

Master's thesis proposal

Title: Isolation of marine collagens; a blue biobased material from invasive marine resources

Credits: 30-60 ECTS

Starting date: Autumn-2020

Research lab: Marine research group, Division of Food and Nutrition Science

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Project description:

Within the health and beauty segment, marine collagen has gained significant interest as a healthy, environmentally sound and non-meat alternative to bovine and pork derived products, which represent a concern due to disease risk. The steadily increasing global demand for collagen and collagen hydrolysates has caused continuous search for new natural collagen sources and upgrading of production methodology. This master project is part of a larger European project -BlueCC- with 8 partners from 6 European countries aiming commercial exploitation of marine collagen and chitosan from marine resources. The BlueCC project aims to take underutilized species such as invasive marine species to develop new eco-friendly marine ingredients in a market acceptance approach. This master project will address development of sustainable, cost-effective and scalable processes for production of collagen from invasive aquatic species. Several emerging eco-innovative technologies such as pulsed electric field (PEF), ultrasound, high pressure processing as well as novel solvents will be employed to develop sustainable, efficient and scalable process for isolation of collagen from the marine resources. Each process will be fine-tuned for each biomass isolated collagen will be characterized.

The main tasks of this master's project are:

1. Isolation of marine collagen from an invasive marine resource.
2. Fine-tuning an eco-innovative technology for isolation of marine collagen.
3. Evaluating structural and functional properties of isolate collagens.

Learning outcomes (what we expect you to learn from this master's project):

1. Knowledge on innovate methods for upcycling food wastes and improving food sustainability.
2. Understanding chemistry of collagen and its relationship with its healthcare application.
3. Secondary and tertiary structural analysis of proteins using techniques e.g. SDS-PAGE, FTIR, NMR, Scanning Electron Microscopy (SEM) and spectrophotometric methods.
4. Techno-functional analysis of collagen using rheometer, texture analyzer and ...
5. Hand on experience on production of marine collagen.

Student Profile:

It is great if you have taken courses within the Food Science area, e.g. Food Chemistry, and courses within biochemistry, analytical chemistry and statistics. We also look for someone who has a curious mindset, and who is willing to learn and work independently. Previous lab working experience is good, but not mandatory.

BlueCC

