



Università degli Studi di Napoli Federico II

PhD in Biotechnology - 38th cycle

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Valorization of vegetable biomasses

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Vegetable ingredients are a natural source of functional ingredients that can be extracted and utilized in a range of industries, including pharmaceuticals, nutraceuticals, and food ¹. In this project the attention will be focused on the wastes and microalgae categories. On one hand, food and agricultural waste are known to be rich in bioactive compounds such as flavonoids, tannins, and phenolic acids. The utilization of these waste products fits within the principles of the circular economy, which aims to minimize waste and maximize the use of resources ². Microalgae, on the other hand, are a highly valuable source of metabolites, including fatty acids, proteins, pigments, and polysaccharides. Their growth conditions can be manipulated to optimize the production of specific metabolites of interest, and they can be cultivated in reactors without competing with arable lands or requiring excessive amounts of water and nutritional supplements ³. However, regardless of the selected feedstock, the selection of an efficient and environmentally sustainable extraction process for vegetables biomasses remains a key challenge. Several innovative extraction techniques have been studied recently, their operative parameter and combination between them can be optimized to achieve different targets. The aim of this project is the maximization of the exploitation of the selected biomass in terms of yield, profit, and sustainability. These targets may be reasonably achieved using the biorefinery concept, allowing for the recovery of as many compounds as possible.

References

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