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PREVENTING DISEASE IN RAINBOW TROUT CAUSED BY AEROMONAS SALMONICIDA

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Background

The bacterium Aeromonas salmonicida subsp. salmonicida is the causative agent of furunculosis, one of the major diseases in aquaculture throughout the world that can affect various fish species [1, 2]. In Denmark this disease primarily affects sea reared rainbow trout (Oncorhynchus mykiss) production. Our study is a part of the collaborative project "Targeted disease prophylaxis in marine fish farming (ProFish)" which will develop and implement tailored vaccines with Danish strains of A. salmonicida to marine trout farming.

Objectives

Fluorescence and Bioluminescence

A. salmonicida will be studied by fluorescence and bioluminescence to follow the infection route and the latent phase of furunculosis in the fish.

MLST and RFLP

A. salmonicida isolated from trout farmed in Denmark are currently being examined by a Multi-locus Sequence Typing (MLST) assay and High Copy Number IS630 Restriction Fragment Length Polymorphism (HCN-IS630-RFLP). A panel of bacteria is selected for genome variation analysis through next generation sequencing and the results will be used for establishing a PCR-based genotyping analysis.

qPCR

A "quantitative polymerase chain reaction" (qPCR) based on self-quenched, fluorogenic primers has been developed and is expected to be implemented in both diagnosis and monitoring. Primers show high sensitivity and are being tested.

Expected Results

These methods are expected to generate new knowledge on the pathogenesis and the latent phase of furunculosis as well as the epidemiology and molecular characterization of A. salmonicida.

The overall aim is to improve prevention and control of the disease.