

V SePA symposium: Proteomics in the analysis of food, environmental protection and medical research

THE BOOK OF ABSTRACTS



31. 05. 2019. Novi Sad

THE BOOK OF ABSTRACTS

V SePA symposium: Proteomics in the analysis of food,
environmental protection and medical research

PUBLISHER

THE FACULTY OF SCIENCES, UNIVERSITY OF NOVI SAD
SERBIAN PROTEOMIC ASSOCIATION

EDITORS

dr Ivana Borišev, dr Danica Jović, Ivana Prodić

CIP - Каталогизacija у публикацији
Библиотеке Матице српске, Нови Сад

547.96(048.3)

SEPA symposium (5 ; 2019 ; Novi Sad)

The book of abstracts [Elektronski izvor] / V SePA symposium: Proteomics in the analysis of food, environmental protection and medical research, 31.5.2019., Novi Sad ; [editors Ivana Borišev, Danica Jović, Ivana Prodić]. - Novi Sad: The Faculty of Sciences ; Belgrade : Serbian Proteomic Association, 2019

Način pristupa (URL):

https://drive.google.com/file/d/18JbBhPAoqdNVpJiC4b_1lXXIFNKbx4JD/view?fbclid=IwAR0BRE7scEqISBfB31BYpn8x55LE7PRaVIVJJqHqC82OiOn61123f2xUI6A. - Nasl. Sa pristupne stranice. – Opis izvora dana: 28.05.2019.

ISBN 978-86-7031-511-2

a) Протеомика -- Апстракти

COBISS.SR-ID 329513735

ISBN: 978-86-7031-511-2

Available online: https://drive.google.com/file/d/18JbBhPAoqdNVpJiC4b_1lXXIFNKbx4JD/view?fbclid=IwAR0BRE7scEqISBfB31BYpn8x55LE7PRaVIVJJqHqC82OiOn61123f2xUI6A

Processing: dr Ivana Borišev, dr Danica Jović, Nada Popsavin

SCIENTIFIC COMITEE

PhD Tanja Ćirković Veličković, Full Professor, Department of Biochemistry, Faculty of Chemistry, Belgrade, University of Belgrade, Serbia; Department of Medicine, University of North Carolina School of Medicine, Chapel Hill, NC, USA; Ghent University Global Campus, Incheon, Korea; Faculty of Bioscience Engineering, Ghent University, Ghent, Belgium; Serbian Academy of Sciences and Arts

PhD Tatjana Simić, Full Professor, Institute of Medical and Clinical Biochemistry, Faculty of Medicine, University of Belgrade, Belgrade, Serbia; Serbian Academy of Sciences and Arts

PhD Ivanka Karadžić, Full Professor, Department of Chemistry, Faculty of Medicine, University of Belgrade, Belgrade

PhD Marija Gavrović-Jankulović, Full Professor, Department of Biochemistry, Faculty of Chemistry, University of Belgrade, Belgrade

PhD Melita Vidaković, Principal Research Fellow, Department of Molecular Biology, Institute for Biological Research, University of Belgrade, Belgrade

PhD Svetlana Dinić, Principal Research Fellow, Department of Molecular Biology, Institute for Biological Research, University of Belgrade, Belgrade

PhD Marija Plješa Ercegovac, Associate Professor, Institute of Medical and Clinical Biochemistry, Faculty of Medicine, University of Belgrade, Belgrade, Serbia

PhD Marko Radulović, Research Professor, National Cancer Research Centre, Department of Experimental Oncology, Institute of Oncology and Radiology of Serbia, Belgrade, Serbia

PhD Ivana Borišev, Research Associate, Department of Chemistry, Biochemistry and Environmental Protection, Faculty of Sciences, Novi Sad, University of Novi Sad, Serbia

PhD Nevena Đukić, Full Professor, Department of Biology, Faculty of Natural Sciences, University of Kragujevac, Serbia

PhD Romana Masnikosa, Senior Research Associate, Unit of Biophysical Chemistry of Macromolecules, Institute of Nuclear Sciences "Vinča", University of Belgrade, Belgrade, Serbia

ELECTROPHORETIC AND MASS SPECTROMETRY-BASED CHARACTERIZATION OF SOLUBLE FRACTION OF CAMEL MILK PROTEINS UPON FREEZE AND SPRAY DRYING TREATMENT

Marija Perusko¹, Ana Simovic², Nikola Stevanovic³, Katarina Smiljanic⁴, Mirjana Radomirovic⁴, Dragana Stanic-Vucinic⁴, Sami Ghnimi^{5,6,7}, Tanja Cirkovic Velickovic^{4,5,6,8}

¹Faculty of Chemistry, Innovation Center d.o.o., Belgrade, Serbia; ²Department of Biochemistry, University of Belgrade, Faculty of Chemistry, Belgrade, Serbia; ³Department of Analytical Chemistry, University of Belgrade, Faculty of Chemistry, Belgrade, Serbia; ⁴Center of Excellence for Molecular Food Sciences & Department of Biochemistry, University of Belgrade, Faculty of Chemistry, Belgrade, Serbia; ⁵Ghent University Global Campus, Yeonsu-Gu, Incheon, South Korea; ⁶Faculty of Bioscience Engineering, Ghent University, Ghent, Belgium; ⁷Department of Food Science, United Arab Emirates University, UAE; ⁸Serbian Academy of Sciences and Art, Belgrade, Serbia

Objective: Camel milk is highly nutritious food with numerous health benefits proposed. Demand for camel milk has increased worldwide. Production of camel milk powders facilitate its transport, prolonge shelf-life, and also offer an attractive additive for various food products. In this study we characterized proteins of soluble fraction of freeze/spray dried camel milk powders.

Material and Methods: Whole camel milk powders were prepared by spray drying treatment at six different inlet temperatures (190°C - 250°C) or by freeze drying. The soluble protein fractions upon the treatments were analysed by combination of electrophoretic techniques and circular dichroism. Freeze dried camel milk and spray dried at 250°C were analysed by mass spectrometry.

Results: SDS-PAGE revealed non-uniform increase in Mw of major protein bands, while native electrophoresis revealed non-uniform decrease in pI values with increased inlet temperature of spray drying. That indicated occurrence of the Maillard reaction. Far-UV circular dichroism spectra showed no differences in secondary structures between freeze and spray dried samples. Mass spectrometry identified α -lactalbumin, glycosylation-dependant cell adhesion molecule 1 (GLYCAM1), immunoglobulin heavy chain, peptidoglycan recognition protein and camel serum albumin as dominant proteins in soluble fraction of camel milk powders. Carboxymethyl-lisene (CML), well known marker of Maillard reaction in food analysis, was detected on GLYCAM1 and on immunoglobulin heavy chain.

Conclusions: Our results indicate glycation of camel milk proteins via Maillard reaction upon spray drying treatment which further may affect techno-functional properties of camel milk powders, their shelf-life and nutritional value.

Acknowledgments: This work was supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia, grant number 172024. The project leading to this application has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 810752.