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Abstracts Book
EXPLORING SEAWEEDS: THE POTENTIAL OF PHLOROTANNINS

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Seaweeds are part of oceans' diversity, constituting one of the most important groups of organisms, in both number and variety of species. Aiming to value this natural resource, several Phaeophyta species were explored for their phlorotannins composition and biological activities. Total phlorotannins content was determined in purified phlorotannins extracts, using the dimethoxybenzaldehyde specific assay. Of the studied species, Fucus spiralis presented the highest amount, followed by Cystoseira species. The anti-inflammatory potential was studied by evaluating the capacity of the extracts to reduce the NO produced by RAW 264.7 macrophage cells, Cystoseira tamariscifolia presenting the best activity. The NO scavenging capacity was assessed on a cell-free system, F. spiralis presenting the best results. The antimicrobial activity was evaluated against pathogenic Gram+ and Gram-bacteria and fungi. In a general way, phlorotannins extracts were more active against Gram+ bacteria and, among fungi, against dermatophytes, with emphasis on F. spiralis and Cystoseira nodicaulis. The capacity of the phlorotannins extracts of the most interesting species to sequester superoxide anion radical, to inhibit lipid peroxidation and to prevent the degradation of hyaluronic acid, by the inhibition of hyaluronidase, was determined. All of the studied species presented promising results; nevertheless, F. spiralis was, by far, the most active. Taking into account the emergence of resistance to antifungal drugs, the antifungal activity of purified phlorotannins extracts was extended to a larger number of yeasts and dermatophytes, demonstrating fungistatic activity against yeast and fungicidal capacity against dermatophytes. Although phlorotannins did not present a clear effect on fungal cell membrane and cell wall, they clearly interacted with the microorganism’s metabolic network. Additionally, F. spiralis presented promising results on the inhibition of C. albicans virulence factor. The studied seaweeds demonstrated interesting nutritional and biological features, Cystoseira species and F. spiralis being particularly promising for the possible development of pharmaceutical formulations and functional food products.