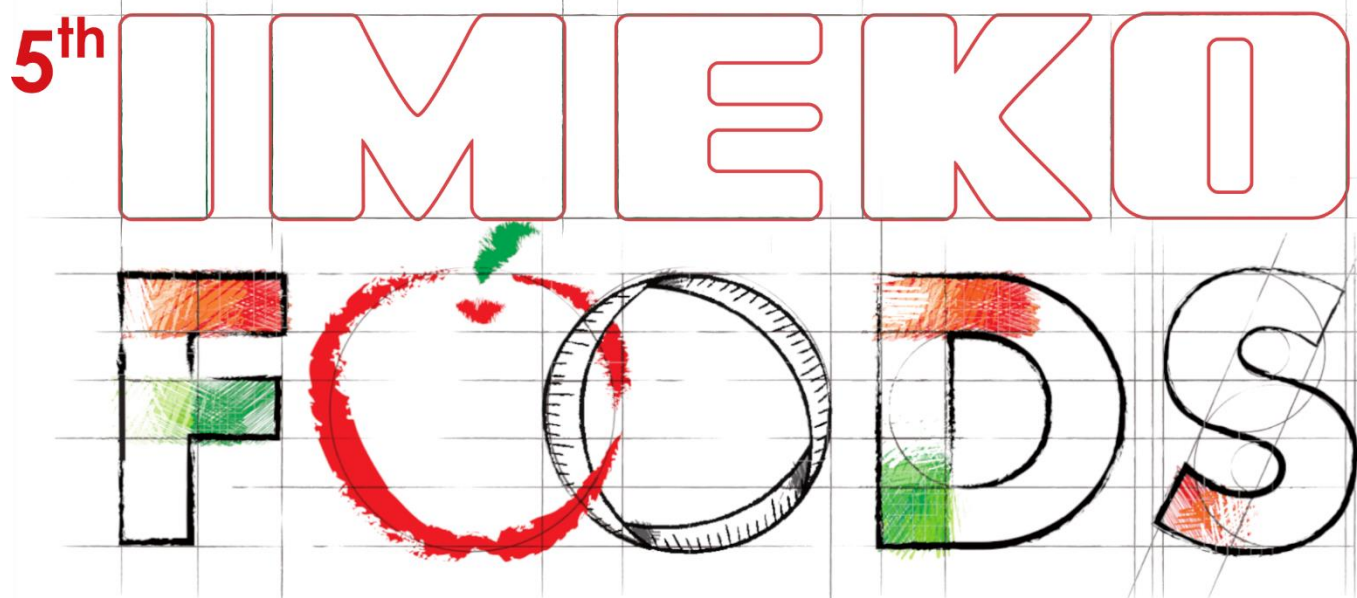


BOOK OF ABSTRACTS

CORRECTED VERSION



Metrology for Sustainable Food Production

16-18 SEPTEMBER 2020 | PRAGUE | CZECH REPUBLIC



Czech University
of Life Sciences Prague



5th international conference on metrology in food and nutrition

BOOK OF ABSTRACTS

2nd version

5TH INTERNATIONAL CONFERENCE ON METROLOGY IN FOOD AND NUTRITION

16-18 SEPTEMBER 2020

CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE | KAMÝČKÁ 129 | CZECH REPUBLIC

WWW.IMEKOFOODS.CZ

ISBN: 978-80-213-3036-8

DOI: 10.5281/zenodo.4035961 formerly 10.5281/zenodo.4017462

Table of contents

Welcome message	8
Keynote speakers.....	10
Program	14
Organizing committee	20
International program committee.....	21
Support and sponsorship	22

