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

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<td>9:00 – 9:15</td>
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<td>9:15 – 9:35</td>
<td><strong>SESSION 1</strong>&lt;br&gt;Chair: Prof. Emilija Janevik Ivanovska&lt;br&gt;Co-chair: Ass. Prof. Elena Drakalska&lt;br&gt;<strong>Ass. Marija Darkovska Serafimovska</strong>&lt;br&gt;Macedonian agency of drug and medical devices, Director&lt;br&gt;University Goce Delcev Stip Republic of Macedonia&lt;br&gt;<strong>Step forward of Macedonian agency for medicines and medical devices, establishment and strategic plan for development</strong></td>
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<td>9:55 – 10:15</td>
<td><strong>Prof. Biljana Gjorgjeska</strong>&lt;br&gt;University Goce Delcev Stip Republic of Macedonia&lt;br&gt;<strong>Use of disinfectants and antiseptics in selected health institutions in Republic of Macedonia</strong></td>
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<td>10:15 – 10:35</td>
<td><strong>Assoc. Prof. Bistra Angelovska</strong>&lt;br&gt;University Goce Delcev Stip Republic of Macedonia&lt;br&gt;President of Pharmaceutical Chamber of Macedonia Republic of Macedonia&lt;br&gt;<strong>Code of Ethics for Pharmacists – Pharmaceutical Chamber of Macedonia</strong></td>
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<td>10:10 – 11:50</td>
<td><strong>Prof. Neven Zarkovic</strong>&lt;br&gt;Rudjer Boskovic Institute, Croatia&lt;br&gt;<strong>4-Hydroxynonenal – major bioactive marker of lipid peroxidation</strong></td>
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<td>11:50 – 12:10</td>
<td><strong>Assoc. Prof. Tatjana Ruskovska</strong>&lt;br&gt;University Goce Delcev Stip Republic of Macedonia&lt;br&gt;Nicotinamide adenine dinucleotide biosynthesis and consumption in dysfunctional white adipocytes</td>
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<td>12:10 – 12:30</td>
<td><strong>Prof. Rubin Gulaboski</strong>&lt;br&gt;Goce Delcev Stip Republic of Macedonia&lt;br&gt;New insights into the chemistry and functions of Coenzyme Q</td>
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<td>12:30 – 12:50</td>
<td><strong>Assoc. Prof. Darko Bosnakovski</strong>&lt;br&gt;University Goce Delcev Stip Republic of Macedonia&lt;br&gt;Genetically modified systems to study muscular dystrophies</td>
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| 12:50 – 14:00| Coffee break<br>**Poster presentation**
SESSION 3
Chair: Assoc. Prof. Cena Dimova
Co-chair: Ass. Prof. Nevenka Velickova

14:00 – 14:40 Prof. Lia Rimondini
Università del Piemonte Orientale, Novara, Italy

Counteracting microbial biofilm formation onto dental materials

14:40 – 15:00 Prof. Elizabeta Zisovska
Agency for Quality and Accreditation of Healthcare Institutions, Skopje, Republic of Macedonia

The endless potential of the umbilical cord blood for investigation, research and treatment

15:00 – 15:20 Ass. Misko Milev
University Goce Delcev Stip, Republic of Macedonia

The cytokinesis-blocked micronucleus assay: Good choice for detection and evaluation of genotoxicity in human cells

15:20 – 15:40 Prof. Lence Miloseva
University Goce Delcev Stip, Republic of Macedonia

Multiple predictive model for clinical and subclinical depression in adolescence

15:40 – 16:00 Coffee break

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

Molecular imaging and radionuclide therapy of prostate cancer

16:40 – 17:00 Assoc. Prof. Vaso Taleski
University Goce Delcev Stip, Republic of Macedonia

Where Nanotechnology and Nanomedicine meet – Applications and Potential Risks

17:00 – 17:20 Dr. Aleksandar Cvetkovski
University Goce Delcev Stip, Republic of Macedonia

