Extending the shelf life of herring by-products to increase the possibilities for value-adding into food ingredients

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Optimal utilization of seafood side-streams through the design of new holistic process lines

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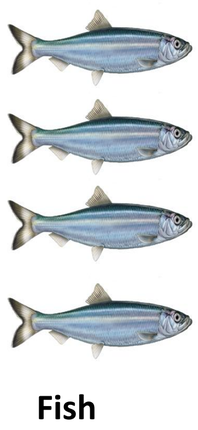
Problems & Aim

Today, most fish by-products are targeted feed production, or are even wasted. Techniques to separate food grade muscle, proteins and oil from complex bony raw materials exist, but applying such techniques to fish by-products is rendered difficult by their high susceptibility to hemoglobin-mediated lipid oxidation. **The aim of this study is to prolong the shelf-life of herring byproducts by rinsing/dipping them in water or 0.9% salt-solution without or with antioxidants added.**

Background



Method and Results

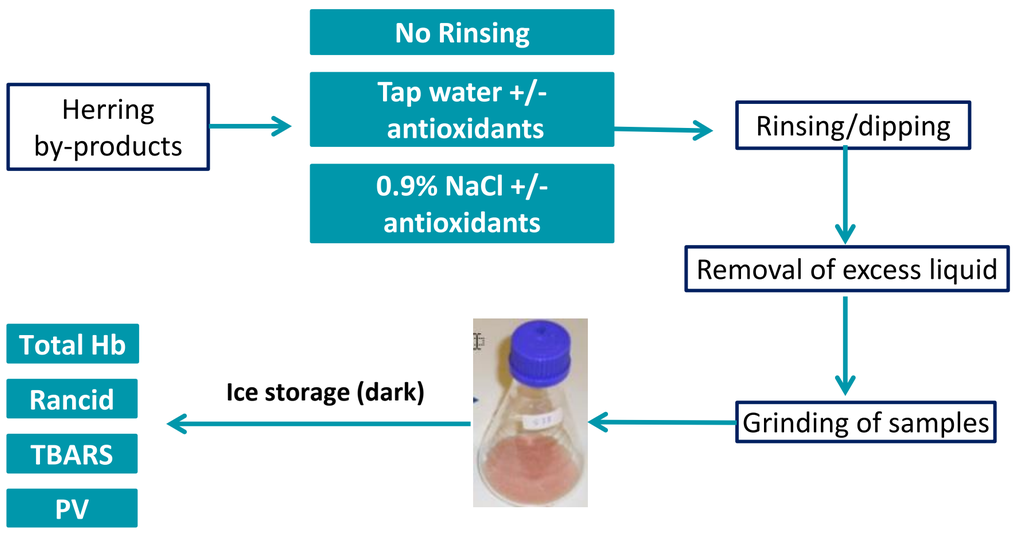


Figure 1. Amounts of hemoglobin (Hb) in different parts of herring byproducts and the relative removal of Hb by rinsing in physiological salt solution

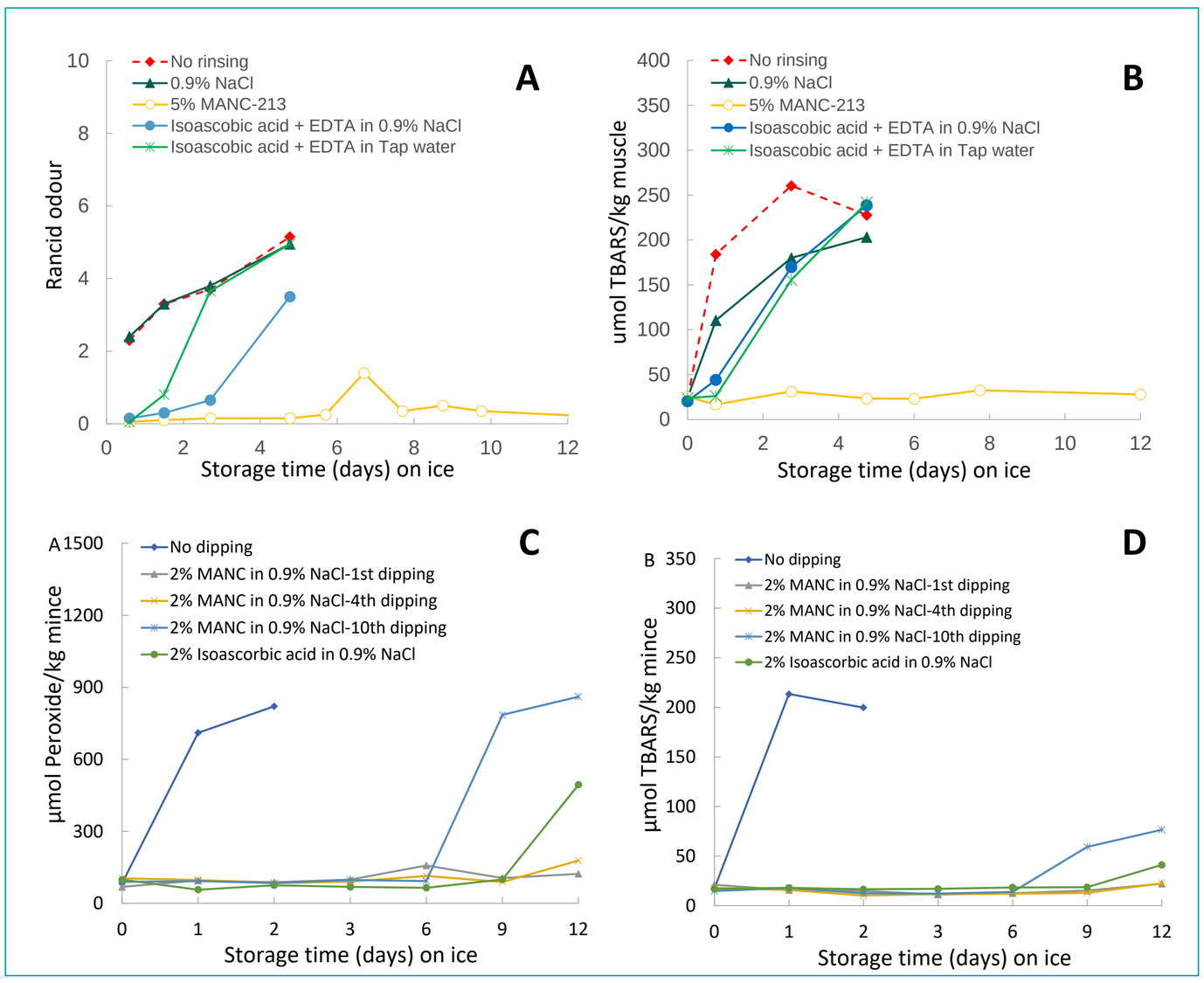


Figure 2. Lipid oxidation during ice storage in two different experiments done with rinsing/dipping of herring by-products into 0.9% NaCl or antioxidant-containing solutions. A. rancid odour, B: TBARS, C. Peroxides, D. TBARS

Conclusions

- Rinsing with 0.9% salt only removed small amounts of Hb and had limited effect on lipid oxidation development during subsequent storage.
- Dipping or rinsing by-products in solutions with added antioxidants however had remarkable effects on lipid oxidation; **shelf life went from <1 day to >12 days.**
- The dipping solutions could be re-used up to 10 times and could still inhibit lipid oxidation of herring by-products.
- These novel antioxidative strategies could be powerful industry tools to allow upgrading of fish by-products to food ingredients.

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