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Vegetable Protein from Edible Aquatic Plants: Safe, Sustainable Production and Resilience Against Climate Change

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The growing demand for sustainable food has driven the development of alternative protein sources with a lower environmental impact. *Lemna minor* emerges as a promising alternative due to its high protein content, essential amino acid rich profile, rapid growth, and high adaptability to adverse environmental conditions. The goal of this project is to explore this species as a sustainable source of protein for the food industry. To this end, protocols will be established to characterize the nutritional, chemical, and bioactive profile of the produced biomass; compare and optimize the growth of *L. minor* in two culture media (Hoagland and Steinberg); assessing the effect of factors such as temperature, light intensity, and photoperiod on biomass production, protein content, and antioxidant activity; developing sustainable methods for protein extraction and isolation; and incorporating the obtained proteins into plant-based food products. The proposal aims to contribute to the development of innovative, environmentally sustainable protein ingredients by promoting the utilization of high-productivity, low-impact aquatic resources. The proposed project involves multidisciplinary research groups (IPB/PT, UVIGO/ES, MORE/PT) with diverse expertise in the food and environmental sectors. The objectives described are in line with the EU Strategy for the 2030 Agenda for Sustainable Development and aim to address food security issues and promote circular food systems in the region. Acknowledgements to FCT/MCTES(PIDDAC): CIMO, UIDB/00690/2020 (DOI:10.54499/UIDB/00690/2020) and UIDP/00690/2020 (DOI: 10.54499/UIDP/00690/2020); and SusTEC, LA/P/0007/2020 (DOI:10.54499/LA/P/0007/2020). Also to FCT for institutional scientific employment program-contracts of S. A. Heleno and M. Caroch. F. Macedo also thanks FCT for his PhD grant (2023.04962.BD).

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References

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