



## TargetFish Newsflash 15

**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](http://targetfish.eu)

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### **A formalin-inactivated immunogen against viral encephalopathy and retinopathy (VER) disease in European sea bass (*Dicentrarchus labrax*): immunological and protection effects**

The European sea bass (*Dicentrarchus labrax*) is an important farmed fish species in the Mediterranean area, very sensitive to the infection by encephalopathy and retinopathy virus (VERv), which causes massive mortalities. Effective vaccines to fight the pathology are not yet available, despite the fact that an easier accessibility to effective vaccines would

However, the same formalin-inactivated antigen resulted in a very low antibody production when administered by immersion. Following the intraperitoneal injection with formalin-inactivated virus, the quantitative expression of specific antiviral genes showed an up-regulation of transcripts at 24 and 48 h post-vaccination in spleen and head kidney, whereas immersion immunization with

be beneficial to the whole Mediterranean aquaculture. Only recently an autologous vaccine for sea bass against VER has been commercialized, but at present is only available in Spain and Greece.



Researchers from the Istituto Zooprofilattico Sperimentale delle Venezie and the University of Tuscia (Italy) have described a promising intraperitoneal immunization protocol against VERv of sea bass juveniles. They have compared the capacity of VERv (RGNNV) inactivated by chemical (formalin,  $\beta$ -propiolactone) or heat treatment to confer specific protection following intraperitoneal or immersion immunization protocols. Interestingly, the intraperitoneal immunization of sea bass with formalin-inactivated VERv induced a significant antigen-specific antibody response, significantly higher than that observed in response to other inactivation protocols.

formalin-inactivated VERv induced a modulation of the same genes after 24 h post-vaccination only in the gills. An effective uptake of VERv particles in the gills was confirmed by immunohistochemistry using anti-VERv antibodies. Lastly, in challenge experiments using live VERv, a relative percentage of survival (RPS) of 81.9% was observed in fish vaccinated intraperitoneally with formalin-inactivated VERv, whereas immersion immunization conferred no protection. Further studies should be carried out to establish why immersion vaccination is not able to confer a significant protection despite the effective uptake of the antigen in the gills. Altogether, these results point to formalin inactivation as the best strategy to maintain the immunogenicity of VERv and demonstrate that a single dose of formalin-inactivated VERv delivered intraperitoneally could be considered a safe and effective strategy to fight *Betanodavirus* infection in European sea bass.

[Read here the full article](#)

## TargetFish Industry Workshops

Please anticipate another TargetFish Industry Workshop during the 18th

International Conference of the European Association of Fish Pathologists (EAFP) in Belfast in September 2017 where the significance of TargetFish highlights and achievements for the aquatic animal health industry will be discussed.



For more information, please visit [targetfish.eu](http://targetfish.eu) or contact the consortium via [targetfish.cbi@wur.nl](mailto:targetfish.cbi@wur.nl)

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