

Efficacy of feed-based formalin-killed vaccine of *Streptococcus iniae* stimulates the gut-associated lymphoid tissues and immune response of red hybrid tilapia

ABSTRACT

Red hybrid tilapia were fed a formalin-killed oral *Streptococcus iniae* vaccine (FKV) in the present study was assessed. Three hundred Red hybrid tilapia 80 ± 10 g were divided into five groups (1A, 1B, 2A, 2B, and Cx), each consisting of 60 fish. Fish from Groups 1A, 1B, 2A, and 2B were fed with FKV over different periods of administration, while Group 2B was the only group of fish to receive an oral booster vaccination on day 14- and 21-days post-vaccination (dpv). Group Cx was fed with normal pellets containing no vaccine as a control group. At four weeks post-vaccination (wpv), all fish were experimentally infected with *S. iniae*. Groups 2A and 2B had the lowest level of mortalities following vaccination (45% and 30%, respectively) compared to Groups 1A and 1B (80% and 55%, respectively), while the level of mortalities in Group Cx was 100%. All vaccinated groups showed a significant increase in anti-*S. iniae* IgM levels ($p < 0.05$) in serum, mucus, and gut-lavage, while Group Cx did not ($p > 0.05$) and all fish in this group died by five weeks post-infection. In conclusion, fish fed with the *S. iniae* FKV had a greater level of protection against *S. iniae*, with increased specific antibody response to the vaccine and there was also evidence of GALT stimulation by the vaccine.

Keyword: Oral vaccination; *Streptococcus iniae*; Red hybrid tilapia; IgM; Gut-associated lymphoid tissue; Formalin-killed oral vaccine