The role of molecular cocrystals in drug development

17:20 – 17:40 Prof. Emilija Janevik Ivanovska
University Goce Delcev Stip, Republic of Macedonia

Drug development based on radiolabeled antibodies

17:40 – 18:00 Closing remarks
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<td>German Federal Office for Radiation Protection, Berlin, Germany</td>
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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. Gratitude is expressed to Alkaloid AD Skopje and Fitofarm for the financial support.
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   Author: Zorica Arsovska Sarafinovska

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   Author: Biljana Gjorgjeska

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9. Counteracting microbial biofilm formation onto dental material
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12. Multiple predictive model for clinical and subclinical depression in adolescence
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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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   **Authors:** Danche Vasileva, Daniela Lubenova, Marija Mihova, Ivan Maznev, Lence Nikolovska, Zhu Jihe;  
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20. Analysis of clinical features and complications in patients with β-thalassemia in the region of Strumica
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21. Lymphoepithelioma: A case report
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22. F-ra Capitullum 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
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25. Prosthetic rehabilitation in patient with advanced degree of functional disorders (case report)
Authors: Natasa Denkova, Katerina Zlatanovska, Ana Radeska-Panovska, Sanja Nashkova, Ivona Kovacevska;

26. Marginal Implants Bone Loss – a Case Report
Authors: Kiro Papakoca, Ana Radeska-Panovska, Katerina Zlatanovska;

27. Ectodermal Dysplasia, a Case Report: Challenge for Prostodontic Solution
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28. Alveolar socket preservation and shaping using temporary prosthetic construction – cases presentation
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29. Porcelain veneers produced by refractory die method
Authors: Katerina Zlatanovska, Julija Zarkova-Atanasova, Ana Radeska, Natasa Denkova, Kiro Papakoca;

30. Correlation of Two Different Local Hemostatic Modalities in Oral Surgery Patients with Oral Anticoagulants
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INTERNATIONAL SYMPOSIUM AT FACULTY OF MEDICAL SCIENCES

“Current achievements and future perspectives in medical and biomedical research”

BOOK OF ABSTRACTS

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The role of molecular cocrystals in drug development

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Abstract
The selection of the crystalline phases in a form of molecular cocrystals has become scientific challenge at the early stage of drug development of pharmaceutical formulations and in the late stage of synthesis and isolation of Active Pharmaceutical Ingredients (APIs) in desirable defined crystalline forms. Optimal crystal form of API interactively interrelates and impacts its aqueous solubility and dissolution rate that are benchmark for drug delivery and absorption determining the extent of its bioavailability and pharmacokinetics profile. Hence, determining the crystal structure and revealing the crystal packing forces and geometry of the API impact upon its physicochemical properties what it is a threshold for controlling the performance of the API. The range of crystal forms in which molecular cocrystals of APIs may exist are advantageous compared to its polymorphs, salts, solvates and hydrates due to the vast number of potential coformers which extend the limited counterions for salt formation implying the existence of more complex intermolecular interactions based on different H-bonding patterns with API that lead to conformational changes and flexibility for crystal packing in process of cocrystallization.

Selected case-studies of cocrystallization screening reveals determined crystal structures of pharmaceutical cocrystals composed of APIs that belong to different pharmacotherapy and functional group classes, respectively. The case study underline the crystal growth and the method of preparation for “drug-drug” type of pharmaceutical cocrystals wherein two different APIs cocrystallized in single crystal cell, and that represent new paradigm for approaching in development of “fixed-doses” or “combo” pharmaceutical formulations. Preliminary results of the Structure-Activity Relationship study on the cocrystals composed of metformin with dichloroacetic acid indicate dual and complementary pharmacological activities of the two selected drug models for cocrystallization.

Keywords: active pharmaceutical ingredients, molecular cocrystals, pharmaceutical cocrystals.