

Production of an ingredient for the formulation of biostimulants by enzymatic hydrolysis of rainbow trout viscera

Main results / outcomes

The optimal experimental conditions to produce free amino acid-rich protein hydrolysates are pH 7, a temperature of 60 °C, at an enzyme dose of 1 % (w/w protein), diluted 1:1 with water and a hydrolysis time of 7 hours.

Practical recommendations

The obtention of free amino acid-rich protein hydrolysates through the enzymatic hydrolysis of rainbow trout viscera implies a faster process than the silage and it is also the most efficient method to hydrolyze protein using enzymes.

The composition of these protein hydrolysates are suitable to use them as ingredients for the formulation of plant biostimulants, as they comply with the legislation.

The use of fish protein hydrolysates in plant biostimulants is presented as an alternative of phosphate rocks and other non-renewable mineral sources in the production of fertilizers.

Using enzymatic hydrolysis for producing fish protein hydrolysates offers the opportunity to recirculate nutrients and can help to contribute to sustainable agricultural practices.

Fish viscera protein hydrolysates for biostimulant production seem a feasible alternative to fishmeal production in Europe, especially in areas located far from fishmeal plants.



Figure 1: rainbow trout viscera.

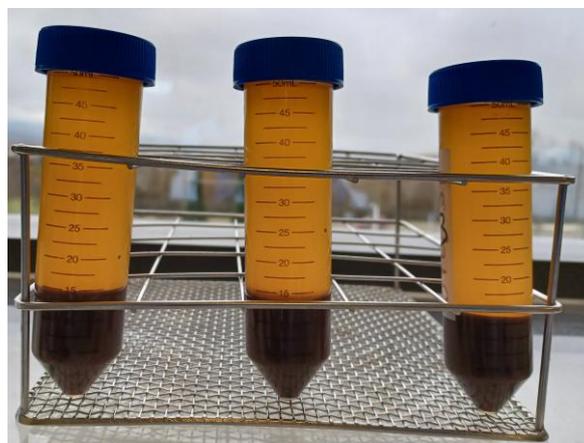


Figure 2: viscera hydrolysates obtained through enzymatic hydrolysis.

Further information

[https://www.cell.com/heliyon/pdf/S2405-8440\(24\)03061-5.pdf](https://www.cell.com/heliyon/pdf/S2405-8440(24)03061-5.pdf)

About this abstract

Authors: Haizea Domínguez (AZTI), Bruno Iñarra (AZTI) Monica Gutierrez (AZTI) and Carlos Bald (AZTI).

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SEA2LAND project is a collaborative Innovation Action (IA) funded by the EU in the frame of the Horizon 2020 programme. The project aims to provide solutions to help overcome challenges related to food production, climate change and waste reuse. Based on the circular economy model, SEA2LAND promotes the production of large-scale fertilisers in the EU from own raw materials. This solution is expected to reduce the soil nutrient imbalance in Europe. The project is running from January 2021 to June 2025.

Website: www.sea2landproject.eu



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Producción de ingredientes para la formulación de bioestimulantes a partir de la hidrólisis enzimática de vísceras de trucha arcoiris

Resultados principales

Las condiciones óptimas para conseguir hidrolizados ricos en aminoácidos libres mediante la hidrólisis enzimática de vísceras son pH 7, una temperatura de 60 °C, una dosis de enzima del 1% (p/p proteína), diluido 1:1 con agua y un tiempo de hidrólisis de 7 horas.

Recomendaciones prácticas

La obtención de hidrolizados de proteína ricos en aminoácidos libres a través de la hidrólisis enzimática de vísceras de trucha supone un proceso más rápido que el ensilado y es el proceso más eficiente para hidrolizar proteína usando enzimas. La composición de estos hidrolizados de proteína son adecuados para usarlos como ingredientes en la formulación de bioestimulantes para plantas, ya que cumplen con la legislación. El uso de hidrolizados de proteína de pescado en bioestimulantes para plantas se presenta como una alternativa a las rocas de fosfato y otras fuentes no renovables de minerales en la producción de fertilizantes. El uso de la hidrólisis enzimática para producir hidrolizados de proteína de pescado ofrece la oportunidad de recircular estos nutrientes y puede contribuir a promover prácticas de agricultura sostenible. Los hidrolizados de vísceras de pescado para la producción de bioestimulantes parecen una alternativa viable a la producción de harinas de pescado en Europa, especialmente en áreas que se encuentran lejos de las plantas productoras de harinas.



Figura 1: vísceras de trucha arcoiris.

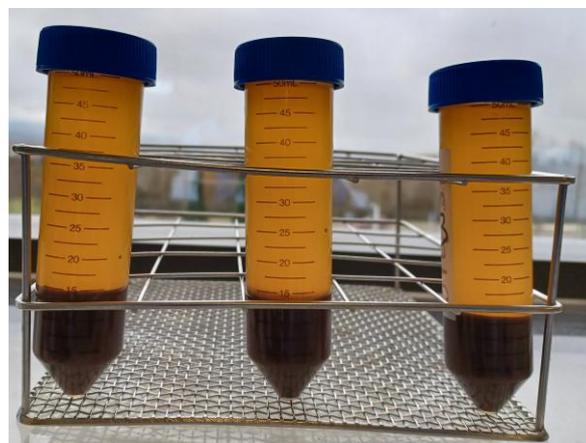


Figura 2: hidrolizados de víscera obtenidos por hidrólisis enzimática.

Más información

[https://www.cell.com/heliyon/pdf/S2405-8440\(24\)03061-5.pdf](https://www.cell.com/heliyon/pdf/S2405-8440(24)03061-5.pdf)

Acerca de este resumen

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