

Membrane Separation and Identification of Secondary Metabolites from Marine and Agricultural Sources

Ph.D. student Behnaz Razi Parjikolaie

Introduction

An important goal of the project is to identify and quantify primary and secondary metabolites of marine and agricultural sources by the use of chromatographic techniques and spectroscopic methods. Afterwards, the use of membrane technology for the separation and concentration of different bioactive compounds from these kinds of sources such as micro/macro algae, shrimp shells and fish is the next step of the project.

Membrane separation and concentration of bioactive compounds

Biomass from marine and agricultural sources consists of various functional bioactive compounds which are being converted to energy in power plant before extraction. By membrane processes these ingredients can be separated and concentrated efficiently. Membrane technologies are non-thermal separation methods which involve no phase change or chemical agents. By using an appropriate membrane, better filtration rates can be attained and the debris and cells are completely removed. Therefore, by this technique, ingredients with valuable biological properties can be separated and concentrated from biomass without having to use environmentally harmful organic solvents or large amount of energy.

These concentrated compounds can be applied for pharmaceutical, biomedical and cosmetic industries. Furthermore, the residue will be free from some problematic ingredients in the context of fuel such as salts, proteins and can be used directly in power plants.

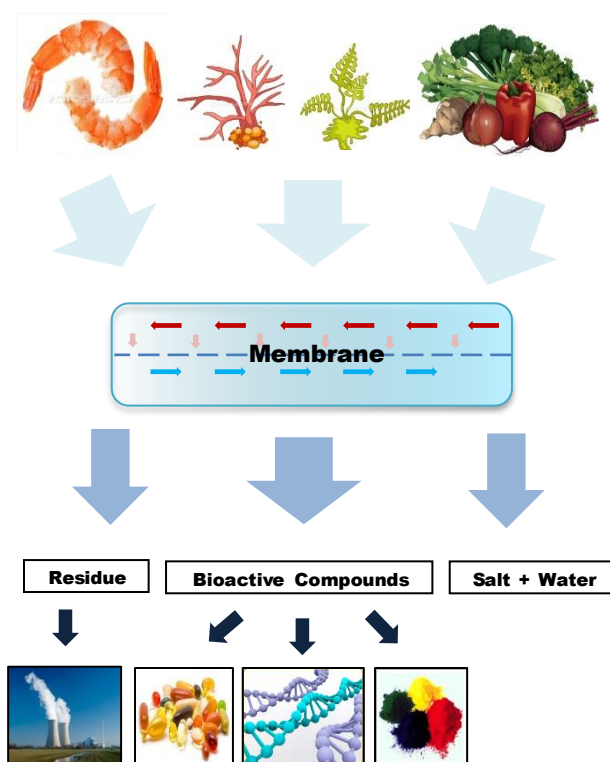


Figure A: Illustration of the process flow

Objectives:

- ❖ Quantification and identification of valuable bioactive compounds from marine and agricultural sources by different types of chromatography
- ❖ Membrane facilitated separation processes in Lab and pilot plant scale
- ❖ Concentration processes in Lab and pilot plant
- ❖ Evaluation of economic viability of the various proposed processes

The project at which my Ph.D. study is affiliated, "Membrane separation and identification of secondary metabolites from marine and agricultural sources" is a part of the Innovation Consortium *Natural Ingredients and Green Energy – with sustainable purification technologies*, is a three year project placed at KBM, SDU supported by Danish Agency for Science, Technology and Innovation