PROTEIN CHANGES IN FISH SILAGE PRODUCED USING DIFFERENT COMBINATIONS OF UNDERSIZED QUOTA SPECIES

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Fish silage implies the liquefaction and stabilization of minced whole fish or fish offal by the addition of mineral and/or organic acids. It is considered a low-investment, low-cost and easy-to-produce fish meal substitute. Silage characteristics are influenced by the initial composition and quality of the raw materials. Therefore, according to the industry, a steady supply of low-variety raw materials is required to ensure product uniformity. However, many of the European demersal fisheries are mixed fisheries, thus supplying a large variation of raw materials.

During this research we investigated protein changes in four types of fish silage, each produced using a different combination of undersized Belgian quota species. The goal of this research is to determine the stability of the proteins in the silages over a 3-month time period and to ascertain the effect of raw material combination (RMC) on silage characteristics.

There was no difference in initial crude protein content (CP) between silages (74%) and in all silages CP decreased over time. However, CP of less complex RMCs levelled off at approximately 64% after 3 weeks, whereas more complex RMCs exhibited a stronger decrease in CP over time and dropped to levels below 60% after 3 months. Accordingly, these complex RMCs also showed a slower but longer hydrolysis compared to less complex RMCs, 73.5% and >85% respectively. Longer hydrolysis leads to a loss of protein-N in the form of NH3 and a decrease in nutritional value. The increase in total volatile nitrogen in this experiment can mainly be contributed to the release of NH3.

There seems to be an effect of RMC on fish silage characteristics in this experiment. Product pasteurization could limit hydrolysis, minimizing protein losses.