



BOOK OF ABSTRACTS

XXI EUROFOODCHEM

22-24 November 2021

On-line conference



TITLE

Book of Abstracts of the XXI EuroFoodChem Congress

EDITORS

Joana S. Amaral, Cristina Todasca, Michael Murkovic, Marco Arlorio, Tanja Cirković Veličković, Hans-Jacob Skarpeid, Karel Cejpek, Irena Vovk, Livia Simon Sarkadi, Małgorzata Starowicz, Matthias Wüst, Robert Tincu, Vuk Filipovic.

EDITION

Sociedade Portuguesa de Química
Av. Da República, 45 – 3º Esq
1050-187 Lisboa – Portugal

DATE

November 2021

ISBN

ISBN 978-989-8124-34-0



@ Sociedade Portuguesa de Química

All rights reserved.

The editors state that the content of scientific abstracts is of the responsibility of their respective authors.

XXI EUROFOODCHEM CONFERENCE

Scientific Committee

Joana Amaral (Portugal) – Chair, FCD-EuChemS
Cristina Todasca (Romania) – Secretary, FCD-EuChemS
Michael Murkovic (Austria) – Treasurer, FCD-EuChemS
Marco Arlorio (Italy) – past-Chair, FCD-EuChemS
Tanja Cirković Veličković (Serbia)
Celestino Santos-Buelga (Spain)
Hans-Jacob Skarpeid (Norway)
Irena Vovk (Slovenia)
Karel Cejpek (Czech Republic)
Lillian Barros (Portugal)
Livia Simon Sarkadi (Hungary)
M. Beatriz P.P. Oliveira (Portugal)
Małgorzata Starowicz (Poland)
Manuel Coimbra (Portugal)
María J. Cantalejo (Spain)
Matthias Wüst (Germany)
Michael Granvogl (Germany)
Reto Battaglia (Switzerland)
Slavica Ražić (Serbia, Division of Analytical Chemistry - EuChemS)
Wiesław Wiczkowski (Poland)
Zuzana Ciesarová (Slovakia)

Organizing Committee

Joana Amaral (Portugal)
Cristina Todasca (Romania)
Michael Murkovic (Austria)
Marco Arlorio (Italy)
Tanja Cirković Veličković (Serbia)
Hans-Jacob Skarpeid (Norway)
Irena Vovk (Slovenia)
Karel Cejpek (Czech Republic)
Livia Simon Sarkadi (Hungary)
Małgorzata Starowicz (Poland)
Matthias Wüst (Germany)
Robert Tincu (Romania)
Vuk Filipovic (Serbia)

Conference organized under the auspices of the Food Chemistry Division of the European Chemical Society (FCD-EuChemS), the Portuguese Chemical Society (SPQ) and the Serbian Chemical Society.

36	Differentiation of bee pollen samples according to their intact glucosinolate content	José Bernal
37	Study of the nutritional profile of <i>Cichorium spinosum</i> L. after fertilization with different nutritional solutions	Beatriz Paschoalinotto
38	Breads enriched with different flours: a new solution for healthier diets	Liege Aguiar Pascoalino
39	Influence of the maturation stage on the chemical composition and bioactive properties of <i>Cynara cardunculus</i> L. var. <i>altilis</i> seeds	Filipa Mandim
40	Oxidative changes in potatoes caused by deep-frying process with sunflower oil and omega 3 sunflower oil: A food modelling study	Birsen Yilmaz
41	Kynurenic acid in honey from various botanical species	Anže Pavlin
42	Molecular level depiction of how stearic acid enhances β -carotene solubilization in dietary mixed micelles	Esra Tunçer
43	Comparison of nutritional properties and in-vitro antioxidant activity of organically grown garlic and its fermented product	Mihajlo V. Jakanovski
44	Identified <i>Saccharomyces cerevisiae</i> strains from wine fermentation	Mariangie Castillo
45	Assessment of gamma-aminobutyric acid contents in brown rice and bran: comparison of HPLC and colorimetric methods	Cristiana Pereira
46	In vitro antioxidant activity and FTIR characterization of polyphenolic extracts from carob kibbles upon roasting	Anna Marina Grigoriou
47	Valorisation of Roman chamomile (<i>Chamaemelum nobile</i> L.) herb for the development of flavourings and natural antioxidants	Renata Barauskienė
48	Biobased food packaging with electrical conductivity for in-pack treatment by pulse electric field	Cláudia Nunes
49	Extrusion cooking effect on arabinoxylans content in novel gluten-free flours based on rice and chickpea	María Ciudad-Mulero
50	Water desorption kinetic curves as a tool for quality and history of products analysis	J.M. Rocha
51	Extrusion process effect on resistant and total starch in corn and lentils enriched flours with grape skin (<i>Vitis vinifera</i>) by-product	M. Cotacallapa-Sucapuca
52	Selecting ingredients and processing methods to increase carotenoid contents of carrot chips	Amy Schmiedeskamp
53	Influence of yeast strain and vessel type on aroma profile of Chardonnay white wine	Ivana Ivić
54	Functional properties and chemical profile of aged carioca beans (<i>Phaseolus vulgaris</i> L.) cooked under the steam of autoclave	Suélen Caroline Frantz
55	Colourful carrot snacks manufacturing by applying osmotic dehydration, convective drying and vacuum microwave drying	Emel H. Yusuf
56	Blue Honeysuckle (<i>Lonicera caerulea</i> var. <i>caerulea</i>) extract as potential natural antioxidant for raw-cooked meat products	Lukáš Jurčaga
57	Multi-step recovery of antioxidant-rich fractions from <i>Hierochloa odorata</i>	Kiran Subbarayadu
58	Recovery of valuable constituents from hop residues with pressurized solvents: Process optimization and extract characterization	Nóra Emilia Nagybakay
59	Valorization of cranberry pomace by using supercritical fluid and pressurized liquid extraction processes	Laura Tamkutė
60	Evaluating applicability of wood hemicelluloses as potential wall materials for spray dried microencapsulation of berry juice	Abedalghani Halahlah
61	High-resolution mass spectrometry analysis of melanoidins: The role of methylglyoxal in the formation of Maillard colorants	Clemens Kanzler
62	Association between ultra-processed breakfast cereals and acrylamide	Francisco J. Morales
63	The reaction of thioglucose and isothiocyanates lead to new transformation products during cooking	Holger Hoffmann
64	Regulation of enzyme activity in spelt flour for breadmaking	Gordana Hojnik Podrepšek
65	How stable are anthocyanins? A study with elderberry juice	Cláudia M. B. Neves
66	Extraction and quantification of tropomyosin in selected samples of shellfish	Mirjana Radomirović
67	Herbal teas with Cannabis: Assessment of potential consumers exposure to THC	Petra Peukertová
68	Effect of pH on the kinetics of the reaction of gallic acid with methylglyoxal	Charia Hadjipakkou
69	Bio-based pH indicator films for intelligent food packaging applications	Bitcan Ioan
70	Effect of sodium nitrite dose on lipid oxidation and colour changes during the shelf-life of refrigerated pork liver pâtés packed in MAP	Martine Carlier
71	Miniaturized, green salting-out liquid-liquid microextraction coupled with GC-MS used to evaluate biogenic amines in wine samples	Magdalena Fabjanowicz

