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Sørensen, Ann-Dorit Moltke; Maciel Gomez, Rocio ; Jafarpour, Ali; Jacobsen, Charlotte

*Published in:*  
Sustain Conference 2018

*Publication date:*  
2018

*Document Version*  
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

*Citation (APA):*  
Sørensen, A.-D. M., Maciel Gomez, R., Jafarpour, A., & Jacobsen, C. (2018). The use of cod frames from the cod filleting for value-creation. In C. Melero, & K. Mølhave (Eds.), *Sustain Conference 2018: Creating Technology for a Sustainable Society* Article F-10 Technical University of Denmark. <http://www.sustain.dtu.dk/>

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## The use of cod frames from the cod filleting for value-creation

Ann-Dorit Moltke Sørensen<sup>1\*</sup>, Rocio Maciel Gomez<sup>1</sup>, Ali Jafarpour<sup>1,2</sup> and Charlotte Jacobsen<sup>1</sup>

1: Technical University of Denmark, National Food Institute, Research group for Bioactives – Analysis and Application, Kgs. Lyngby, Denmark

2: Sari Agricultural Sciences and Natural Resources University, Department of Fisheries – Seafood Science and Technology, P.O. Box 578, Sari-Iran

\*Corresponding author email: [adms@food.dtu.dk](mailto:adms@food.dtu.dk)

Cod frames are a side-stream from the cod filleting in the fish industry. These cod frames are bones with a substantial amount of meat attached to them. The aims of this project are to identify valuable compounds in this side-stream and to evaluate their possible applications without generating new side-streams.

In order to identify valuable compounds, the cod frames were characterized with respect to dry matter, ash, lipid protein and phosphorous content, total amino acids composition and fatty acid composition. Cod frames were sampled every third month over a year, March 2017 – March 2018 (five sampling points). The different sampling time will show if there is any seasonal variation in the different parameters analyzed. From the early sampling points (March 2017, June 2017), the following values were obtained: 13.2 – 14.7 % Protein, 0.98 – 1.18 % Oil, 19.4 – 21.2 % Dry matter, 4.8 – 6.0 % Ash and 2.7 – 3.1 % PO<sub>4</sub> (phosphate).

Assuming that the side-stream amounts to 2,000 tons cod frames from a fish factory yearly, the amount of protein and phosphate extracted could be 132,500 and 30,000 kg / year if we have 50% recovery.

Due to the content of protein and the interest in the phosphate, the aim is to combine two approaches and generate peptides (protein hydrolysates) to be used as emulsifiers, antioxidants or both and phosphate rich powder if possible.

One approach to obtain peptide and phosphate is grinding the sample, followed by enzyme treatment, heat inactivation, separation in liquid (hydrolysates) and solid (bone including phosphate) fraction. Another approach is separating the bones from the fish meat by boiling. Thereafter, fish meat and bones were treated separately to obtain hydrolysates and phosphate rich powder, respectively. Again, the hydrolysates were generated by the use of enzymes. The phosphate rich powder was produced by drying and grinding. Three different enzyme treatments were used for the two approaches (Alcalase, Neutrase and a combination hereof). Functional properties of the obtained peptides and phosphate content in the bone powder are currently being analyzed. The newly generated results will be presented on the poster.

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