

Brown seaweed *Sargassum polycystum* as dietary supplement exhibits prebiotic potentials in Asian sea bass *Lates calcarifer* fingerlings

ABSTRACT

Seaweeds are known to contain nutrients that are essential for human nutrition, making them edible and potential resources to mine for bioactive substances. The present study was aimed to investigate the prebiotic potentials of the seaweed, *Sargassum polycystum* as supplement in diets for Asia sea bass fingerlings. Experimental dietary formulations were supplemented with four graded levels of powdered seaweed (0.0, 1.5, 3.0 and 4.5 %) and fed to sea bass fingerlings (mean initial weight 2.2 g) for 55 days. Fish were evaluated for feed efficiency, growth performance and mortality. The results showed that survival, feed consumption and efficiency, and growth performance were better in fish fed the 1.5 and 3.0 % seaweed supplemented feed compared to the control. Carcass protein and Fe contents, red blood cell (RBC) and white blood cell (WBC) counts were also better in the fish fed the sargassum supplemented diets, which were significantly ($p < 0.05$) higher in the 1.5 and 3.0 % treatments than in the control. Proliferation of pure colonies of descendant Gram positive, none-spore forming, cocci and rod-shaped, catalase and oxidase negative bacteria was observed in the intestines of fish reared with the sargassum supplemented feed. These bacteria were identified as *Lactobacillus paracasei* subspecies *paracasei*, which were earlier identified to exhibit probiotic characteristics. Taken together, these results demonstrated the prebiotic potentials of sargassum, *S. polycystum* for Asian sea bass fingerling when supplemented in their diets at concentrations of between 15 and 30 g/kg. The commercial cultivation of sargassum seaweed needs to be encouraged.

Keyword: Prebiotic; Probiotic; Sargassum; Brown seaweed; Feed efficiency; Sea bass fingerlings