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Serbian Biochemical Society
Twelfth Conference

International scientific meeting

September 21-23, 2023, Belgrade, Serbia

“Biochemistry in Biotechnology”

PROGRAMME

Day 1 – Thursday, September 21st

(Serbian Academy of Sciences and Arts: Ceremony Hall)

- 09:00–10:00 Participants registration
- 10:00–10:20 Opening ceremony
Welcome messages by Marija Gavrović Jankulović - SBS and
Vladimir Stevanović - SASA

Section 1

- 10:20–11:00 Mario Gabričević
Faculty of Pharmacy and Biochemistry, University of Zagreb, Croatia
**Protein-ligand interactions – Alpha-1-acid glycoprotein
(Orosomucoid) with drugs: Multitechnic approach**
Plenary / FEBS3+ lecture
- 11:00–11:30 Marija Stojadinović
University of Belgrade – Faculty of Chemistry
Macrophage polarization and infectious diseases
Invited lecture
- 11:30–12:00 Coffee Break

Section 2

- 12:00–12:30 Jelena Bašić
University of Niš, Faculty of Medicine
Apolipoprotein E and matrix remodeling – a link to neurodegeneration in Alzheimer’s disease
Invited lecture
- 12:30–13:00 Nevena Tomašević
University of Kragujevac, Faculty of Science
Histone deacetylase 4 (HDAC4), an epigenetic target for spinal muscular atrophy
Invited lecture
- 13:00–13:30 Jasmina Ivanišević
University of Belgrade – Faculty of Pharmacy
HDL-associated proteins in hypertensive disorders of pregnancy
Invited lecture
- 13:30–15:15 **Poster Session 1 & Lunch break**
(University of Belgrade – Faculty of Chemistry)

Section 3

- 15:30–16:00 Sophie Combet
Laboratoire Léon Brillouin, UMR12, CEA-CNRS, Université Paris-Saclay, France
Stability of food proteins at high pressure conditions
ANSO PRESSION Lecture

- 16:00–16:30 Annie Brûlet
Laboratoire Léon Brillouin, UMR12, CEA-CNRS, Université Paris-Saclay, France
Effect of structure on digestion of plant protein gels
ANSO PRESSION Lecture
- 16:30–17:00 Ali Assifaoui
PAM Unit, AgroSupDijon, University of Burgundy, France
Polysaccharide-based hydrogels: Structure and function
ANSO PRESSION Lecture
- 18:30–22:00 Social event 1 - guided tour and dinner

Day 2 – Friday, September 22nd

(University of Belgrade – Faculty of Chemistry: Ceremony Hall)

9:00–10:00 Participants registration and poster posting

Section 4

10:00–10:30 Zhao Minyan / Li Qian / Xu Shuwen
Alliance of International Science Organizations
Presentation of the ANSO program
ANSO PRESSION Lecture

10:30–10:45 Ana Vesković
University of Belgrade - Faculty of Physical Chemistry
EPR imaging of redox-responsive hydrogels
Oral presentation

10:45–11:00 Nikolina Sibiñčić
Innovative Centre ltd., University of Belgrade – Faculty of Chemistry
Expression of recombinant SARS-CoV-2 nucleocapsid protein in mammalian cells
Oral presentation

11:00–11:15 Jovana Stevanović
University of Belgrade - Institute for the Application of Nuclear Energy
Evaluation of long noncoding RNAs *H19* and *MALAT1* as oxidative stress indicators in gestational diabetes
Oral presentation

11:15–11:45 Coffee Break

Section 5

- 11:45–12:15 Jelena Purać
University of Novi Sad, Faculty of Sciences, Department of Biology and Ecology
The effect of low-dose spermidine supplementation on polyamine content and antioxidative defence mechanisms in honey bees
Invited lecture
- 12:15–12:45 Neda Aničić
University of Belgrade – Institute for Biological Research ‘Siniša Stanković’
Insights into iridoid biosynthesis in *Nepeta* species (subfam. *Nepetoideae*, fam. *Lamiaceae*): Functional characterization of a key enzyme
Invited lecture
- 12:45–13:00 Jelena Spremo
Faculty of Sciences, Department of Biology and Ecology, University of Novi Sad
The impact of spermidine supplementation on genes involved in autophagy in honey bee (*Apis mellifera* L.)
Oral presentation
- 13:00–13:15 Antos Sachanka
Institute of Bioorganic Chemistry of the National Academy of Sciences of Belarus, Belarus
Design and property of the fusion enzyme of bovine DNA-exotransferase and DNA binding protein *Sso7d* from *S. solfataricus*
Oral presentation

