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Predictive Microbiology

Evaluation and Management of Quality and Safety in Aquatic Food Chains

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Predictive microbiology: Evaluation and management of quality and safety in aquatic food chains

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Quality and safety of aquatic foods must be retained at least until the time of consumption and this represents various challenges. For specific products it can be a challenge to extrapolate quality attributes measured at points of an aquatic food chain until the time of consumption. This is partly due to complex spoilage reactions. However, globally aquatic foods are both highly traded and very diverse products. Therefore, tools are needed to evaluate how processing, product characteristics, storage and distribution influence quality attributes and safety throughout aquatic food chains. In addition, technologies are needed to extend shelf-life for some products by controlling both spoilage reactions and potential human health hazards. This presentation provides examples of how predictive microbiology models and software can be used to evaluate and manage quality and safety in aquatic food chains.

The freely available Seafood Spoilage Safety Predictor software (<http://sssp.dtuaqua.dk>) will be used to demonstrate how shelf-life of selected fresh and lightly preserved aquatic foods can be predicted during distribution at constant and variable temperature storage conditions. Control of *Listeria monocytogenes* is an important safety issue for many ready-to-eat (RTE) aquatic foods. Sophisticated predictive microbiology models are available for this human pathogenic bacterium and specific examples with smoked fish and marinated shrimps will be used to show how these tools can be applied in the development of RTE aquatic foods that are stabilized against growth *L. monocytogenes*. Furthermore, suggestions will be provided on how to use predictive models to document control of *L. monocytogenes* in RTE aquatic in relation to the available EU regulations. Finally inactivation of pathogenic microorganisms in aquatic foods by novel preservation technologies including high pressure processing and bacteriophages is mentioned with focus on their potential and limitations.

Keywords Fresh Fish · Lightly Preserved Aquatic Foods · *Listeria monocytogenes* · Shelf-life Prediction



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