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, il1β, tnfα, mif, il10, cc1, cxcl8, ccr4* 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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