13:15–13:30 Natalija Andrejević
Faculty of Chemistry, University of Belgrade
Amyloid fibrillation of egg-white proteins and its tendency to bind synthetic dye from water solutions
Oral presentation

13:30–15:00 **Poster Session 2 & Lunch break**

Section 6

15:00–15:30 Camille Loupiac
UMR PAM, Team PCAV, Institut Agro Dijon, Université de Bourgogne Franche Comté, France
Proteins under stresses
ANSO PRESSION Lecture

15:30–16:00 Andreja Rajković
Faculty of Bio-science Engineering, Department of Food Technology, Safety and Health, Ghent University, Belgium
Be serious about *B. cereus*: facts that do(not) age well
ANSO PRESSION Lecture

16:00–16:30 Aleksandra Martinović
Food Hub, University Donja Gorica, Montenegro
The significance of the contemporary tools of the microbial food safety risk assessment
ANSO PRESSION Lecture

18:30–22:00 Social event 2 - dinner / ANSO PRESSION organized event

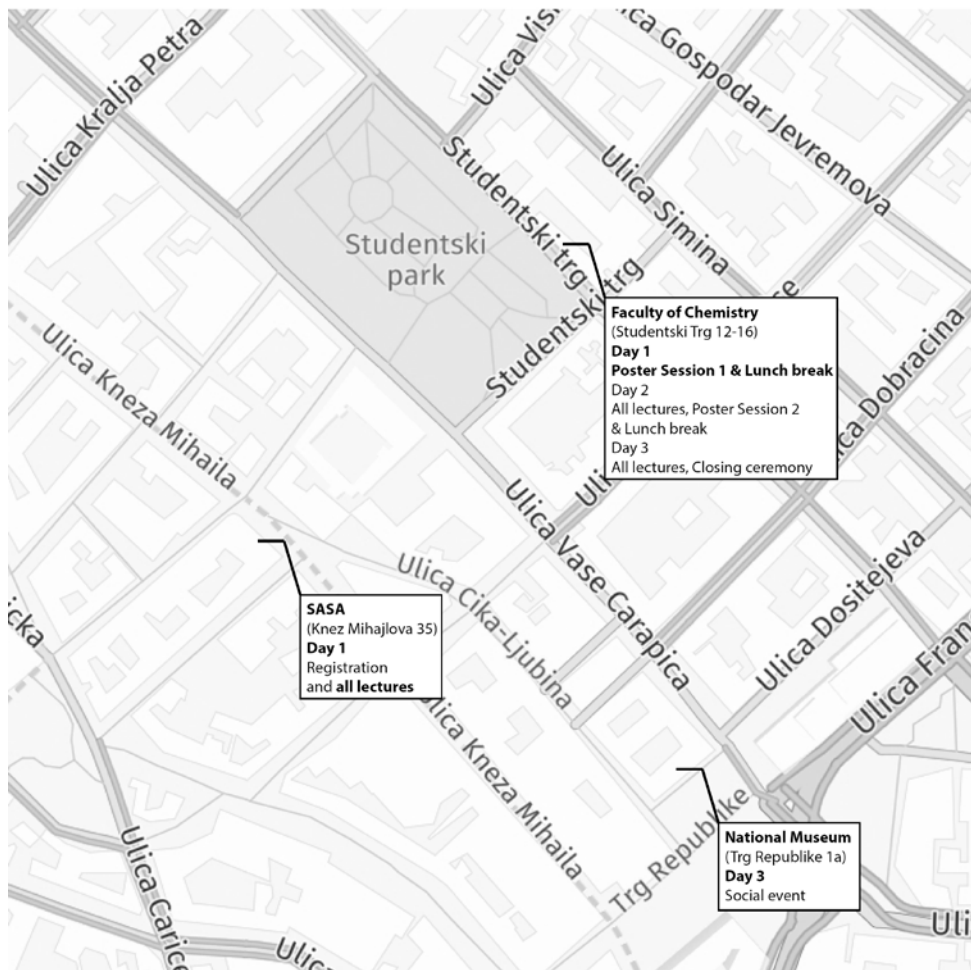
Day 3 – Saturday, September 23rd

(University of Belgrade – Faculty of Chemistry: Ceremony Hall)