Extraction and quantification of tropomyosin in selected samples of shellfish

**Mirjana Radomirović¹, Nikola Gligorijević², Dragana Stanić-Vučinić¹, Andreja Rajković³,
Tanja Ćirković Veličković^{1,3,4,5}**

¹ University of Belgrade - Faculty of Chemistry, Center of Excellence for Molecular Food Sciences and Department of Biochemistry, Belgrade, Serbia

² Institute for the Application of Nuclear Energy, Department of Metabolism, University of Belgrade, Belgrade, Serbia

³ Faculty of Bioscience Engineering, Ghent University, Ghent, Belgium

⁴ Ghent University Global Campus, Incheon, Korea

⁵ Serbian Academy of Sciences and Arts, Belgrade, Serbia

* tcirkov@chem.bg.ac.rs

Food allergies affect up to 10% of the general population and represent an important health problem in the field of food safety in industrialized countries. Hence, developing reliable, specific, and sensitive methods for detecting and quantifying allergens in food products is of high importance. Shellfish have been recognized as one of the eight most common sources of allergens, with tropomyosin (TPM) being considered a major heat-stable allergen, having a highly conserved amino acid sequence among different shellfish species. Allergenicity of TPM may change during food processing, such as cooking. The objective of this study was to develop an enzyme-linked immunosorbent assay (ELISA) for the detection and quantification of shellfish tropomyosin in food samples.

Two different extraction buffers - phosphate-buffered saline (PBS) and PBS containing 1 M sodium-chloride (PBSN), were compared for their ability to recover proteins from pre-cooked frozen Mediterranean mussel (*Mytilus galloprovincialis*) and fresh frozen razor mud shrimp (*Solenocera melanthero*). The samples were additionally cooked according to the manufacturer's instruction and analyzed as such. The protein content was quantified using Bradford protein assay, and the protein components of soluble extracts were profiled using SDS-PAGE. TPM presence was confirmed using Western blot. Sandwich ELISA was developed using a monoclonal anti-TPM antibody as a capture antibody, while polyclonal anti-TPM antibody served as a detection antibody and was coupled to the biotinylated secondary antibody and streptavidin-alkaline phosphatase conjugate. Tropomyosin was quantified using highly purified natural shrimp tropomyosin as standard.

The profile of extracted proteins was changed when using PBSN instead of PBS. A higher concentration of proteins was recovered from raw shrimp using PBSN instead of PBS. At the same time, the type of extraction buffer did not affect protein recovery either from heated shrimp or pre-cooked/heated mussels. Significantly fewer proteins were extracted from cooked shrimp sample compared to the raw shrimp, while cooking showed no effect on the extraction of proteins from mussels. Cooking did not affect TPM recognition in Western blot. TPM was quantified in shrimp samples in sandwich ELISA. However, developed ELISA could not quantify mussel's TPM, indicating that this approach may distinguish mussels and shrimp TPM.

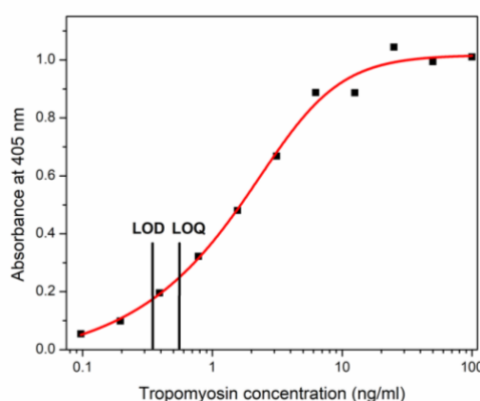


Fig. 1. Quantification of tropomyosin using sandwich ELISA.

Acknowledgments: This research work was supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia, contract number: 451-03-9/2021-14/200168; the Science Fund of the Republic of Serbia, Program DIASPORA, #6504499, ShellPCR, and the European Commission, under the Horizon2020, FoodEnTwin Project, GA No. 810752.