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BOOK OF ABSTRACTS

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P181. Biological and chemical valorization potential of portuguese seaweeds: *Ulva rigida, Gracilaria* sp. and *Fucus vesiculosus*

Gabriela S. S. Matos, Sara G. Pereira, Catarina I. Teixeira-Guedes, Ana M. P. Gomes, José A. Teixeira, Cristina M. R. Rocha

University of Minho, Center of Biological Engineering. University of Minho, Center of Biological Engineering. University of Minho, Center of Biological Engineering. Universidade Católica Portuguesa, Faculty of Biotechnology. University of Minho, Center of Biological Engineering. University of Minho, Center of Biological Engineering.

E-mail: *gabriela.souza@ceb.uminho.pt*

The seaweeds are an interesting source of nutrients and their rich composition allows them to be applied for different purposes. The aim of this study was to optimize the conventional solid-liquid extraction for three different seaweeds (*Ulva rigida*, *Gracilaria* sp. and *Fucus vesiculosus*) and characterize the chemical profile and antioxidant activity of the different extracts. An experimental design using a central composite was chosen for the optimization process. Four independent parameters were selected: type of solvent (different water:ethanol ratios), ratio (1:10-100 solid:liquid), time (0.5-9 h) and temperature (5-95 °C). Besides the nutritional characterization, the extraction yield, total phenolic content and antioxidant activity (DPPH and FRAP methods) were also evaluated. It was possible to verify that the use of water as solvent presented the highest extraction yield for the three seaweeds when performed with temperatures above 75 °C, times above 1 h of extraction and different ratios, and that these extracts were rich in polysaccharides. For *U. rigida*, the extraction conditions of 2 h, 85 °C, water as solvent and ratio 1g:60 ml was the one that showed higher yield (45.65 %) and also higher sugar content (49.76 mg/g, Glucose Equivalent/dry weight). However, for this seaweed, the extractions performed with ethanol concentrations above 50% and low temperature (under 45 °C) presented higher content of total phenolic and antioxidant activity. For *Gracilaria* sp., the extraction condition of 7 h, 75 °C, ethanol 50 % and ratio 1g:90 ml showed highest protein and total phenolic content, as well as antioxidant activity, but water as solvent with temperature above 75 °C was the condition with higher yield and sugar content. Similar results were obtained for *F. vesiculosus*, but with values of antioxidant activity 10-fold higher than obtained for *Gracilaria* sp and *Ulva rigida*. In conclusion, a sequential extraction procedure using a hidro-ethanolic solvent at mild temperatures to extract an antioxidant fraction and water at high temperatures to extract a polysaccharide-rich fraction can be considered. These fractions with different added value features can be used to develop new food products such as functional foods and nutraceuticals, improving the local bioeconomy.