



GOCE DELCEV UNIVERSITY - STIP
FACULTY OF MEDICAL SCIENCES



International symposium at
Faculty of medical sciences

CURRENT ACHIEVEMENTS AND FUTURE PERSPECTIVES IN MEDICAL AND BIOMEDICAL RESEARCH



STIP, 24 NOVEMBER 2015
MULTIMEDIA CENTRE – UGD, STIP

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INTERNATIONAL SYMPOSIUM AT FACULTY OF MEDICAL SCIENCES
“Current achievements and future perspectives in medical and biomedical research”

SCIENTIFIC PROGRAM

November 24, 2015 - Stip

8:30 – 9:00

Registration

9:00 – 9:15

Rector / Vice rector/Dean

SESSION 1

Chair: Prof. Emilija Janevik Ivanovska

Co-chair: Ass. Prof. Elena Drakalska

9:15 – 9:35

Ass. Marija Darkovska Serafimovska
Macedonian agency of drug and medical devices, Director
University Goce Delcev Stip
Republic of Macedonia

Step forward of Macedonian agency for medicines and medical devices, establishment and strategic plan for development

9:35 – 9:55

Assoc. Prof. Zorica Arsovska Sarafinovska
Institute of Public Health of the Republic of Macedonia, Skopje,
University Goce Delcev Stip
Republic of Macedonia

Adherence to Therapy: A Modern Pharmacotherapeutic Approach

9:55 – 10:15

Prof. Biljana Gjorgjeska
University Goce Delcev Stip
Republic of Macedonia

Use of disinfectants and antiseptics in selected health institutions in Republic of Macedonia

10:15 – 10:35

Assoc. Prof. Bistra Angelovska
University Goce Delcev Stip
President of Pharmaceutical Chamber of Macedonia. Republic of Macedonia

Code of Ethics for Pharmacists – Pharmaceutical Chamber of Macedonia

10:40 – 11:10

Coffee break

Poster presentation

Chair: Prof. Milka Zdravkovska
Co-chair: Ass. Prof. Darinka Gjorgieva Ackova

10:10 – 11:50

Prof. Neven Zarkovic
Rudjer Boskovic Institute, Croatia

4-Hydroxynonenal – major bioactive marker of lipid peroxidation

11:50 – 12:10

Assoc. Prof. Tatjana Ruskovska University Goce Delcev Stip Republic of Macedonia

Nicotinamide adenine dinucleotide biosynthesis and consumption in dysfunctional white adipocytes

12:10 – 12:30

Prof. Rubin Gulaboski University Goce Delcev Stip Republic of Macedonia

New insights into the chemistry and functions of Coenzyme Q

12:30 – 12:50

Assoc. Prof. Darko Bosnakovski
University Goce Delcev Stip
Republic of Macedonia

Genetically modified systems to study muscular dystrophies

12:50 – 14:00

Coffee break

Poster presentation

Chair: Assoc. Prof. Cena Dimova
Co-chair: Ass. Prof. Nevenka Velickova

- | | | |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| 14:00 – 14:40 | Prof. Lia Rimondini
Università del Piemonte Orientale,
Novara, Italy | <i>Counteracting microbial biofilm formation onto dental materials</i> |
| 14:40 – 15:00 | Prof. Elizabeta Zisovska
Agency for Quality and Accreditation of Healthcare Institutions, Skopje,
Republic of Macedonia | <i>The endless potential of the umbilical cord blood for investigation, research and treatment</i> |
| 15:00 – 15:20 | Ass. Misko Milev
University Goce Delcev Stip
Republic of Macedonia | <i>The cytokinesis-blocked micronucleus assay: Good choice for detection and evaluation of genotoxicity in human cells</i> |
| 15:20 – 15:40 | Prof. Lence Miloseva
University Goce Delcev Stip
Republic of Macedonia | <i>Multiple predictive model for clinical and subclinical depression in adolescence</i> |
| 15:40 – 16:00 | Coffee break | Poster presentation |

SESSION 4

Chair: Assoc. Prof. Darko Bosnakovski
Co-chair: Ass. Prof. Katarina Smilkov

- | | | |
|----------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 16:00 – 16:40 | Prof. Adriano Duatti
University of Ferrara, Ferrara, Italy | <i>Molecular imaging and radionuclide therapy of prostate cancer</i> |
| 16:40 – 17:00 | Assoc. Prof. Vaso Taleski
University Goce Delcev Stip
Republic of Macedonia | <i>Where Nanotechnology and Nanomedicine meet – Applications and Potential Risks</i> |
| 17:00 – 17:20 | Dr. Aleksandar Cvetkovski
University Goce Delcev Stip
Republic of Macedonia | <i>The role of molecular cocrystals in drug development</i> |
| 17:20 – 17:40 | Prof. Emilija Janevik Ivanovska
University Goce Delcev Stip
Republic of Macedonia | <i>Drug development based on radiolabeled antibodies</i> |
| 17:40 – 18:00 | Closing remarks | |

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The organizers would like to acknowledge the support given from the University Goce Delcev- Stip and the Pharmaceutical chamber of Macedonia.

