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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European Chemical Society
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Sociedade Portuguesa de Química

12:30-12:45	Maria Rita Martins - Acorn Flour as bioactive compounds source in gluten free bread
Room 2 – Food Safety – Chairperson: Reto Battaglia	
11:45-12:00	Zuzana Ciesarová - Health promoting foods with sea buckthorn: more benefits, less acrylamide
12:0-12:15	Rebeca Cruz- -Is it safe to eat seafood? A case study of flame-retardants
12:15-12:30	Iolanda Nicolau-Lapeña - Selecting alternatives to chlorine for strawberry sanitation while maintaining nutritional and physicochemical quality
12:30-12:45	Lieselot Hemeryck - Investigation of diet-related DNA adduct formation by means of DNA adductomics
Room 3 – Food Sustainability – Chairperson: Susana Cardoso	
11:45-12:00	Kandi Sridhar - Kinetics modeling and effect of drying temperature on new commercial grape 'Kyoho' skin: Evaluation for functional and antioxidant properties
12:0-12:15	Franziska Hanschen - Stability of glucosinolate hydrolysis products and the identification of novel compounds in foods
12:15-12:30	Rossana Cardoso - Gamma irradiation preserves nutritional and chemical composition of *Agaricus bisporus* Portobello
12:30-12:45	Thi-Van-Linh Nguyen - Effects of Drying Conditions in Low-temperature Microwave-assisted Drying on Bioactive Compounds and Antioxidant Activity of Dehydrated Bitter Melon Slices (Momordica charantia L.)
Keynote 1 – Chairperson: Fernando Ramos	
12:45-13:15	**Nicoletta Pellegrini** - Food design and low-calorie intake
13:15-14:30	*Lunch break*
Plenary session 2 – Chairperson: Tanja Dcirkovic Velickovic	
14:30-15:10	**Isabel CFR Ferreira** - Functionalizing food with natural bioactive ingredients
Room 1 – Functional Foods – Chairperson: Nadia Mulinacci	
15:15–15:30	Bartosz Fotschki - The effect of diets supplemented with hemp and poppy seed oils on the development of obesity-related disorders in Zucker rats
15:30-15:45	Oludemi Taofiq - Enhanced extraction of ergosterol from *Pleurotus ostreatus* using response surface methodology (RSM)
15:45-16:00	Tuba Esatbeyoglu - Biological activities of stilbenoids in vitro
16:00-16:15	Giovanni Caprioli - Simultaneous quantification of 30 different bioactive compounds including polyphenols in spent coffee ground and coffee silverskin by HPLC-MS/MS triple quadrupole
Room 2 – Food Composition – Chairperson: Roberto Larcher	
15:15–15:30	Antonio Salatino - How diverse is Brazilian propolis?

ORAL COMMUNICATIONS

Functional Foods

Enhanced extraction of ergosterol from *Pleurotus ostreatus* using response surface methodology (RSM)

Oludemi Taofiq[1], Sandrina A. Heleno[1], Márcio Carocho[1], Cristina Costa[2], Prieto M.A[1,3], Joana Barros[2], Inês Ferreira[2], João Nunes[2], Lillian Barros[1], Isabel C.F.R. Ferreira[1,*]
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Pleurotus ostreatus (Jacq. ex Fr.) P. Kumm., is one of the most widely consumed mushrooms in the world with interesting health-promoting benefits, mainly due to its richness in several bioactive compounds [1]. Mushrooms produce ergosterol as one of their main sterols, which has been considered a contributor to their anti-inflammatory, antioxidant, and antitumor properties [2]. Obtaining an ergosterol enriched extract depends on different variables, such as the extraction method, solvent type, temperature, extraction time, and the solid-liquid ratio [3]. Therefore, it is essential to define the main variables and relevant response criteria to maximize the extraction yield and purity, combining the economic competitivity.
In the present work, response surface methodology (RSM) was applied to optimize a heat assisted extraction system (HAE), combining time (*t*) and temperature (*T*) effects, and using a circumscribed central composite design (*CCCD*) for the recovery of ergosterol from the fruiting bodies of *P. ostreatus produced with lignocellulose substract*. The obtained responses were the quantification of ergosterol by HPLC-UV (Y_1: mg of ergosterol per g of extract residue and Y_2: mg of ergosterol per 100 g of dry weight mushroom), and the extraction yield (Y_3: %). The *CCCD* consist of 16 response combinations and 4 centre points. Response surface models were fitted by using the following second order polynomial equation:

$$Y = b_0 + \sum_{i=1}^{n} b_i X_i + \sum_{\substack{i=1 \\ j>i}}^{n-1} \sum_{j=2}^{n} b_{ij} X_i X_j + \sum_{i=1}^{n} b_{ii} X_i^2$$

The results obtained showed a significant interaction between the variables. For all the three responses (Y_1, Y_2, and Y_3), the model successfully explained more than 80% variation in the experimental data (i.e. R^2>8). The individual optimum conditions and responses were as follows; Y_1 (10 min, 30°C, 57.6 mg/g), Y_2 (150 min, 61°C, 246.3 mg/100 g dw), and Y_3 (10 min, 80.9°C, 9.3%). The global optimum conditions predicted by the model were: 150 min and 54.3 °C, capable of yielding 7.3 %, 33.3 mg/g and 244.3 mg/100 g dw. The values predicted by the model are in close agreement with the experimental observations with very low residual distribution, proving the validity of the applied model. The results also showed the usefulness of the predictions for future scale up based on the desired responses. The obtained ergosterol enriched extract can be considered as a bioactive ingredient for pharmaceutical, cosmeceutical and nutraceutical purposes.

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