Date of poster presentation: 12 April 2022

Diagnostics for biorefinery of low trophic marine resources to animal health application

KOOTSTRA, A.M.J. 1, KALS, J. 2, VAN AMERONGEN, A. 1, VAN DEN BOSCH, H. 1, GEERDINK, P. 1, GERRITS, E. 3, MUIZELAAR, W. 2, TELLEMAN, Y. 1

1 Wageningen Food & Biobased Research, the Netherlands

2 Wageningen Livestock Research, the Netherlands

3 Wageningen Food Safety Research, the Netherlands

Topic

This project combines biorefinery of low trophic marine resources with animal health applications by the development of diagnostics and the research on feed and food safety. In this manner, developments towards circular and climate positive production systems can be accelerated.

Background

Low trophic marine biomass will play an important role in the development of circular and climate neutral food, feed and non-food production systems. In some types of low trophic marine biomass, such as seaweed and shellfish, animal health promoting properties have been found, aside from their nutritional value. Using biorefinery, several fractions of the biomass may be produced, each with its own application, hereby ensuring a higher resource use efficiency and maximum valorisation. Diagnostics needed to evaluate biomass and monitor biorefinery processes are currently lacking and need to be developed.

Objective

The objective of this project is to develop knowledge on targeted biorefinery of low trophic marine biomass and side streams and the development of enabling diagnostics, focusing on demonstrating bioactive properties for improving animal health, as well as on safety of the raw materials and refinery products in animal feed.

Project activities 2022

In 2022, this project focuses on the development of a biorefinery product from mussels - a model for low trophic marine biomass- with bioactive properties that improves the health status of cultivated sole (Solea solea). The diagnostics used to assess bioactive properties are applied and developed further.

The ongoing work includes:

- validation of in vitro and diagnostic tests,
- development of small pilot scale biorefinery process,
- in vivo test of bioactive mussel fractions in a fish trial,
- further hazard identification of raw materials, processing, and biorefinery products

Impact and value creation

The knowledge developed in this project can be used for the design of biorefinery processes of low trophic marine biomass, where we can interest industry such as cultivators, processors, and feed producers for application in the field of animal health in a way that ensures food and feed safety.

It is important to realise that, in addition to animal health, similar developments for accelerating circular and climate positive production systems are needed in other fields of application as well. For example, extracts of low trophic organisms may positively affect plant health, soil health and human health. Consequently, these developments are of great importance for stimulating the application of low trophic marine biomass, and the circular and climate neutral production system as a whole.

Keywords: Low trophic, biorefinery, diagnostics, bioactivity, animal health