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INTERNATIONAL SYMPOSIUM AT FACULTY OF MEDICAL SCIENCES

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November 24, 2015 – Stip

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- 2. Adherence to Therapy: A Modern Pharmacotherapeutic Approach**
Author: Zorica Arsovska Sarafinovska
- 3. Use of disinfectants and antiseptics in selected health institutions in Republic of Macedonia**
Author: Biljana Gjorgjeska
- 4. Code of Ethics for Pharmacists – Pharmaceutical Chamber of Macedonia**
Author: Bistra Angelovska
- 5. 4-Hydroxynonenal – major bioactive marker of lipid peroxidation**
Authors: Neven Zarkovic, Kamelija Zarkovic
- 6. Nicotinamide adenine dinucleotide biosynthesis and consumption in dysfunctional white adipocytes**
Authors: Prof. Tatjana Ruskovska, David Bernlohr
- 7. New insights into the chemistry and functions of Coenzyme Q**
Authors: Rubin Gulaboski, Valentin Mirceski, Ivan Bogeski, Sasa Mitrev, Kokoskarova Pavlinka, Velo Markovski, Reinhard Kappl, Markus Hoth
- 8. Genetically modified systems to study muscular dystrophies**
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- 13. Molecular Imaging and therapy with radionuclides of prostate cancer**
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- 14. Where Nanotechnology and Nanomedicine meet – Applications and Potential Risks**
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- 15. The role of molecular cocrystals in drug development**
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- 16. Drug development based on radiolabeled antibodies**
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POSTER PRESENTATIONS

- 1. Correlation between dynamic balance and gait parameters in patients with ischemic stroke in the chronic period**
Authors: Danche Vasileva, Daniela Lubenova, Marija Mihova, Ivan Maznev, Lence Nikolovska, Zhu Jihe;
- 2. Effect of kinesitherapy on physical activity in patient with Guillain-Barré syndrome**
Authors: Antoaneta Dimitrova, Kristin Petrova Grigorova, Daniela Lubenova, Danche Vasileva, Milena Nikolova;
- 3. Case Report :
Oligoasthenoteratozoospermia, treatment with acupuncture**
Authors: Jihe Zhu, Blagica Arsovska, Dance Vasileva, Andrijana Sterjovska-Aleksovska, Kristina Kozovska;
- 4. Treatment of cervical spondylosis with acupuncture**
Authors: Kristina Kozovska, Jihe Zhu, Blagica Arsovska, Andrijana Sterjovska-Aleksovska;
- 5. Effect of kinesitherapy on static and dynamic balance in patient after vertebral system stroke**
Authors: Milena Nikolova, Antoaneta Dimitrova, Danche Vasileva, Daniela Lubenova, Kristin Petrova Grigorova;
- 6. Malignant pleural effusions in lung cancer: the condition during the disease**
Authors: Marija Karakolevska-Ilova, Elena Simeonovska Joveva, Aleksandar Serafimov, Lidija Petrovska;
- 7. Systemic fungal infections in hematological malignancies**
Authors: Petar Kuzmanovski, Velo Markoski;
- 8. Morbidity and mortality of malignant neoplasms in Macedonia**
Authors: Viktorija Vukovikj, Velo Markoski;
- 9. Cognitive behavioral program in treating insomnia among elderly patients**
Authors: Kneginja Richter, Lence Miloseva, Guenter Niklewski, Anja Piehl;
- 10. Regulations and legal aspects in management of medical waste**
Authors: Biljana Shikoska, Cena Dimova, Gjorgji Schumanov;
- 11. Control of the psychiatric disorders in the Republic of Macedonia**
Authors: Leonid Ramov, Velo Markoski;
- 12. Monitoring of the renal function in Indometacin treated patients with rheumatoid arthritis**
Authors: Drita Yzeiri Havziu, M.Hiljadnikova-Bajro, T. Kadifkova Panovska;
- 13. Incidence of breast cancer in Macedonia**
Authors: Dijana Stojanova, Velo Markoski;
- 14. HPV virus as a cause of cancer of the cervix in R.Macedonia**
Authors: Stefanija Joveva, Velo Markoski, Vaso Taleski;
- 15. Analysis of the Pap test results by age groups in the area of Kriva Palanka**
Authors: Robert Nikolovski, Kristina Denchovska, Goran Mladenovski, Velo Markovski;
- 16. Giant rhinophyma treated by excision and full thickness skin grafting**
Author: Emilija Lozanovska Doneva;
- 17. Incidence of patients with chronic renal failure in Skopje**
Authors: Simona Kamceva, Velo Markoski;
- 18. Calculation of effective dose to family members of patients with thyroid diseases**
Authors: Marina Zdravevska Kochovska, Emilija Janjevik Ivanovska, Meri Angeleska, Sasho Nikolovski, Zlatko Filipovski;

