The Roadmap to Discover the Potential Value of Red Seaweeds from Peniche

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The Starting Point

Seaweeds are known for their biotechnological and nutritional value, being currently exploited worldwide for scientific and industrial purposes, following the ever-growing demand for natural and healthy products. This seeped into an increasing exploitation of wild seaweed populations which, in turn, has led to the development of targeted culture techniques, to sustainably grow and enhance harvests. Yet, while seaweeds are regarded as a valuable nutritional sources in several parts of the world, and known for their many health benefits, in Portugal they are still seen as merely “sea weeds”, occupying no more than a market niche, and holding humble acceptance yet as a food ingredient to the general public. Peniche shores in particular, in the Centre of Portugal, are home to a high number of seaweed species, with reasonably unexplored potential regarding their value. Therefore, finding valuable species from a biotechnological and nutritional perspective is an endeavor that will hopefully lay down a prized economic venue for Peniche as a seaweed provider for several industries, yet always bearing the preservation of the natural populations in mind. To achieve this goal, during the current research proposal an array of biochemical analyses will be carried out, species by species, namely upon wild and cultured specimens under selected culture variables. The results will allow to choose a number of red seaweeds rich in bioactive compounds whose cultivation will enhance metabolite production, while at the same time, protocols will be developed to ensure a sustainable exploration of this natural resource through culture, therefore protecting natural populations.

The Roadmap

The Starting Point

13 selected species

M1 Harvest and Identification

M2 Nutritional Profile and Bioactivities

M3 Culture in Controlled Conditions

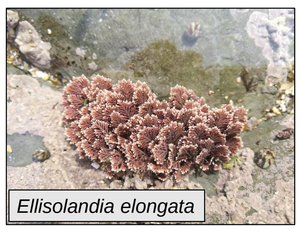
M4 Cultured Species Nutritional Profiles

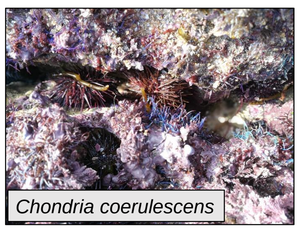
M5 Compound Purification

M6 Antioxidant Activity of Purified Compounds

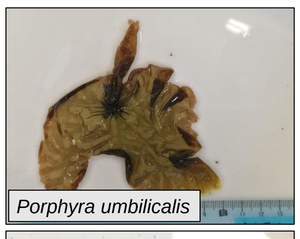
The Finishing Line

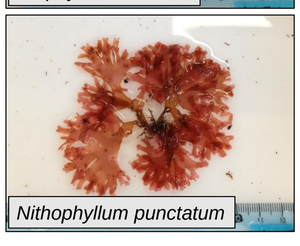
? species


Ellisolandia elongata


Chondria coerulescens


Osmundea pinnatifida


Porphyra umbilicalis


Nithophyllum punctatum

Milestones

M1 to M2

Species Characterization

M3

Cultivation and Characterization

M4 to M6

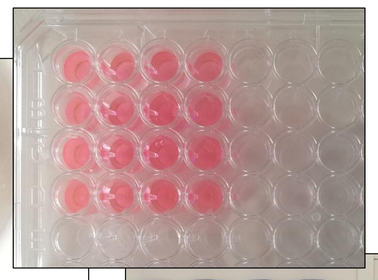
Compound Purification and Optimization

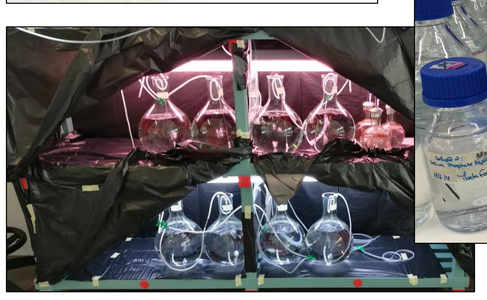
Biochemical Analyses

- Protein Content
- Lipid Content
- Crude Fiber
- Phycocolloids
- Pigments
- Bioactivities

Culture Variables

- Light Source
- Nutrient Source
- Temperature
- pH





The Finishing Line

Economical Impact

Seaweed valorization: species with promising nutritional profile and bioactivity potential will be seen as a valuable nutritional or functional ingredient in human diet, in the future.

Peniche valorization: Peniche will be valorized as it holds a high abundance and diversity of seaweeds with noteworthy potential as a nutritional and nutraceutical resource.

Sustainable exploration: cultivation protocols will be developed in order to cultivate selected species while preserving the natural populations.

Acknowledgements

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