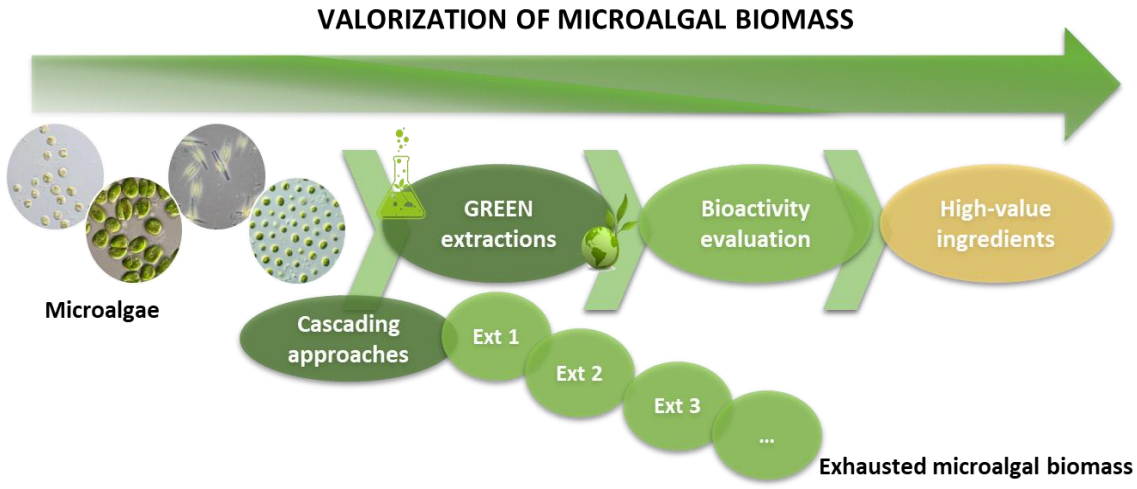
Unlocking the potential of eco-friendly approaches to produce high-value compounds from microalgae

Natalia Castejón

In recent years, the demand for new bioactive compounds with potential benefits to human health has experienced an outstanding increase. A significant emphasis on research on marine organisms, like microalgae, has been placed to find novel and sustainable sources of natural compounds. However, extraction methods commonly used to isolate these bioactives are focused on extracting targeted compounds without the depletion of raw materials. Moreover, these techniques involve high volumes of organic solvents and high energy requirements. In the current context of global warming, EU strategies aim to ensure the sustainable use of the seas while protecting marine environments. A critical concern under this initiative is the valorization of microalgal biomass. Thus, searching for new processes that will successfully increase the value of microalgae using environmentally-friendly techniques is a primary objective nowadays.

In this talk, I will provide a comprehensive overview of our current works in the framework of the BioactALGAE project. Our primary focus lies in investigating the sustainable production of lipids, proteins, and minor compounds by applying innovative extraction approaches based on the principles of Green Chemistry. Additionally, after the extraction and characterization process, we are assessing the bioactivity of microalgal extracts by a spectrum of *in vitro* cell-based assays, measuring potential endpoints for potential applications in the food and nutraceutical industry.



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