The Seaweed Biorefinery – for high value added products

www.searefinery.eu

The overall aim of SeaRefinery is to develop and test an innovative biorefinery approach for seaweed exploitation in Northern Europe, led by industrial key players and specifically aimed at producing algal bioactive molecules for nutraceuticals, functional foods, cosmetics, pharmaceuticals and biobased materials.

SeaRefinery will develop eco-friendly chemical and enzymatic processing technologies to extract and purify high value-added components such as antioxidants, antimicrobial components and hydrocolloids from cultivated seaweed species (including e.g. *Saccharina latissima* and *Alaria esculenta*).

Bioactive compounds such as , e.g. phlorotannins, fucoidan, and laminarin, will be selectively tested for bioactivity. In addition, laminarin and marine proteins will be assessed in nutraceutical and selected food model systems. Alginate will be evaluated as an additive for textile applications via coating and extrusion technologies.

In order to maximise the value of the biorefinery feedstock (input) and derived products (output), monocultures will be grown on innovative textile cultivation substrates with high yield biomass production. Seasonal variation, replicated over two years, of the selected biomolecules will be a measuring tool for harvesting the seaweeds with maximum contents of bioactive compounds.

SeaRefinery is funded under the Marine Biotechnology Era-Net by co- funding agencies:

The SeaRefinery consortium is made up of 8 participants from industry and research and representing key players along the seaweed value chain

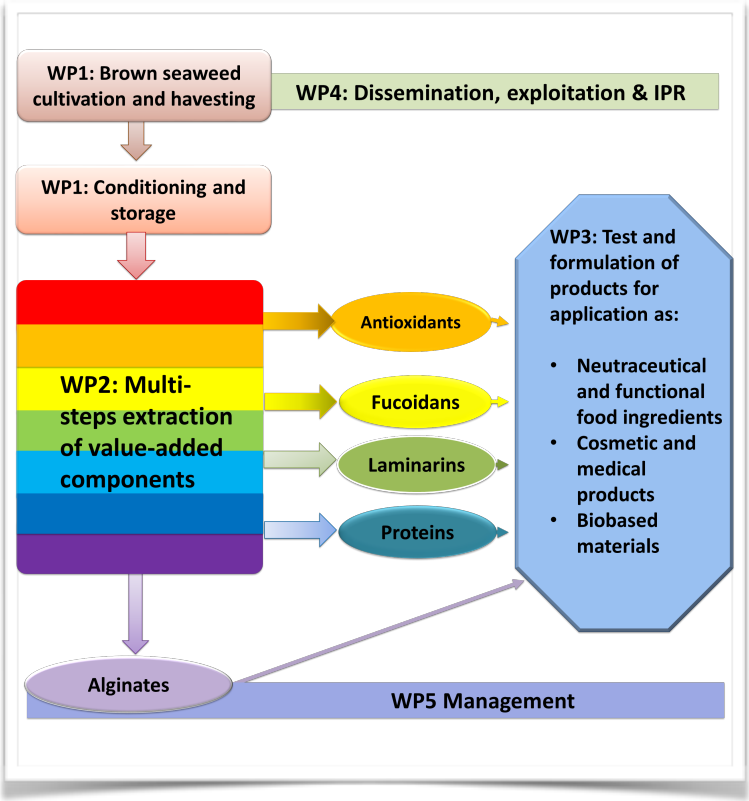
The work plan

SeaRefinery is a 3 year project (Nov 2015 – Oct 2018).

The research focus of Year 1 is on: (i) improving cultivation techniques (using innovative substrates), harvesting, conditioning and storage of brown seaweeds and (ii) the development of eco-friendly extraction techniques for the recovery go high value algal products.

Year 2 focusses on the test and evaluation of the new algal products for formulation in neutraceutical and functional food ingredients, cosmetic and medical products and biobased materials.

Year 3 will see production of: (i) selected products produced in a pilot-scale biorefinery and (ii) a portfolio of commercial options based on the research findings.



Schematic of the SeaRefinery Project work plan

For more Information visit or our project website www.searefinery.eu or contact sarah@cybercolloids.net