fill out these frameworks based on the needs of the institution and its patient population. It would be especially informative for this subcommittee to begin collecting data using the ASCO framework to assess its utility to the institute. Additionally, value must be incorporated into pricing at both a manufacturer and payer level.

Bing Yan

Professor, Shandong University, China

Examples of Nanoparticles' Toxicity to Susceptible Populations

Applications of nanotechnology-based industrial and consumer products lead to more and more environmental accumulation of nanoparticles and increasing risk of human exposures. This increases threat to human health¹, especially to susceptible populations such as reproduction system of male², pregnant³, lactating⁴, and overweight populations. To clarify such threats, we have built mice models for these groups, simulated nanoparticle exposures to them, and evaluated effects on their health. Our data suggest that 1) nanoparticles exhibit similar biodistributions in model mice to normal mice; 2) aggravation of disease is more evident in susceptible populations; 3) accumulation of nanoparticles in pregnant and lactating mice causes health threat to their pups; 4) minor toxic effects could be repaired and more serious effects caused disease progression, such as in overweight mice; 5) more oxidative stress and inflammation inductions may be accountable for disease aggravations.