Oral presentations

Technical support for regional, PDO, PGI and TSG labels. The contribution of the distributed research infrastructure of the METROFOOD-RI Greek node.....	25
Combination of -omics strategies with traditional methods allows for comprehensive assessment of protective and adverse effect of ω -3 polyunsaturated fatty acids in parenteral nutrition	27
The food nutrition security cloud in Europe.....	29
Combined non-traditional isotopes for quality, authenticity and high geographical resolution assessments of wines	31
Development of inorganic and isotopic analytical strategies for the geographical authentication of olive oil	32
Stable isotope ratios of herbs and spices commonly used as herbal infusions on the Italian market	34
Laser photoacoustic spectroscopy for food fraud detection	35
Food reformulation – a challenge (not only) for the food industry.....	36
Quality assurance / quality control in cannabis products analysis	37
Essential oils in foods. Dead end or light at the end of the tunnel?	39
Improving crop plants growth and health with the help of microorganisms: SIMBA EU project	40
Open data in the context of FNS-Cloud and METROFOOD-RI	42

The first certified reference materials for somatic cell counting (SCC) in milk	44
Research statistical study of various dietary supplements through measurements of their energy content	46
Nutritional features of Australian grown Feijoa (<i>Acca sellowiana</i>) fruit	48
Personalised nutrition.....	49
Nutritional value of edible insects and perspectives of their use as an alternative source of proteins.....	50
Natural food supplements from microalgae via supercritical CO ₂ extraction	52

Posters

Omega-3 and omega-6 fatty acids from sustainable crops	55
Characterization and assays of wild growing plants used in herbal medicine	57
Protein quality of foods of plant origin available in Portugal	59
Determination of fat content and profile of fatty acids in new varieties of oats	60
The effect of microwave treatment on quality and oxidation stability of nuts and almonds.....	62
Behaviour of polyphenols and antioxidant activity after boiling of heads from a globe artichoke improved genotype	64
A method for determination of acrylamide in bread by UPLC-MS/MS	66
Characterization of food from burnt areas in the Central Region of Portugal	67
Mackerel seasonality effect on Se content	69
Assessment of the mechanisms and pathways of fish contamination and mercury-selenium antagonism	71
Open access to METROFOOD-RI* services	73
Screening for Microcystins and Nodularin in food supplements on the Belgium market	74

Magnetic aptamer-based oligoprecipitation as innovative sample treatment strategy for food allergen determination: egg white lysozyme as case study	76
Characterization and discrimination of salt samples of different geographical areas and kind by Neutron Activation Analysis and chemometric methods.	78
Building a database for provenance studies of origin wines from the Douro Valley	79
Determination of genetically modified DNA in foods by PNA-functionalized magnetic microbeads as substrates for enzyme-labelled amperometric genoassay	81
Antioxidant properties of white wines from different geographical origins	83
Authenticity of dairy products by capillary electrophoresis	85
Optimization of HPLC method for determination of cholesterol	87
Variations in the fatty acids profile of the meat by adding hempseed cake in the diet of multiparous cull cows	89
The effect of frying oil on the fat content of fish fingers and potato croquettes and its stability	91
Food Research Institute Prague – part of the European Research Infrastructure METROFOOD	93
Policies and strategies in food and healthy lifestyles	94
EPA and DHA content in fish oil supplements on the Italian market: A preliminary study	96
Is the nutrition of the Czech badminton representatives adequate?.....	98
Non-coeliac gluten sensitivity.....	99
Omega-3 recovery from food processing waste	101
METROFOOD: an Infrastructure for Promoting Metrology in Food and Nutrition	102
Joint Research Unit – METROFOOD-MK and its Contribution to Food Safety and Quality	103
Use of a certified reference material (CRM) of metals in hydrobiological products in a laboratory intercomparison program	105

Active food packaging joins quality by design for the development of antimicrobial materials containing essential oil–based cocrystals107

Clitoria ternatea extract as a source of antioxidant compounds in chitosan based edible films and their intelligent properties109

Capacity development within the Greek Node of METROFOOD RI regarding food processing. Challenges and opportunities for fermented food product reformulation111

Data sharing to improve food supply chain management.....113

The effect of the addition of cricket flour on the quality of bakery products115

Joint Research Unit – METROFOOD-MK and its Contribution to Food Safety and Quality

Najdenkoska A.¹, Arsova Sarafinovska Z.¹, Velkoska-Markovska L.², Jankulovska S. M.².

