FACTSHEET
MATÍS
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Improved thawing methods in whitefish processing

A major challenge in whitefish fisheries is the seasonal variation in amount of landings throughout the year. While most of the whitefish is caught and processed during winter, the market demands all-year deliveries. If Atlantic cod is correctly frozen, stored and thawed, the quality can be good and of comparable quality to fresh fish.

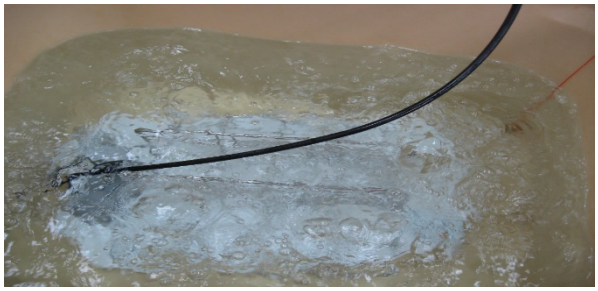
Work package two in the QualiFish project aims to develop new technology for monitoring and optimization of thawing processes, by improving equipment and methods to thaw frozen-at-sea whole fish with the aim to increase quality, yield and capacity.

The choice of thawing method strongly affects the quality of the fish, since thawing may escalate chemical reactions and muscle degradation. In regard to this a thawing trial was conducted at Matis on Iceland in November 2014, with the aim of finding an optimal thawing method. The experiment was conducted on Atlantic cod caught by commercial trawling vessels in the Barents Sea. The cod was head and gutted (HG) and frozen pre-rigor in blocks, and stored at -25 °C for at least six weeks.

The cod was thawed using three different methods:

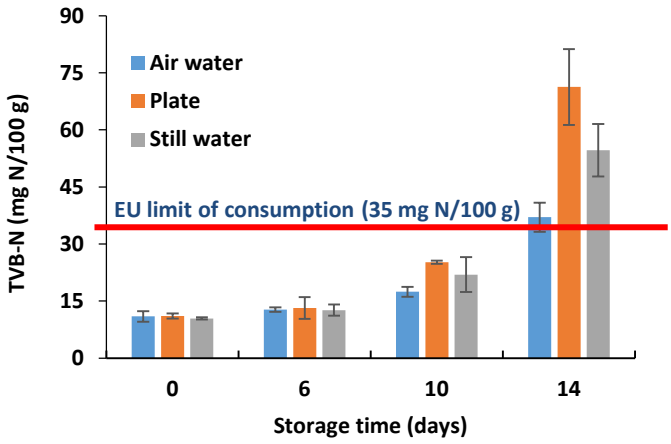
- Water thawing with air circulation
- Water thawing without air circulation
- Converted plate freezer

For water thawing with and without air, 100-litres tubs were used. For water thawing with air, a thawing element was placed in the bottom of the tub to generate air circulation. The water was not replaced during the thawing process, and water with an initial temperature of 18 °C was pumped into the tubs at the start of the experiment. For contact thawing, a converted plate freezer was used for thawing of fish blocks at 10 °C. The temperature profiles during thawing was measured using temperature loggers.



Quality analyses of the fish and the water was performed before filleting and packing and storage at 0-2 °C. Subsequently, samplings and analyses of the stored fish were performed 6, 10, and 14 days post-filleting. Chemical composition of water, protein and lipids was analysed, in addition to total viable nitrogen (TVB-N) and water holding capacity (WHC). Microbiological parameters included analyses of total viable counts (TVC), H_2S-producing bacteria, coliforms (*E.coli*), and *Listeria monocytogenes*.

Of the three methods investigated water bath with air circulation gave the best results, with regard the overall quality and capacity. The converted plate freezer gave the poorest results and will not be used in further experiments.



The QualiFish project is financed by The Norwegian Research Council and is a collaboration between scientists, equipment vendors and industry. Read more about the project and the project partners at www.qualifish.no and http://www.sintef.no. Follow us on Twitter: https://twitter.com/QualiFish, Facebook: https://www.facebook.com/QualiFish and LinkedIn.

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