



TargetFish Newsflash 5

TargetFish brings together leading European research groups that are experts on the fish immune system and enterprises from the Biotech and Veterinary sectors that aim to commercialize fish vaccines for European fish farming. By developing a targeted vaccination strategy, TargetFish will prevent important fish diseases in European aquaculture industry.

This highlight is part of monthly progress updates by the TargetFish consortium.

targetfish.eu

Booster immersion vaccination using diluted *Yersinia ruckeri* bacterin confers protection against ERM in rainbow trout

Inactivated vaccines against Enteric Redmouth Disease caused by *Yersinia ruckeri* (Hagerman strain) have very successfully protected rainbow trout already for many years. Typically, these vaccines are administered by immersion to fry with optimal protection when used at weight ranges of 4-5 gram. Single immersion vaccination confers immunity to reinfection but only for shorter periods (5-6 months) whereas sometimes a longer protective period (8-12 months) is needed until injection vaccination can be performed safely.

Prolonged protection can be achieved by an oral booster vaccination or, by a

second immersion vaccination as shown in a recent publication (2015: Aquaculture 440: page 1-5) by researchers from the University of Copenhagen. The researchers showed that a booster vaccination using a diluted (1:10) bacterin solution and short term (30 sec) bath provided protection superior to set-ups using higher dilutions in combination with increased exposure time (1 h, 2 h). However, significant elevation of the protective level was obtained using diluted vaccine if the exposure time was increased to more than 1 h. It may be worthwhile for trout farmers to supplement a primary immersion vaccination at 5 g with a booster vaccination at on-growth stage, for example by adding 1 liter of bacterin into the transport tank (volume 1-2 m³) and expose the fish during transportation between farms or ponds when fish are handled anyway.



Of scientific interest and subject of further investigation in the TargetFish project; increased antibody levels recorded after challenge of vaccinated fish suggest that immersion induces priming of memory cells. In these experiments, challenge was performed only 2-4 months after booster vaccination which means on-farm evaluation of longer protection periods is still required. This field trial will be performed during the coming period but this challenge might also be picked up by the industry itself?

From a practical aspect, while bath vaccination (log-tem bathing in highly -diluted vaccine) was explored during the early days of the development of fish vaccines during the late 1970s / early 1980s there was little application at the time. However, as the aquaculture industry expanded, new diseases appeared and new

vaccines developed and there was an increased need for booster vaccines (it must be remembered that practically all fish vaccination currently relies on a single priming dose with no booster - unlike most other vaccines for animal and human use).

Booster vaccination by means of long-term bathing in more diluted vaccine that is currently used in immersion (dip) vaccination would offer the opportunity to booster vaccinate fish thus inducing stronger protection of longer duration and would help eliminate the stress and potential scale damage associated with both immersion or injection vaccination.

In addition, effective booster vaccines will allow us to develop much-needed vaccination strategies to be developed where booster vaccines can be incorporated as part of a targeted vaccination strategy whereby the immune response can be strengthened just prior to a predicted disease challenge.

TargetFish 2nd Industry Workshop

Following the great success of the 1st TargetFish Industry Workshop held during the 16th International Conference of the European Association of Fish Pathologists (EAFP) in Tampere, Finland in September 2013 a second Workshop is planned for the 17th EAFP Conference in Gran Canaria, Spain in September 2015.

Venue: TENERIFE HALL, AUDITORIUM ALFREDO KRAUS
LAS PALMAS DE GRAN CANARIA, SPAIN
17th EAFP INTERNATIONAL CONFERENCE

Time: 16:30 – 18:30
10th of September 2015



The 1st Industrial Workshop was held relatively close to the commencement of the TargetFish project and basically covered the content of the various Work Packages. Two years on most of the Work Packages have now achieved a number of significant discoveries relevant to the aquatic animal health industry. These findings will be described during the Industry Workshop and an opportunity for the researchers and industry partners to meet and discuss the significance and application of these findings on the development of new vaccines, vaccination techniques/strategies, treatments and diagnostics and how they may be taken forward into commercial applications.

For more information, please please visit www.targetfish.eu or contact the consortium via targetfish.cbi@wur.nl



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Website: targetfish.eu

Mail address: targetfish.cbi@wur.nl

TargetFish is a large collaborative project funded by the European Commission (Grant Agreement No. 311993) under the 7th Framework Programme for Research and Technological Development.



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