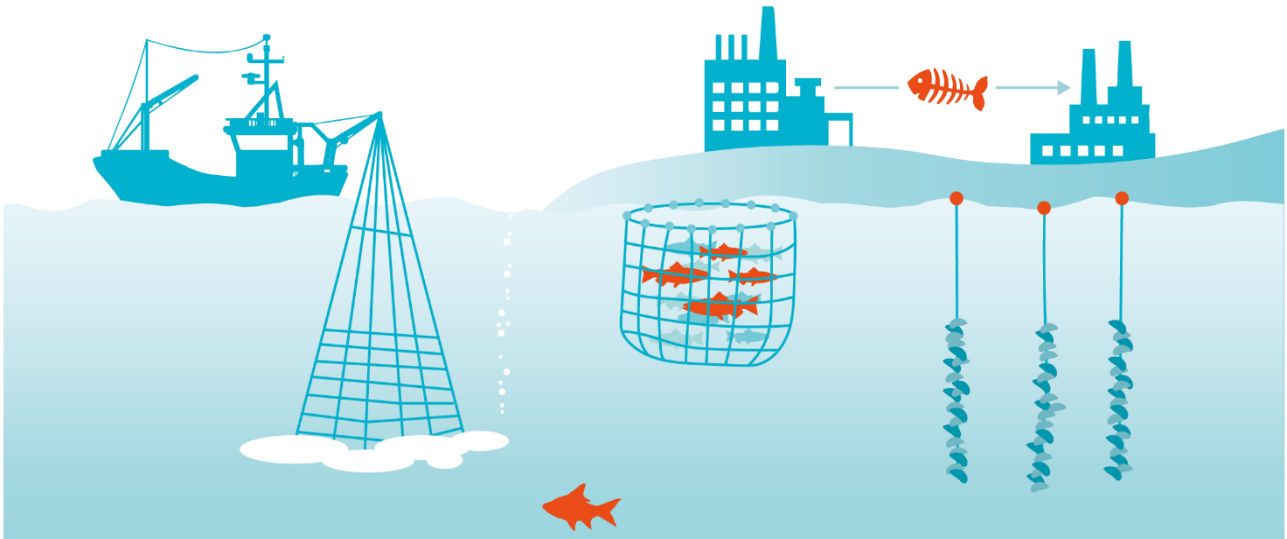
waseabi

Optimal utilization of seafood side-streams through the design of new holistic process lines

D3.4 Producing flavouring ingredients from solid side streams



Deliverable type: Report
WP number and title: WP3 Developing and testing (bio)technological processes on lab scale
WP leader: AZTI
Task number and title: Task 3.4 Food ingredients from enzyme hydrolysis of by-catches and processing side-streams
Lead beneficiary for the task: DTU
Dissemination level: Confidential
Due date: 31.12.2021
Actual submission date: 21.12.2021
Author(s): Ann-Dorit Moltke Sørensen, Grethe Hyldig, Charlotte Jacobsen, Carlos Bald, Jone Ibarruri, Nagore Luengo, Bruno Iñarra.
Contributing Partners: DTU, RG, CHA, SP, AZTI, BN, NS

BBI JU

Bio-based Industries Consortium

Horizon 2020 European Union Funding for Research & Innovation

This project has received funding from the Bio Based Industries Joint Undertaking (JU) under grant agreement No 837726. The JU receives support from the European Union's Horizon 2020 research and innovation programme and the Bio Based Industries Consortium.

Deliverable 3.4 on “Producing flavouring ingredients from solid side streams” is considered confidential, and as stated in the consortium agreement and in IPR management plan only executive summary, that contains non sensitive data, will be released within the project time span to protect any exploitable results.

1 Executive Summary

The aim of Task 3.4 was to obtain flavouring agents from side-streams using enzymatic hydrolysis controlling the process accurately to get the adequate product profile. The results obtained showed that it is possible to produce hydrolysates with characteristics as savoury ingredients. The hydrolysates were rich in free Glutamic acid (GLU), which is one marker of umami flavour and the sensory profile revealed high umami taste.

The presences of endogenous enzymes were shown to have an influence on the production of free GLU. For cod side-streams, the concentration of free GLU was higher without inactivation (preheating) of the biomass before initiating the hydrolysis with added enzymes. Moreover, results from hake showed that excluding Alcalase from the enzyme mix still resulted in a hydrolysate rich in free GLU, whereas hydrolysates produced from salmon backbone needed Alcalase or another protease enzyme to produce hydrolysates rich in free GLU.

The enzyme treatment increased the free GLU level and intensity of umami taste for hydrolysates. Cod samples without addition of enzymes scored a medium intensity of umami taste, however, had very low level of free GLU indicating that other parameters also influence the perception of umami taste. All the enzyme treated hydrolysates were evaluated to have some bitterness with the one produced from salmon backbone scoring the highest intensity and cod frame and hake the lowest intensity in the sensory profiling.

Overall, the results are promising for upgrading the value of the marine side-stream, and process scale up will be performed in the next work package.