18th Euro Fed Lipid Congress and Expo

18 – 21 October 2021 · Online

Hosted by
Deutsche Gesellschaft
für Fettwissenschaft e.V.

FATS, OILS AND LIPIDS

For a Healthy and Sustainable World




BOOK OF ABSTRACTS

www.eurofedlipid.org

WEDNESDAY, 20 OCTOBER 2021

SCI Young Scientist Award / DGF Normann Medal Award — *Meeting room 1*

Chairs: Markus Dierker, Bertrand Matthäus, Kevin W. Smith

09.30 a.m. **SCI YOUNG SCIENTIST AWARD**
Adipose Tissue Inflammation in Human Obesity and Response to Chronic Marine Omega3 Fatty Acid Supplementation: The BIOCLAIMS Study at the University of Southampton
H. Fisk, Southampton/GB, R. Ayres, C. Childs, Southampton/GB, O. Kuda, J. Kopecky, Prague/CZ, E. Antoun, K. Lillycrop, P.C. Calder, Southampton/GB

09.50 a.m. **DGF NORMANN MEDAL LECTURE**
Minimizing Waste of Foods Rich in Omega-3 Fatty Acids by Preventing Lipid Oxidation
C. Jacobsen, National Food Institute, Kgs. Lyngby/DK

10.30 a.m. Coffee Break

Lipid Oxidation: Impact of Processing on Lipid Oxidation — *Meeting room 3*

Chairs: Fatima Paiva Martins, Karin Schwarz

11.00 a.m. **EUROPEAN YOUNG LIPID SCIENTIST AWARD LECTURE**
Examining the role of Endogenous Factors for Lipid Oxidation in Muscle Food Systems and Development of New Cost-effective Stabilization Technologies
H. Wu, Göteborg/SE

11.20 a.m. **Examining the Impact of Non-thermal Plasma on Lipid Model Systems**
D. Liu, Gent/BE, A. Nikiforov, N. De Geyter, B. De Meulenaer, Gent/BE

11.40 a.m. **Lipid Oxidation in Protein Enriched Products from Cod- Salmon and Herring Backbones during Ice and Frozen Storage**
H. Wu, Göteborg/SE, M. Abdollahi, Göteborg/SE, I. Undeland, Göteborg/SE

12.00 p.m. **Assessment of Lipid Oxidation in Sardine (*sardina pilchardus*) Treated by Plasma–Activated Water (paw)**
M. Mozzon, Ancona/IT, L. Ismaiel, A. Nartea, C. Mannozzi, R. Foligni, Ancona/IT

12.20 p.m. **Enzymatic Degradation of *Chlorella vulgaris* Cell Wall Improved Protein Bioaccessibility while Preserving Lipid Oxidative Stability**
G. Canelli, Zurich/CH, I. Kuster, B. Maude Hauser, Zurich/CH, P. Murciano Martínez, Z. Rohfritsch, F. Dionisi, Lausanne/CH, C.J. Bolten, Singen/DE, L. Neutsch, Wädenswil/CH, A. Mathys, Zurich/CH

12.40 p.m. Table Top Exhibition – Lunch Break

Olive Oil and Authenticity – Quality and Technology Aspects — *Meeting room 3*

Chairs: Diego Luis Garcia Gonzalez, Ina Willenberg

01.40 p.m. **Data Validity within the Sensory Evaluation of Extra Virgin Olive Oil - Do different test locations have a relevant impact?**
A. Bongartz, Waedenswil/CH, M. Popp, Waedenswil/CH, R. Retsch, Nuremberg/DE

02.00 p.m. **Turbidity of Extra Virgin Olive Oil: Characterization and its Effect on Product Quality and During Processing and Distribution**
C Breschi, Florence/IT, L. Guerrini, L. Calamai, P. Masella, A. Parenti, B. Zanoni, Florence/IT

02.20 p.m. **Impact of Coadjuvants on Enzymes Activity during VOO Extraction**
G. Squeo, Bari/IT, R. Silletti, G. Difonzo, C. Summo, C. Crecchio, F. Caponio, Bari/IT

02.40 p.m. **Effect of Ripening on Quality Attributes and Volitile Profile of Extra Virgin Olive Oils from 'Megaritiki' and Chondrolia Chalkidikis' Greek Cultivars**
V. Papoti, Thessaloniki/GR, K. Moustaka, D. Marlis, T. Adamidis, K. Zinoviadou, Thessaloniki/GR

03.00 p.m. **Effect of Olive Leaf Incorporation during the Industrial Extraction of cv. Arbequina Olive Oils on their Quality and Bioactive Composition**
I. Marx, Bragança/PT, N. Rodrigues, J. Pereira, A. Peres, Bragança/PT, A. Veloso, Coimbra/PT, R. Cruz, S. Casal, Porto/PT

03.20 p.m. Coffee Break

Olive Oil and Authenticity – Spectroscopy in the Analysis of Olive Oil — *Meeting room 3*

