Title:

Sargassum muticum and *Osmundea pinnatifida* food-grade extracts with antioxidant activity for novel functional foods

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Abstract:

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In line with the consumers´ awareness that a relationship between diet, health and disease prevention exists, the research/development of new functional foods (FF) have emerged. The population ageing increase, the quality of life decrease due to stress and the high incidence of the so-called modern diseases represent driving forces for different foods/diets to promote healthy active ageing and well-being as well as to counteract the incidence of many diseases. The marine environment provides a huge source of healthy foods including seaweeds which are sources of a plethora of chemicals, many of them with biological properties that can be extracted and incorporated in several food matrices leading to new potential FF. Despite the scientific interest for the use of marine-derived food ingredients FF, namely efficient extraction methods to obtain food grade validated extracts with biological properties such as antioxidant.

Aqueous extracts of *Sargassum muticum* and *Osmundea pinnatifda* from North Portuguese Coast by enzyme-assisted extraction (EAE) and ultrasound-assisted extraction (UAE) were obtained and evaluated in terms of their antioxidant potential. EAE, especially with cellulase and flavourzyme, were responsible for higher extract yields of *S. muticum* (25.3-30.5%) and of *O. pinnatifida* (46.1-54.8%). The total antioxidant capacity (ABTS) of *O. pinnatifida* extracts was statistically different in each extract and higher in those obtained by alcalase and favourzyme action. In opposition, lower values of the total antioxidant capacity were observed in *S. muticum* enzymatic extracts especially by cellulase and viscozyme action; higher antioxidant capacity was observed in ultrasound extract (46.4 μg/mL $_{\text{ascorbic acid equiv.}}$).