

Soybean meal as a source of protein in formulated diets for tiger grouper, *Epinephelus fuscoguttatus* juvenile. Part I: Effects on growth, survival, feed utilization and body compositions.

Abstract

The effects of fish meal (FM) replacement with graded level of soybean meal (SBM) on growth performance, feed utilization, survival rate and body composition were investigated in juvenile tiger grouper, *Epinephelus fuscoguttatus* (initial body weight 13.9 ± 0.65 g). Six experimental diets were formulated to contain 50% crude protein, 16% crude lipid and 365.8 kcal/100g feed with SBM replacing FM protein at 0% (SM 0), 10% (SM 10), 20% (SM 20), 30% (SM 30), 40% (SM 40) and 20% with phytase (SM 20P) replacement levels. At the end of the ten-week feeding trial, there were no significant differences detected in terms of growth performances (weight gain and specific growth rate), feed conversion ratio (FCR) and survival rates of fish fed with the control diet (SM 0), SM 20, SM 30 and SM 20P. Net protein utilization of fish fed SM 20P was higher than those fed with other diets suggesting an improved utilization of nutrients with phytase addition in the diet. Replacements of FM protein with SBM at 10% and 40% have resulted in significantly lower growth and poorer FCR than other replacement levels. Survival rates remain high ($\geq 90\%$) throughout the trial. Whole-body proximate composition of the fish was significantly affected by the inclusion of SBM in the diets. It can be concluded that 20% - 30% of FM protein replacement with SBM is recommended and addition of phytase in the SBM-based diet should be considered to improve nutrient utilization of tiger grouper juvenile.