

4TH EDITION OF EURO GLOBAL CONFERENCE ON

FOOD SCIENCE AND TECHNOLOGY

SEPT **12-13**



VIRTUAL EVENT

Contact us:

Ph: +1 (702) 988-2320

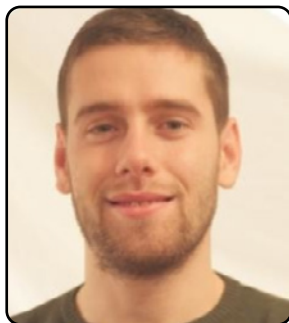
Email: food-science@magnusconference.com

Website: <https://food-chemistry-technology-conferences.magnusgroup.org/>

**BOOK OF
ABSTRACTS**

**4TH EDITION OF EURO-GLOBAL
CONFERENCE ON
FOOD SCIENCE AND
TECHNOLOGY**

12-13 SEPT



Valorization of raspberry seeds using acidic NADES: A preliminary study

Nemanja Teslic^{1*}, Filipe Oliveira², Filipa Santos², Alena Stupar¹, Milica Pojic¹, Anamarija Mandic¹, Branimir Pavlic³, Aleksandra Cvetanovic³, Ana Rita C. Duarte², Aleksandra Misan¹

¹ Institute of Food Technology, University of Novi Sad, Novi Sad, Serbia

² LAQV, REQUIMTE, Departamento de Quimica Nova School of Science and Technology, Caparica, Portugal

³ Faculty of Technology, University of Novi Sad, Novi Sad, Serbia

By-products of raspberry seeds fruit processing industry are rich in bioactive compounds. Ellagic acid (EA) is a polyphenol naturally present in raspberry seeds which has antioxidant, hepatoprotective, antimicrobial, anti-carcinogenic, anti-inflammatory activity, among other interesting bioactivities. EA majority is bonded in the form of ellagitannins (ETs) which have lower bioactivity when comparing to EA. Hence, ETs have to be hydrolysed to EA. Classical acid hydrolysis of ETs requires utilization of mineral acids (e.g. HCl) and alcohol (e.g. MeOH) which are detrimental for human health and hazardous for the environment. Natural Deep Eutectic Systems (NADES) composed of e.g. citric acid and betaine could serve as alternative medium for the hydrolysis process. This would allow to production edible, non-toxic and ready-to-use extracts which could be further used in food and cosmetic industry. Hydrolysis of ETs to EA using NADES is determined by numerous parameters (e.g. temperature, time, molar ratio of citric acid and betaine in NADES, water content in NADES, NADES/plant ratio etc.) and process optimization with all variables could be time consuming, inefficient and expensive. Thus, it is necessary to reduce their number and determine the most influential variables prior to final optimization step. For that purpose, 25-1 factorial experimental design was applied with a total of 16 experimental setups. The obtained extracts were analysed in terms of EA content which was determined by HPLC method, total polyphenol content analysed with Folin-Ciocalteu procedure and in vitro antioxidant activity determined by DPPH assay. Among all selected variables, NADES/plant ratio, temperature, and time, exhibited the highest impact on EA content, thus, these parameters should be selected for the final optimization step.

Acknowledgment/Funding: Authors would like to thank the Ministry of education, science and technological development of the Republic of Serbia, Grant No. 451-03-9/2021-14/ 200222; the Science Fund of the Republic of Serbia, PROMIS, Grant No. 6060592, DEStiny; and the European Union, Horizon 2020 (European Research Council), Grant no ERC-2016-CoG 72503 for the funding.

Audience Take Away:

- Alternative ways to perform hydrolysis with chemicals that are edible and non-toxic
- Which are the most influential variables driving the hydrolysis process
- Solution how to use underutilized raspberry seeds as raw material for extracts enriched with ellagic acid
- More info about Natural Deep Eutectic Systems and their applications

Biography:

Dr. Nemanja Teslic studied Food Technology at the University of Novi Sad, Serbia, and graduated as Bcs and Msc in 2012. and 2013., respectively. In 2018. he received PhD degree at Department of Agricultural and Food Sciences at the University of Bologna, Italy under supervision of prof. Andrea Versari. In 2019. he obtained the position of Research Associate at the Institute of Food Technology, University of Novi Sad. During 3 months in 2020/2021. he completed postdoctoral fellowship supervised by prof. Ana Rita Duarte at Departamento de Quimica Nova School of Science and Technology. He has 26 published articles in SCIE journals.