

Master's thesis proposal

Title: Sustainable valorization of underutilized marine resources using innovative techniques

Credits: 30-60 ECTS

Starting date: Flexible

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

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-Possible chance for collaboration with industrial partners of project.

Project description:

World population is growing and demand for healthy and sustainable food products is continuously growing. However, seafood industry is still highly irresponsible and unsustainable and lose a large amount of marine resources as by-catch which are mainly used for low price ingredients like mink feed and fish meal or, are even wasted. A typical example of underutilized marine resource in Sweden is empty crab which is targeted in this master project. It is part of a larger national project with several partners from industry and academia. The project aims to compare the efficacy of an innovative technique called pH-shift process with a relatively older technology i.e. mechanical separator in value addition of empty crab as an alternative protein source. One of the most important questions that will be addressed here is that how these two different techniques can affect on the structural, techno-functional and final product-forming capacity of the proteins recovered from the crabs. This question will be targeted as corner-stone of this master project.

The main tasks of this master's project are:

1. Analysis of structural and functional properties of protein samples recovered with different methods from empty crab.
2. Prototype food product development from the recovered proteins.
3. Evaluation and/or analysis of data obtained from the previous steps.

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

1. Knowledge on innovate methods for recycling food wastes and improving food sustainability.
2. Understanding chemistry of proteins and its relationship with their food 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 proteins using rheometer, texture analyzer and ...
5. Hand on experience on prototype food product development.

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.