- 19. Contemporary Microbiological Diagnostic Tests for Rapid Identification and Detection of Resistance of Mycobacterium tuberculosis**
Authors: Oliver Taleski, Vaso Taleski;
- 20. Analysis of clinical features and complications in patients with β -thalassemia in the region of Strumica**
Authors: Silvana Sinokapovska, Cena Dimova;
- 21. Lymphoepithelioma : A case report**
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- 22. F-ra Capitulum Radii L.Dex. – A Case report**
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- 23. Patient with intracranial hemorrhage and arteriovenous malformation detected with transcranial color duplex sonography – case report**
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- 24. Hereditary supracondylar spur of the humerus: Case report**
Authors: Strahil Todorov, Christian Lozanoski, George Zafirovski;
- 25. Prosthetic rehabilitation in patient with advanced degree of functional disorders (case report)**
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- 26. Marginal Implants Bone Loss – a Case Report**
Authors: Kiro Papakoca, Ana Radeska-Panovska, Katerina Zlatanovska;
- 27. Ectodermal Dysplasia, a Case Report: Challenge for Prosthodontic Solution**
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- 28. Alveolar socket preservation and shaping using temporary prosthetic construction – cases presentation**
Authors: Nikola K. Gigovski, Vesna Korunoska- Stevkoska, Emilija Bajraktarova, Aneta Mijoska, Ana Radeska-Panovska, Ana Gigovska;
- 29. Porcelain veneers produced by refractory die method**
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- 30. Correlation of Two Different Local Hemostatic Modalities in Oral Surgery Patients with Oral Anticoagulants**
Author: Cena Dimova;
- 31. Assessment of orthodontic treatment need among school children by using iotn (index of orthodontic treatment need)**
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- 35. Oral surgery treatment in the patients with combination syndrome**
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- 37. Evaluation of Different Preparation of Artificial Teeth and Acrylate Prosthetic Base**
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- 41. Determining normal tissue toxicity of non-radioactively Lu/Y-labeled rituximab-conjugates in rat animal model**
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- 42. Genetically Engineered Mouse Models For Human Pancreatic Cancer: A Review Of The KC, KPC And iKRas*P53* Models**
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- 50. Determination of active pharmaceutical ingredient – chloropyramine in dragées**
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- 51. Comparison of volatile aroma compounds between cultivated and spontaneous flowering stems of Sideritis scardica Griseb. from R. Macedonia**
Authors: Bujar Qazimi, Gjoshe Stefkov, Marija Karapandzova, Ivana Cvetkovikj, Svetlana Kulevanova;
- 52. Bioactive compounds of cold-pressed oil from the seeds of Gojy Berry (Lycium barbarum)**
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- 53. Development and validation of HPLC method for determination of flavonoids in herbal preparations**
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- 54. Atomic emission spectrometry with inductively coupled plasma (ICP-AES) analysis of trace elements in Camellia sinensis teas**
Authors: Dragica Doneva, Trajce Stafilov, Zorica Arsova-Sarafinovska, Katerina Starkoska, Maja Shishovska, Katerina Bačeva Andonovska;
- 55. Determination of trace elements analyzed by atomic emission spectrometry with inductively coupled plasma (ICP-AES) in Matricaria chamomilla L. teas present on macedonian market**
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- 56. Human health risks from heavy metals via consumption of contaminated food**
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- 57. Development of an ultrasonic method for effective extraction of capsaicin as a potent bioactive compound**
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- 63. Oxidative stress, oxidative DNA damage and prostate cancer**
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- 64. RNA interference (RNAi) mechanism as a basis for future successful treatment of chronic hepatitis B infection**
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- 66. Cancer specific conjugated monoclonal antibodies for anticancer therapy**
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- 67. Accreditation of the Laboratory of Radiopharmacy – requested requirements or need of challenge**
Authors: Apostolova Paulina, Delipetrev Katarina, Smilkov Katarina, Gjorgieva Ackova Darinka, Sterjova Marija, Janevik Ivanovska Emilija;
- 68. Quality control of PET radiopharmaceuticals, with reference to its specifics vs quality control of conventional pharmaceuticals**
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- 69. Production of [11C] Choline in The University Institute for PET – new perspective in diagnostics of prostate malignancy in R. of Macedonia**
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- 70. PET radiopharmaceuticals in the diagnosis of neurological diseases**
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- 71. Achievements and perspectives in formulation of stable immunoconjugate of the HER2-targeting trastuzumab – potential for rapid labelling with Gallium-68**
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Faculty of Medical Sciences

