Development of a vaccine against viral nervous necrosis (VNN)/viral encephalopathy and retinopathy (VER)

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Abstract

Infection with betanodavirus currently represents one of the major bottlenecks for the development of Mediterranean aquaculture. Betanodavirus causes the disease Viral Encephalopathy and Retinopathy (VER) which manifest in the nervous system of several marine cultured fish species, including sea bass (*Dicentrarchus labrax*). It causes clinical signs such as abnormal swimming pattern and high mortalities. The virus survives well in the environment and spreads easily making it difficult to prevent infection with biosecurity measures alone. A new experimental recombinant vaccine based on VLPs (Virus Like Particles) produced in yeast has been developed in the recently finalized EC project "TargetFish" (1). Initial vaccination trials suggest ability to induce protection against VER in sea bass and my PhD project focuses on further testing under both lab and field conditions along with analysis of the protective immune response. The work is part of the EC project MedAid (2) and will include collaboration with selected partners from the TargetFish consortium (3).

References:
1. http://targetfish.eu/
2. MedAID (Mediterranean Aquaculture Integrated Development) is a four-year project, funded by the European Union in the frame of Horizon 2020, grant agreement number 727315. The goal of MedAID is to increase the overall competitiveness and sustainability of the Mediterranean marine fish-farming sector, throughout the whole value chain http://www.medaid-h2020.eu/
3. Anna Toffan, Istituto Zooprofilattico Sperimentale delle Venezie *(Italy)*, Ansgar Stratmann, *W42 Industrial biotechnology GmbH (Germany)*, and others.

Questions and comments:

Anna Toffan: *"Which adjuvants did you use?"*

Sofie Hansen & Niels Lorenzen: *"We have two that need to be tested, we will try the purified particles and raw extract of pichia".*

Toni Erkinharju: *"Will you try cohabitation challenge? Infecting a mixed population of vaccinated and non-vaccinated fish?"*

Sofie Hansen: *"That is a good suggestion that should mimic farm conditions."*