The utilization of soybean meal in formulated diet for marble goby Oxyleotris marmoratus

Abstract

Marble goby, Oxyeleotris marmoratus is a carnivorous fish that highly demanded in Asia region and has great potential in aquaculture industry. A feeding trial was conducted to investigate the possibility of replacing fishmeal with soybean meal in the diet for marble goby juvenile. Fish (initial body weight and length 0.28±0.01 g and 2.60±0.04 cm respectively) were fed with four isonitrogenous and isolipidic diets, which contained 0%, 10% and 20% of defatted soybean meal (SB0, SB10 and SB20, respectively) and 20% of soybean meal supplemented with 2000 FTU/kg phytase (SB20+P). The fish were randomly distributed into 12L aquariums and hand-fed till apparent satiation twice daily. After 40-day of feeding trial, highest growth was observed in fish fed SB0, without significant difference with fish fed SB10; both groups were significant better than juveniles fed SB20 and SB20+P. Treatment SB20+P obtained slightly higher growth than those fed SB20. Similar trend was observed in the specific growth rate, feed conversion ratio and nitrogen retention efficiency. Protein efficiency ratio of fish fed SB0, SB10 and SB20+P was significant higher than fish fed SB20. The body lipid content was significantly reduced in higher soybean meal level diet partly due to starvation as the fish were reluctant to feed on experimental diet. No distinct enteritis symptoms was observed in juveniles fed SB0 and SB10 while juveniles fed SB20+P had better intestinal morphology than in SB20. In conclusion, young marble goby juvenile can utilize 10% of defatted soybean meal in their diet without affecting its growth, nutrient utilization and intestinal condition.