

**RECOMBINANT FERRITIN-H INDUCES IMMUNOSUPPRESSION IN  
EUROPEAN SEA BASS LARVAE (*DICENTRARCHUS LABRAX*)  
RATHER THAN IMMUNOSTIMULATION AND PROTECTION  
AGAINST *VIBRIO ANGUILLARUM***

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**ABSTRACT**

Studies in aquatic animals including European sea bass (*D. labrax*) suggested a role for ferritin in innate immune defence as they demonstrated a significant increase in ferritin gene transcript levels in several tissues upon administering microbial pathogens. At present, we examined the use of recombinant sea bass ferritin-H to protect European sea bass larvae against *Vibrio anguillarum* infection.

The ferritin-H gene *Dlfer* was cloned into pcDNA4/V5-His B. Ferritin-H was expressed in transfected COS-7 cells, purified using the ProBond™ purification kit and examined by SDS-PAGE and Western blotting using an anti-V5 FITC-labelled mouse monoclonal antibody.

Axenic sea bass larvae were fed alginate microparticles (1.0 mg) containing a high (1.0 mg) or low dose (0.5 mg) of the recombinant ferritin-H at day 7 after hatching. Simultaneously, two groups were either fed with empty alginate microparticles or were receiving no

microparticles (unfed) (negative controls). Larvae were infected with *V. anguillarum* after 18 h of feeding. Negative controls showed high mortality. *V. anguillarum* significantly upregulated the expression of the *tlr3*, *tlr5*, *cas1*, *il1 $\beta$* , *tnfa*, *mif*, *il10*, *cc1*, *cxcl8*, *cxcr4* and *ccr9* genes. Sea bass larvae fed with recombinant ferritin-H prior to infection were not significantly protected. Gene expression points more in the direction of immuno-suppression by ferritin-H, as in humans instead of immuno-stimulation, as described for shrimp. Further research is needed to design innovative protective measures against vibrio infections in sea bass.

## **KEYWORDS**

*Dicentrarchus labrax*, sea bass, axenic, larvae, ferritin, innate immunity, *Vibrio anguillarum*

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