

Highly Efficient Protein Recovery from Food By-products

Teagasc is seeking commercial partners within various food processing industries to exploit a novel technology for extracting proteins from solid by-products or waste from food (fish, meat, poultry), with over 95% protein recovery, based on improved sequential isoelectric solubilisation.

Problem Addressed

This technology addresses the issue that almost 50% of the total weight of fish is considered a waste or a low-value product, composed mainly of heads, internal organs, tail, fins, frames and skin. Protein content and amino acid profile in these by-products are similar to that in fillets hence there is a significant amount of high quality protein currently not harnessed. As most by-products from fish processing are used in composting, pet food or animal feed, so provide a very low value-add, there is a desire to generate alternatives with a higher value-add. This represents an opportunity to such industries to significantly increase total protein recovery from such waste, with significant costs implications, through increased profits through generation of protein-based added-value products.

Solution

This novel technique, allows solubilisation of more than 95% of total protein, a significant improvement compared to the previous 65% reported. Furthermore, reagent consumption is not increased despite the additional step of extraction, and no expensive equipment investment is required, since regular equipment are employed in the process (tanks, centrifuges, blenders, stirring and pH probes), rendering this easily transferable to industry. Although specifically developed using fish by-products, this could be applied to solid by-products or wastes coming from other food industries such as meat processing and poultry.

Competitive Advantage of Technology

1. 95% of total protein extracted from fish by-products, significant improvement from 65% previously.
2. No expensive equipment required, or increased reagent consumption.
3. Should be easily scalable and transferable to industry, and can be combined with other extraction processes.

Opportunity

This technology would be attractive to the fish, meat and poultry industry. The process has been tested at pilot plant scale with satisfactory results. Scaling-up and possibly optimising/refining the process to industrial scale is the next development objective.



Intellectual Property Status

Patent application 'Isoelectric solubilisation of animal matter' in EU (EP16750106.3), and US (US15744738)

Funding

Department of Agriculture, Food and the Marine and the Marine Institute (Nutramara Initiative)

How to Proceed:

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