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POSTER COMMUNICATIONS

RED ALGAE AS A SOURCE OF NUTRIENTS WITH ANTIOXIDANT POTENTIAL

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Seaweeds have been consumed since ancient times in different cultures, especially in Asian regions [1]. Currently, there are several scientific studies that, in addition to highlighting the nutritional content of seaweeds, also highlight their bioactive properties, normally associated with the presence of different compounds, namely phenolic compounds [2]. These factors may justify the growing demand and interest of consumers to include algae in their daily diet [3].

The present work aimed to determine the nutritional composition (ash, protein, fat, and carbohydrate content and energy value), the organic acids content and the antioxidant activity of three typical red algae from Galicia: *Chondrus crispus*, *Mastocarpus stellatus*, and *Gigartina pistillata*. The nutritional profile was evaluated using official analysis methods (AOAC), while organic acids were determined by UPFLC-PDA. The antioxidant activity was assessed using two *in vitro* assays: inhibition of lipid peroxidation through the formation of reactive substances of thiobarbituric acid (TBARS) and inhibition of oxidative hemolysis (OxHLIA).

The results obtained showed a similar nutritional composition among the three algae analyzed, where it was found a low-fat content and a high content of proteins, carbohydrates, and energy. Malic acid was the major organic acid in all the studied algae, with *M. stellatus* revealing the highest total organic acids content. Finally, the *in vitro* assays showed the excellent antioxidant capacity of the three algae, in particular *M. stellatus*, which demonstrated the lowest EC₅₀ value in the OxLHIA test ($1.0 \pm 0.1 \mu\text{g/mL}$) and, therefore, the highest antioxidant activity.

Thus, this study confirms the potential of red algae to be part of the human diet as a source of non-animal protein, due to its interesting nutritional content and due to their bioactive properties, acting as antioxidants. In addition, this study justifies the growing interest on using these algae in the development of new products in food and pharmaceutical industry.

References

- [1] E. Gómez-Ordóñez, A. Jiménez-Escrig, P. Rupérez Food Chemistry, 135 (2012) 806-811
- [2] M. Suhailla, S. N. Hashim, H.A.Rahman. Trends in Food Science & Technology, 23 (2012) 83-96
- [3] D. Gurpilhares, L.P. Cinelli, N. K. Simas, A. Pessoa Jr., L.D. Sette. Food Chemistry, 280 (2019) 175-186

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