¹Institute of Public Health of the Republic of North Macedonia, 50 Divizija 6, Skopje, North Macedonia, ²“Ss. Cyril and Methodius” University in Skopje, Faculty of Agricultural Sciences and Food – Skopje, 16-ta Makedonska Brigada, 3, 1000, Skopje, North Macedonia

AIM

The North Macedonian Node within the European Research Infrastructure METROFOOD-RI consist of two institutions: Institute of Public Health (IJZRS) and Faculty of Agricultural Sciences and Food (FASF), named as Joint Research Unit – METROFOOD-MK. The node's laboratories are equipped with: gas chromatography systems with different type of detectors: MS, NPD, ECD, FID; liquid chromatography systems with different type of detectors: DAD, UV, RI than, Graphite Furnace Atomic Absorption Spectroscopy, Flame Atomic Absorption Spectroscopy system, Cold vapor (flow injection mercury system). Within the METROFOOD-PP activities, it is defined what services METROFOOD-MK Node will provided in characterization of RMs and food safety&quality analysis. For the food safety the following parameters are selected: inorganic contaminants (trace elements), organic contaminants (pesticides and mycotoxins), allergens, additives, and microbiological parameters.

As the most important parameter in estimating food quality is determination of food composition in terms of content of proteins, fat, fatty acids, carbohydrates, fibers (total, crude), vitamins, micro- and microelements and providing information about nutritional values, physico-chemical analysis, bioactive compounds and adulteration. Determination of nutritional value is important as consumers could be informed which nutrients are present in the certain food and how much energy they provide. General food labelling is governed by Directive 2000/13/EC, while Nutrition labelling of food is regulated by Directive 90/496/EEC. Standardised methods for determination of food composition, are used. Kjeldahl method has been applied to determine proteins / nitrogen content. For determination of total fats has been used: Soxhlet, Weibull-Stoldt and Rose-Gottlieb Method. Fibers will be determined through the enzymatic method. Total carbohydrate content is calculated by difference, rather than analyzed directly. Under this approach, the other constituents in the food (protein, fat, water, alcohol, ash) are determined individually, summed and subtracted from the total weight of the food.

According to ISO/IEC 17025 laboratories shall have quality control procedures for monitoring the validity of tests. This monitoring may include the participation in interlaboratory comparisons or proficiency testing programmes. By these mechanisms the laboratory can provide evidence of its competence to its clients, interested parties and the accreditation body. In order to maintain accreditation and prove competence the MK - Node laboratories participated in many PT schemes, organized by the international PT providers. The evaluation of the PT results showed that the results, about the food quality and safety, are with z – score below 2. Furthermore, during the "Early Phase" of the METROFOOD-RI, the MK - Node have participated in a pilot service dedicated to characterization of a new RMs of rice grains, rice flour and oyster tissue, particularly for

determination of food composition. Given that accredited methods were used for that purpose, the new food matrix-Reference Materials (RMs) will be characterized with acceptable reference value.

Keywords: METROFOOD-RI, metrology, food quality and safety.

Contact person: Anita Najdenkoska; email: a.najdenkoska@iph.mk

ACKNOWLEDGMENT

PRO-METROFOOD project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 739568 and METROFOOD-PP preparatory phase project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 871083.

REFERENCES

C Zoani¹, L Anorga², N Belc³, I Castanheira⁴, O F X Donard⁵, L Kourimska⁶, A Kukovecz⁷, I Iatco⁸, A Najdenkoska⁹, N Ogrinc¹⁰, H Ozer¹¹, M Rychlik¹², M Z Tsimidou¹³, J Van Loco¹⁴, and G Zappa¹, Feasibility studies for new food matrix-Reference Materials, XXII World Congress of the International Measurement Confederation (IMEKO 2018), <https://iopscience.iop.org/article/10.1088/1742-6596/1065/23/232005/pdf>