



Influence of partial replacement of dietary fish meal with *Sargassum ilicifolium* meal on growth performance, innate immune responses and immune related-genes expression in *Lates calcarifer* juveniles

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Abstract

A six-week study was conducted to assess the effect of dietary fish meal (FM) replacement with *Sargassum ilicifolium* meal (SIM) at four substitution levels including 0 (control), 3% (S3), 6% (S6) and 9% (S9) on performance of Asian sea bass (*Lates calcarifer*) juveniles (initial mean body weight of 29.0 ± 1.0 g). Growth performance pronouncedly increased in SIM-supplemented groups compared to the control ($p < 0.05$). Supplementing diet with SIM remarkably enhanced red blood cell count compared to the control. Moreover, fish in the control and S3 groups had higher lymphocyte, but lower neutrophil percentages than the S6 and S9 treatments ($p < 0.05$). The insulin like growth factor-1 mRNA transcript abundance levels in the liver were greatest and the least in fish fed on the S9 and control, respectively. The expression of lysozyme gene, as indicated by an abundance of mRNA transcript for lysozyme, in the liver was higher in the S6 and S9 groups than the other groups ($p < 0.05$). Furthermore, fish fed the SIM incorporated diets had higher interleukine-1 β mRNA transcript abundance in the liver compared to the control ($p < 0.05$). Overall, according to the findings of this study 6% of dietary FM could be replaced with SIM to improve growth rate and health status in *L. calcarifer* juveniles.

Keywords: Barramundi, brown algae, hemato-immunological responses, gene expression