Section 7

- 10:00–10:30 Jaroslav Katrlík
Institute of Chemistry, Slovak Academy of Sciences, Slovakia
Study of biomolecular interactions by biosensors and biochips
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- 10:30–11:00 Jelena Žakula
University of Belgrade - Institute of Nuclear Sciences Vinča
Cancer cell death induced by ruthenium complexes
Invited lecture
- 11:00–11:30 Ivan Spasojević
University of Belgrade - Institute for Multidisciplinary Research
Microalgae and transition metals - adaptation and opportunities
ANSO PRESSION Lecture
- 11:30–12:15 Coffee Break & Cocktail
- 12:15–12:30 Posters and speed talks awards announcement
- 12:30–13:00 Closing ceremony
- 14:30–17:00 Social event 3 - guided tour / visit to the National Museum

Map of events



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(abstracts are enumerated for referencing purposes)

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Foreword

Dear colleagues

Welcome to the XII Conference of The Serbian Biochemical Society, entitled 'Biochemistry in Biotechnology'.

This year we have the richest program ever. In addition to our tradition to invite promising young researchers from four main university centers in Serbia to deliver lectures, we have eight guests from abroad that will participate through FEBS3+ program or within ANSO PRESSION project. This is a turning point in the organization of the conference which undergoes a transformation into scientific event with strong international character.

As always, we cherish the participation of PhD students and early career researchers. We are glad that many colleagues took the opportunity to show what they do and to find their place within the scientific ecosystem.

Organizing Committee

Evaluation of the immunomodulatory potential of chimera Bv1a-BLwt and its mutants on the co-culture model system

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Allergen immunotherapy (AIT) is currently the only disease-modifying treatment for allergies. Pre-clinical models for the evaluation of novel therapeutics are crucial for ensuring their efficacy and safety. While cell culture models are cost-effective and efficient, they cannot fully replicate the cellular interactions *in vivo*. Therefore, it is essential to use more sophisticated model systems, such as co-cultures, to assess the potential of new therapeutics more accurately. Immunomodulatory protein banana lectin (BLwt) is an attractive candidate for adjuvant in AIT. Its mutant BL_{H84T} was developed to reduce its potential mitogenicity. The aim of this study was the development of the co-culture model system for testing the immunomodulatory effect of chimeras composed of the major birch pollen allergen (Bv1a) and BLwt (Bv1a-BLwt, Cwt), the hypoallergenic isoform of Bv1a (Bv1l) and BL_{H84T} (Bv1l-BL_{H84T}, C1 and BL_{H84T}-Bv1l, C2). Chimeric structures were designed *in silico*, fully minimized, and relaxed without van der Waals atomic clashes. Afterward, proteins were successfully expressed in *Escherichia coli* and purified by IMAC yielding around 0.4 mg per 1L of expression medium. The IgE binding capacity was assessed using ELISA inhibition with birch pollen allergic patients' sera. Caco-2 intestinal epithelial cells and THP-1 differentiated macrophages were used for the co-culture model system development. After protein application on the apical side of the co-culture, the integrity of the epithelial monolayer was not disturbed. The immunomodulatory potential of antigens was tested by measuring the gene expression levels for pro- and anti-inflammatory cytokines in both cell lines from co-culture. The obtained results indicate that the best anti-inflammatory response was favored after treatment with Cwt. Additionally, to further confirm the immunomodulatory effect of the recombinant chimeras, PBMCs obtained from individuals allergic to birch pollen were employed and treated with recombinant proteins. Only after treatment with Cwt, PBMCs secreted the anti-inflammatory cytokine IL-10. Obtained results suggest that Cwt chimera could have a therapeutic effect in AIT in birch pollen allergy.

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