
VALORIZATION OF RED SEAWEED GRACILARIA GRACILIS THROUGH A BLUE BIOREFINERY STRATEGY

FrancaVilla Matteo*^{†1}, Deborah Racca², Mauro Marone², Paolo Marasco², Domenico Soldo², and Gianfranco Pazienza²

¹STAR*Facility Centre, Department of Agriculture, Foods, Natural Resources and Engineering (DAFNE), University of Foggia – Italie

²STAR*Facility Centre, Department of Agriculture, Foods, Natural Resources and Engineering (DAFNE), University of Foggia – Italie

Résumé

The European algae industry represents a promising biobased sector with significant potential to address key societal challenges. These include contributing to the EU's carbon neutrality targets, supporting the development of an innovative and sustainable food system, and advancing a circular and resilient European bioeconomy. Among the strategies explored to enhance the environmental and economic sustainability of industrial processes, the biorefinery approach-conceptualized as an *algae biofactory*-has emerged as a compelling solution.

Within the framework of blue biorefineries, a strong emphasis is placed on sustainability, ensuring both worker safety and the safety of processes and final products. In this context, the use of mild, eco-friendly, and green solvents is essential for the selective extraction of high-value compounds from seaweeds. These compounds not only offer high stability but also align with broader goals of reducing pollution, lowering energy consumption, and mitigating environmental degradation.

Seaweed biomass, in particular, presents both an intriguing and complex substrate for biorefinery applications. In our laboratory, we investigate its conversion through an integrated cascading approach involving chemical processes. The primary objective of this study is to explore the production of high-value algal products for applications in pharmaceuticals, biostimulants, and biomaterials.

This contribution will present key research findings from the cascade conversion of the Mediterranean red seaweed *Gracilaria gracilis* into a portfolio of high-value products.

Mots-Clés: Blue Economy, Seaweed, Biorefinery, Green Chemistry

*Intervenant

[†]Auteur correspondant: matteo.francavilla@unifg.it