Marine macroalgae - applications in the industrial sector and therapeutic potential

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Abstract (300 word limit)

At the last decade increased the interest and search for new natural compounds from marine biodiversity to discover novel bioactive substances. It is expected that many naturally bioactive marine compounds with novel structures and bioactivities may be found among marine metabolites. Moreover, there is also an urgent need for bioactive compounds environmentally friendly or with "green" chemical properties. Still, there is a long way from discover to the applications of this new natural compounds, because they need to be cost efficient and be economically viable from an ecological point of view. Marine macroalgae produce significant amounts of primary and secondary metabolites that present a wide variety of bioactive properties, including antioxidant, antiviral, antimicrobial, antitumoral, anti-inflammatory, anti-aging or immunomodulatory potential, with also antibiotic properties. These molecules are promising candidates for many possible applications such as in pharmaceutical, nutraceutical, cosmetic and medicine areas but also in agriculture or feeding. These applications may promote several benefits to humans' daily life, and so to a better quality of life. Still, some substances may be poisonous to humans and to other organisms, or become toxic upper to a certain quantity. In this topic will be focused the marine macroalgae benefits, applications in industrial sector and therapeutic potential.

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Image



Figure 1- Macroalgae applications.

Recent Publications (minimum 5)

1. Leandro, A., L. Pereira, A. M. M. Gonçalves (2020). Diverse Applications of Marine Macroalgae. Marine Drugs 18, 17.
2. Cotas, João, Adriana Leandro, Diana Pacheco, Ana M. M. Gonçalves, Leonel Pereira (2020). A comprehensive review of the nutraceutical and therapeutic applications of Red Seaweeds (Rhodophyta). Life 10 (3), 19.
3. Cotas, J., A. Leandro, P. Monteiro, D. Pacheco, A. Figueirinha, A. M. M. Gonçalves, G. J. da Silva, L. Pereira (2020). Seaweed phenolics: from extraction to applications. Marine Drugs. 18, 384.
4. Leandro, A., D. Pacheco, J. Cotas, J. C. Marques, L. Pereira, A. M. M. Gonçalves (2020). Seaweeds bioactive candidate compounds to food industry and global food security. Life 10, 140.
5. Gonçalves A.M.M. (2021) Sustainable Premium Ready Meals for a Daily Nutritional Diet: Human Population Growing Demand. In: Leal Filho W., Azul A.M., Brandli L., Lange Salvia A., Wall T. (eds) Decent Work and Economic Growth. Encyclopedia of the UN Sustainable Development Goals. Springer, Cham.



Biography (150 word limit)

Ana Marta Goncalves has her expertise in the evaluation of biochemical pathways and the impacts of stressors in aquatic species to assess and improve the health status of the ecosystems and wellbeing. Her interests are also focused at the valorization of marine resources and their applications to food industry. Sustainable and healthy food products from marine resources (seaweed) are developed for a premium diet with appropriate nutritional balance and potential functional benefits based on a circular economy production. Based on the response of aquatic species to stressors and on the mode of action, her studies also highlight the best biomarker to function as early warning indicators. These tools can be used to monitor water changes and provide a broad measure of the impacts, with particular interest to the management of aquatic systems. This approach allows to assess the body condition of the individuals and to characterize the diet food source.

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