QualityMeter

Rapid quantification of specific spoilage bacteria in fish

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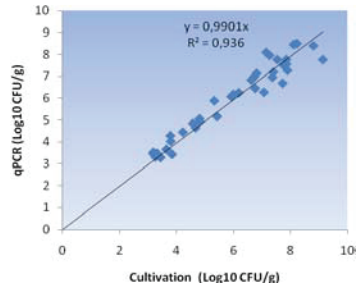
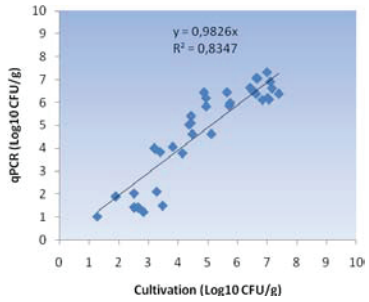
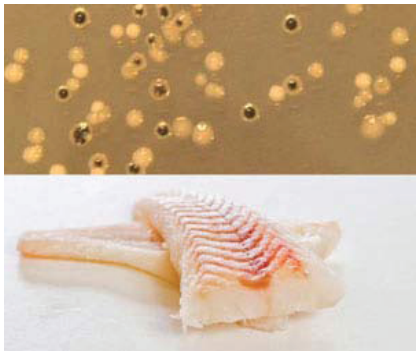


Correlation of *Pseudomonas* species quantification in fish fillets using real-time PCR and cultivation.



Correlation of *Photobacterium phosphoreum* quantification in fish fillets using real-time PCR and cultivation.



Specific spoilage bacteria are the cause of quality deterioration of lean fish during storage.

Background

The spoilage process of fish has been a research topic for scientist for many years. Soon after catch the deterioration of the fish flesh starts. In the beginning, the spoilage process is orientated by endogenous enzymes from the fish and lipid oxidation but soon enough bacteria take over.

The fish spoilage is a complicated process of interactions between bacteria, raw material and the environment. Number of bacterial species thrives in a spoiling fish but research has shown that some of them are more active spoilers than others, contributing more to the staling smell and off-flavours of spoiled fish. These have been named specific spoilage organisms.

Information on the quantity of these bacteria in fish can therefore be used to estimate the freshness of the fish. The spoilage bacteria multiply gradually during storage and determination of their quantity provides unbiased information on the quality of the fish.

Matís has been developing rapid methods for quantification of these bacteria in fish, focusing on Pseudomonas species and Photobacterium phosphoreum.

By applying real-time PCR the detection time has been reduced from 3 days down to 5 hours as compared to conventional cultivation.

QualityMeter

The key to the QualityMeter lies in the genetic material of the bacteria. By utilization of genetic information it was possible to pinpoint unique genetic sequences, only found in these bacteria. The QualityMeter targets these regions.

The method development included several steps beginning with biomarker search, then testing of specificity and sensitivity, reagents optimization, sample preparation adjustments and finally, testing of real samples in storage trials.

The method is now being tested at our collaborators in Europe through the EU funded project Chill-On. The aim is to demonstrate that the method can be used at different locations and by different personnel and thereby proving sufficient assay robustness for commercialisation of a testing kit.

The test kit will be commercialised as QualityMeter for numerical evaluation on fish freshness within 5 hours.

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