BOOK OF ABSTRACTS

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XX EUROFOODCHEM CONGRESS

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

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15:30-15:45	Iris Tauber - Flavour analysis of an old Austrian apple variety at different ripening stages
15:45-16:00	Fernando Tateo - IRMS characterization of the saffron water-soluble fraction for the discrimination of the origin.
16:00-16:15	Carmen Gonzalez Sotelo - SEA-TRACES – Sustainable Seafood Production using Authenticity and Traceability tools
16:15-16:30	Christoph Walkner - Food authentication by rare earth element labelling and detection using solution based and laser ablation ICP-MS
Room 3 – Food Sustainability – Chairperson: Daniel Alberto Wunderlin	
15:15–15:30	Ana Rita Silva - Agrocybe cylindracea bio-residues: a sustainable source of ergosterol-rich bioactive extracts
15:30-15:45	Vera Barbosa - Tailored farmed fish iodine and selenium fortification with naturally enriched diets: gilthead seabream (*Sparus aurata*) and common carp (*Cyprinus carpio*) as case studies
15:45-16:00	Steve Huysman - At-line boar taint classification by means of Rapid Evaporative Ionisation Mass Spectrometry (REIMS)
16:00-16:15	Ana Luísa Fernandes - Anthocyanins Thermostability Modulation Through the Fortification with Pectic Polysaccharides Extracts
16:15-16:30	Filipa Pimentel - Simulated gastrointestinal digestion increases the antioxidant activity of *Porphyra dioica*
16:30-16:45	***Coffee break and poster session***
Room 1 – Functional Foods – Chairperson: Nicolas Sommerer	
17:15-17:30	Małgorzata Starowicz - Influence of heat treatment on biological compounds profile and antioxidant activity of herbs and spices and cookies with their contribution
17:30-17:45	Ecem Evrim Çelik - Determination of the Interactions between Bound and Free Antioxidants Naturally Occurring in Foods
17:45-18:00	Bianca Albuquerque - Composition in anthocyanins and bioactive properties of jabuticaba bioresidues
18:00:18:15	Vaida Kitryte - Multistep fractionation of blackberry (*Rubus fruticosus* L.) pomace into high value functional ingredients
18:15-18:30	Carlos Gomes - Valorisation of a Portuguese endemic species as a potential functional food: *Thymus carnosus* Boiss.
Room 2 – Food Composition and Authenticity – Chairperson: Sauro Vittori	
17:15-17:30	Helmut Mayer - Genetic variants of bovine milk proteins – “A2 milk” authentication using isoelectric focusing and PCR
17:30-17:45	Jing Zhang - Comparison of fatty acids and triglycerides profiles among big eye tuna (*Thunnusobesus*), Atlantic salmon (*Salmo salar*) and bighead carp (*Aristichthysnobilis*) heads

Agrocybe cylindracea bio-residues: a sustainable source of ergosterol-rich bioactive extracts

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The world production of edible mushrooms has increased more than 30-fold since 1978 and, on average, each customer consumes 5 kg of mushrooms per year [1]. Depending on the dimension of the mushroom industry, the amount of obtained by-products may range from 20 to 35% in weight of fresh mushroom [2]. Indeed, 38% of the 90 million tonnes of food waste produced by the European Union every year has its origin in the food manufacturing sector [3]. However, there are several strategies of transforming these wastes into high value-added products based on the cascade use principle, and this is exactly what the MicoBioExtract project aims to perform. Thus, the bio-residues of a popular edible mushroom in southern Europe, *Agrocybe cylindracea*, were studied as a sustainable source of bioactive extracts [4].

Ergosterol has been reported to be one of the most important compounds, contributing to the health-promoting benefits, associated with mushrooms' consumption [2]. Its extraction was performed using a heat-assisted technique and applying the response surface methodology, in order to optimize the combined effects of the variables time, temperature and solvent percentage, using a circumscribed central composite design with 16 independent combinations and 4 replicated centre points. At the optimum condition predicted by the model, the bioactivity of the extract was tested, evaluating the antioxidant (TBARS assay) and cytotoxic (in a porcine liver primary cell culture, PLP2) activities.

The results obtained from the optimization study showed a significant interaction between temperature and extraction time, with an 8.24% extraction yield. The global optimum condition for ergosterol extraction predicted by the model was 150 min at 90 °C, with 329 mg of ergosterol per 100 g of dry weight sample. Regarding the bioactive potential, namely the antioxidant activity, this extract was capable of preventing the formation of malondialdehyde, a secondary product of lipid peroxidation in the TBARS assay. Concerning the cytotoxicity of the extracts against the PLP2 cell line, the results showed no significant cytotoxic effect, with GI_{50} values higher than 400 µg/mL.

Thus, the extraction of molecules with a high nutritional and bioactive value from mushroom bio-residues and the goal to incorporate them in functional foods and nutraceuticals could boost the circular bio-economy, and help developing strategies towards promoting sustainability.

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References:

[1] Current Overview of Mushroom Production in the World, D.J. Royse, J. Baars, Q. Tan, John Wiley & Sons Ltd, Chichester, 2017, 5–13.

[2] S.A. Heleno, P. Diz, M.A. Prieto, L. Barros, A. Rodrigues, M.F. Barreiro, I.C.F.R. Ferreira, Food Chemistry, 197 (2016) 1054-1063.

[3] Multifunctional polymeric nanocomposites based on cellulosic reinforcements. D. Puglia, E. Fortunati, J. Kenny, Perugia, Elsevier Inc., Oxford, 2016, 4-5.
R. Ullrich, J. Nüske, K. Scheibner, J. Spantzel, M. Hofrichter, Applied Environmental Microbiology, 70 (2004) 457581.