



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).



- 15:30-15:45 Carolina Camacho - Carotenoids and colour of wild sea urchin (*Paracentrotus lividus*) gonads
- 15:45-16:00 Ewa Sikorska - Optical spectroscopy and chemometrics as a tool for quality and authenticity assessment of apple fruits and juices
- 16:00-16:15 Rafael Sprea - A comprehensive study on the nutritional, chemical and bioactive properties of lovage (*Levisticum officinale* W.D.J. Koch)
- 16:15-16:30 Marijana Ačanski -Hierarchical clustering of cold-pressed pumpkin seed oil samples from various sources

Room 3 – Food Safety – Chairperson: Giovanni Caprioli

- 15:15-15:30 Bienvenida Gilbert-Lopez - Liquid chromatography/mass spectrometry and dielectric barrier discharge ionization (DBDI): a versatile tool for pesticide analysis in food
- 15:30-15:45 Tiziana Nardin - Glycoalkaloid profiles of herbal infusion using neutral loss - high resolution mass spectrometry
- 15:45-16:00 Carlos Cardoso - Algal consumption: weighing benefits against risks
- 16:00-16:15 Rosa Pilolli - Multidisciplinary characterization of selected wheat genotypes and in-silico risk assessment of their potential toxicity for celiac disease patients
- 16:15-16:30 Sarah Azinheiro - Comparative study of multiplex real-time Recombinase Polymerase Amplification and ISO 11290-1 methods for the detection of *Listeria monocytogenes* in dairy products

16:30-17:15 Coffee break and poster session

Room 1 – Functional Foods – Chairperson: Franziska S. Hanschen

- 17:15-17:30 Andre Horta - Extraction optimization of phenolic compounds from *Fucus spiralis*
- 17:30-17:45 Yibin Li - Effect of Different Encapsulating Agent Combinations on Physicochemical Properties and Stability of Microcapsules Loaded with Phenolics of Plum (*Prunus salicina* Lindl.)
- 17:45-18:00 Débora A. C. Campos - Pineapple by-products integrated valorisation towards functional foods

Room 2 – Food Processing – Chairperson: Michael Hellwig

- 17:15-17:30 Custódio Lobo Roriz - Dragon fruits as an alternative source of colorants: evaluation of antibacterial activity and colouring capacity
- 17:30-17:45 Baoru Yang - Impact of Bioprocessing on Bioactive and Flavour Compounds of Berry Products
- 17:45-18:00 Ma. Michelle Lopez - Flavonoid enrichment of fresh-cut apple through osmotic dehydration

Room 3 – Food Safety – Chairperson: António Peres

- 17:15-17:30 Tomas Lafarga - Potential of thermosonication as an alternative to chlorine disinfection in strawberries inoculated with *Listeria innocua*
- 17:30-17:45 Susana Bernardino - Use of a seaweed-enriched kefir whey in the development of edible food coatings
- 17:45-18:00 Kristina Kukurova - Variability of L-asparagine level in sea buckthorn berries and acrylamide formation in novel cereal products

ORAL COMMUNICATIONS

Food Processing

Dragon fruits as an alternative source of colorants: evaluation of antibacterial activity and colouring capacity

Custódio Lobo Roriz^{1,2}, Maria Inês Dias¹, Filipa S. Reis¹, Tânia C. S. P. Pires¹, Maria José Alves¹, Filipa Fernandes¹, Patricia Morales², Lillian Barros¹, Isabel C.F.R. Ferreira^{1,*}

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Betalains are a group of secondary metabolites named chromoalkaloids that are synthesized from tyrosine. These compounds have gained some attention in the last few years mainly due to their interesting bioactive potential, namely antioxidant, antimicrobial, and other bioactive properties [1]. Their strong and vibrant colours are also one of the characteristics by which these compounds have gained visibility in the food and pharmaceutical industries [2]. Betalains can be divided in two groups regarding the colour range: betaxanthins in the orange to yellow range, and betacyanins in the purple to pink range. Thereby, these compounds can be used as natural colouring agents, providing alternatives to the massively used artificial counterparts [3]. Although there are already some natural options in the market, these are not enough to meet the needs of the food industry, due to the growing concern of consumers regarding what they eat.

Thus, the objectives of this work were to: i) obtain bioactive extracts and with strong colouring capacity from the epicarp of two pitaya varieties, white-fleshed pitaya *Hylocereus undatus* (Haworth) Britton & Rose (WFP) and red-fleshed pitaya *Hylocereus costaricensis* (F.A.C.Weber) Britton & Rose (RFP); ii) chemically characterize the betalains' content through HPLC-DAD-ESI/MS; iii) evaluate the bioactive properties of the extracts, namely antimicrobial activity. The extracts were obtained through a dynamic maceration assisted by heat, and the betacyanins' profile was characterized by HPLC-DAD-ESI/MS. The antibacterial capacity was determined against a panel of Gram-negative and Gram-positive bacteria using the colorimetric method of rapid detection with *p*-iodonitrotetrazolium chloride (INT), and the responses obtained were expressed as minimum inhibitory (MIC) and minimum bactericidal (MBC) concentrations.

By the chromatographic analysis of the extracts it was possible to identify six compounds in both samples. For the WFP the major compounds identified were 6'-*O*-malonylbetainin (phylocactin), followed by 4'-malonyl-betainin, while for the RFP the major compound found was phylocactin. In the evaluation of the antibacterial activity, both extracts showed MIC and MBC values that ranged from 10 to 20 mg/mL. Gram-positive bacteria showed to be more susceptible to both extracts than the negative strains.

Further studies need to be conducted to better understand the correlation between the bioactive potential and the betacyanins' composition. Nevertheless, these natural matrixes proved to be viable alternatives for obtaining colouring extracts with antimicrobial properties.

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- [2] C. L. Roriz, L. Barros, M. A. Prieto, A. Ćirić, M. Soković, P. Morales, & I. C. F. R. Ferreira, *Food & Function*, 9 (2018) 12.
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