University Goce Delcev – Stip, Macedonia

INTERNATIONAL SYMPOSIUM AT FACULTY OF MEDICAL SCIENCES

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Where Nanotechnology and Nanomedicine meet – Applications and Potential Risks

Vaso Taleski¹, Darko Bosnakovski¹, Milka Zdravkovska¹, Velo Markoski¹, Zdenka Stojanovska¹, Svetlana Jovevska¹,

¹Faculty of Medical Sciences, Univ. „Goce Delchev“ Shtip, Republic of Macedonia
Presenter's telephone 389 70 266 822, e-mail address: vaso.taleski@ugd.edu.mk

Abstract

Most definitions describing concept of nanotechnology includes control, understanding, design, imaging, measuring and manipulating matter at dimensions between 1 and 100 nanometers. Nano-structure poses unique physical, chemical and biological properties exclusively due to its nanoscale dimensions, significantly different from the properties of bulk materials and single atoms or molecules. Gravity loses impact and importance, surface tension and Van der Waals constants has more importance in system of nano particles. Extremely small size enables nano particles to enter the human body through usual or unusual routes, pass through cell membranes, cross the blood-brain barrier and access new sites, interact with DNA or small proteins at different levels, in blood or within organs, tissues or cells.

Nowadays nanotechnology is being used in a range of applications, with potential to be applied at any stage in food industry: production, processing, packaging, labelling, transporting, tracing, keeping the quality of food product and extend the product shelf life.

The use of nanotechnologies to solve medical problems can dramatically improve the quality of life. Nanomedicine has the potential to enable early detection, prevention and significantly improve diagnosis, treatment and follow-up of many diseases.

Based on nano (bio) sensors, rapid and sensitive detection of pathogenic bacteria and trace levels of viruses in small sample volumes and lower costs than current in-use technologies are developed. Early detection enables accurate and prompt treatment. Likewise, sensors to detect biofilm formation by bacteria on surfaces are developing.

Over 70 products are under clinical trials, covering important diseases including cardiovascular, neurodegenerative, musculoskeletal and inflammatory diseases (such as cancer, atherosclerosis, diabetes, eye diseases, antimicrobial resistance, tissue engineering, Alzheimer disease, arthritis). Nanomedicine delivered over 70 products, including nano-delivery, pharmaceuticals, imaging, diagnostics and biomaterials. Researchers have developed "nano-sponges" that absorb toxins and remove them from the bloodstream, absorb free radicals, monitor the level of nitric oxide (which indicate inflammation, important to monitor inflammatory diseases) in the bloodstream.

Nanomedicine is understood to be a key enabling instrument for targeted and regenerative medicine by delivering of drugs (increases efficiency and minimizes side-effects), treatments, implantable devices, early diagnosis of cancers, accurate cancer imaging, cancer therapy and drug delivery.

Multi-drug resistant microorganisms present one of the most serious and increasing global, public health threat. This problem causes approximately 25,000 deaths each year and over 1.5 billion expenses in healthcare and productivity losses in Europe. New strategies to combat MDR are urgently needed and nanomaterials are very

promising approach. Metal nanomaterials (silver, gold, copper, titanium, zinc, magnesium, cadmium and alumina) possess unique antimicrobial activities. Silver ions showed strongest bactericidal effect.

Regenerative medicine based on tissue engineering is currently a great exciting challenge for science and industry.

Nanoparticles are also used to stimulate the body's innate repair mechanisms, artificial activation and control of adult stem cells and to deliver vaccine, allowing a stronger immune response.

Nanomedicine provides important new tools to deal with the grand challenge of an ageing population.

Future applications of nanomedicine will be based on the ability to build nanorobots. These nanorobots could be programmed to repair specific diseased cells („genetic surgery“), functioning in a similar way to antibodies in our natural healing processes and eliminating bacterial infection. Intense research is going on to make changes in the DNA structure of human beings as it can bring about a way to cure gene-related diseases.

Risks of nanotechnology are still unknown and unpredictable. Potential problem with it is lack of knowledge and understanding the impact these products will have on the nanoscale. Initial scientific studies showed negative effects on living organisms and a potentially serious threat to human health in connection with disposal of nanowaste and environmental contamination. Scientists are primarily concerned with toxicity, characterization and exposure pathways.

Number of ethical and societal concerns have been raised, ranging from possible health risks of using or consuming nanoenabled products, intellectual property rights governing them, and the new challenges they may arise.

There are concerns that strong economic competition may be taking precedence over scientific prudence when it comes to public health and the potential dangers of nanotechnology.

However, currently the benefits of nanomedicine definitely outweigh the risks.

Keywords: antimicrobial, ions, nanoparticles, nanomedicine, nanotechnology.