

Recovery and Encapsulation of Marine Derived Antifouling Agents

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Abstract : Biofouling is a complex problem of the aquaculture industry, as it reduces the efficiency of the equipment and causes significant losses of cultured organisms. Nowadays, the current antifouling methods are proved to be labor intensive, have limited lifetime and use toxic substances that result in fish mortality. Several species of marine algae produce a wide variety of biogenic compounds with antibacterial and antifouling properties, which are effective in the prevention and control of biofouling and can be incorporated in antifouling coatings. In the present work, *Fucus spiralis*, a species of macro algae, and *Chlorella vulgaris*, a well-known species of microalgae, were used for the isolation and recovery of bioactive compounds, belonging to groups of fatty acids, lipopeptides and amides. The recovery of the compounds was achieved through the application of the ultrasound- assisted extraction, an environmentally friendly method, using green, non-toxic solvents. Moreover, the coating of the antifouling agents was done by innovative encapsulation and coating methods, such as electrohydrodynamic process. For the encapsulation of the bioactive compounds natural matrices were used, such as polysaccharides and proteins. Water extracts that were incorporated in protein matrices were considered the most efficient antifouling coating.

Keywords : algae, electrospinning, fatty acids, ultrasound-assisted extraction

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