Chairs: Diego Luis Garcia Gonzalez, Ina Willenberg

03.50 p.m. **Green and Fast Determination of Ethyl Ester Content in Olive Oil by IR Spectroscopy**
C. Alamprese, Milan/IT, S. Grassi, Milan/IT, G. Squeo, F. Caponio, Bari/IT

04.10 p.m. **Fourier-Transform near Infrared Spectrocopy (FT-NIR) with Multivariate Techniques for Virgin Olive Oil Analysis**
T.M. Keceli, Adana/TR, A.A. Mecit, Adana/TR, A. Kiritsakis, Thessaloniki/GR

04.30 p.m. **Detection of Adulterated Olive Oil by Near Infrared Spectroscopy Coupled to Multivarriate Statistics**
C. Gertz, Hagen/DE, I. Willenberg, Detmold/DE

04.50 p.m. **Stability Assessment of Virgin Olive Oils by Mesh Cell-FTIR Spectroscopy: Spectral changes in a Real-time Storage Experiment**
A. Lobo-Prieto, Seville/ES, N. Tena, R. Aparicio-Ruiz, M.T. Morales, D.L. García-González, Seville/ES

05.10 p.m. **^{1}H-NMR Spectral Fingerprints of Extra Virgin Olive Oils: Confirmation of the Identity and Homogeneity within Commercial Lots**
O. Winkelmann, Hamburg/DE, T. Kuechler, Hamburg/DE

05.30 p.m. **Euro Fed Lipid General Assembly** – All Euro Fed Lipid Members are cordially invited to attend.

LECTURES

Effect of Olive Leaf Incorporation during the Industrial Extraction of *cv. Arbequina* Olive Oils on their Quality and Bioactive Composition

Ítala M.G. Marx[a,b*], Nuno Rodrigues[a], Ana C.A. Veloso[c,d], Rebeca Cruz[b], Susana Casal[b], José A. Pereira[a], António M. Peres[a]

[a.]CIMO, Instituto Politécnico de Bragança, Bragança, Portugal; [b.]LAQV/REQUIMTE, Faculdade de Farmácia da Universidade do Porto, Porto, Portugal; [c.]Instituto Politécnico de Coimbra, ISEC, DEQB, Coimbra, Portugal, [d.]CEB, Universidade do Minho, Braga, Portugal, *e-mail: itala.marx@ipb.pt

Extra virgin olive oil (EVOO) is a key element of the Mediterranean diet and is highly appreciated due to its unique nutritional and organoleptic attributes. The documented health-promoting properties of EVOO are associated with several chemical families, with a particular relevance to the phenolic composition, namely to phenolic alcohols and secoiridoid derivatives. This fact has been recognized by the European Food Safety Authority leading to a health claim regarding the protective effect of polyphenols from olive oils against the oxidative stress of blood lipids. In this sense, olive oil industry seeks to uncover technological processes that would ensure increasing the phenolic content of olive oils and thus, to fulfill the health claim requirements. Therefore, this study focused on evaluating the effect of *cv*. Arbequina leaves addition (1%, w/w) during the industrial extraction of *cv.* Arbequina oils on their physicochemical-sensory quality, chlorophyll and carotenoids total contents, CIELAB color intensities and individual phenolic profile. It was observed that, leaves incorporation reduced the primary oxidation (peroxide value by 33% and K_{232} by 17%) and increased the oxidative stability (19%). Moreover, oils amendment promoted the rise of the total phenolic content (up to 293±9 mg GAE/kg), which became richer in secoiridoid derivatives (up to 144±3.0 mg/kg), namely on oleacein content (up to 55±2 mg/kg), as well as in total carotenoids (up to 2.85±0.04 mg lutein equivalents/kg). Furthermore, the addition of Arbequina leaves was able to increase the contents of secoiridoid derivatives after acid hydrolysis, in comparison with oils extracted without leaves, allowing supporting the health claim (5.2±0.2 mg/20 g). Regarding the sensory attributes, the leaves incorporation during extraction enhanced the bitterness (2.9±0.5) and sweetness (7.0±0.4) but decreased the pungency (1.6±0.4). Although the *cv*. Arbequina leaf incorporation during oils' extraction increased the potential positive health impact, oils extracted from olives and leaves should not the commercialized as EVOO, according to the European Union regulations.

Acknowledgments: The authors are grateful to the Foundation for Science and Technology (FCT, Portugal) for financial support by national funds FCT/MCTES to CIMO (UIDB/00690/2020), CEB (UIDB/04469/2020), and REQUIMTE-LAQV (UIDB/50006/2020) units and to BioTecNorte operation (NORTE-01-0145-FEDER-000004) and Project "GreenHealth" (Norte-01-0145-FEDER-000042) funded by the European Regional Development Fund under the scope of Norte2020 - Programa Operacional Regional do Norte. Ítala M.G. Marx acknowledges the Ph.D. research grant (SFRH/BD/137283/2018) from FCT. Nuno Rodrigues thanks the National funding by FCT, through the institutional scientific employment program-contract.