'Long-haired' water moulds are the most virulent

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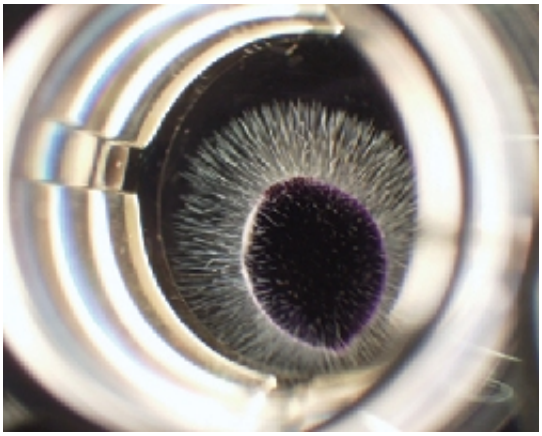

The last stage of the HeMP-methode. The water mould has a good growth - the medication does not work against Saprolegnia

The water mould *Saprolegnia* can cause skin disease in salmon during its freshwater phase. The mould attacks both fish and eggs and has at times caused great economic loss for the fish farming industry, both in Norway and in other salmon-producing countries. *Saprolegnia* infection may be seen with the naked eye as white patches on the skin or as "cotton-like" patches on eggs.

In his doctorate, Svein Stueland from the National Veterinary Institute showed that different strains of the water mould *Saprolegnia* vary in their ability to cause disease and mortality in farmed salmon. In addition, he developed a simple and effective method for testing new medications

that may prove important for treating the disease.

Stueland's project grew out of a need for knowledge of the distribution of *Saprolegnia* and its disease-producing abilities. Such knowledge is necessary to develop better treatment methods against the disease. Earlier, the disease was effectively controlled with the dye malachite green, however, this substance is now forbidden and the fish farming industry needs new, effective and reliable medications against the disease.

During the study, *Saprolegnia* was collected from eggs and farmed salmon in Norway, Canada, Chile and Scotland. Significant differences in pathogenicity between the different strains of Saprolegnia were seen, with the mortality in salmon fry varying from zero to 89%.

The mould's appearance and its growth abilities are related to its ability to infect and produce disease in salmon. The "long-haired" *Saprolegnia*, which also showed high growth rate early in its growth phase, had the greatest disease-producing ability. "Long-haired" *Saprolegnia* contains mould spores equipped with types of long hooks. Simultaneously, a connection was shown between the "genetic fingerprint" and the mould's pathogenic ability.

Molecular-biological analyses, or so-called fingerprinting, made it also possible to differentiate between the collected *Saprolegnia* strains. Genetic analyses revealed greater genetic variation in the moulds from particular countries, than between countries, indicating that *Saprolegnia* from Norway, Canada, Chile and Scotland share to a great degree a common genetic base.

As a part of his doctoral work, Stueland also developed a simple and effective method for testing the efficacy of medications for the treatment of this disease in fish farming.

The project was a collaboration between the National Veterinary Institute, the Norwegian School of Veterinary Science, PHARMAZ AS, Marine Harvest AS and the Norwegian Research Council.

Cand. med. vet. Svein Stueland defended his Ph. D. thesis, entitled "*Saprolegnia* infections in salmonids. Characterization of *Saprolegnia* species and search for new treatment of *Saprolegnia* infections", at the Norwegian School of Veterinary Science, on June 16, 2009.

The last stage of the HeMP-methode. The water mould has a good growth - the medication does not work against Saprolegnia

This picture shows that the tested medicament works - the water mould does not grow.

Source: Norwegian School of Veterinary Science (news : web)