

Dietary herbs supplementation improves growth, feed efficiency and apparent digestibility coefficient of hybrid grouper (*Epinephelus fuscoguttatus* × *Epinephelus lanceolatus*) juvenile

ABSTRACT

This study aimed to determine the beneficial effects of dietary herbs supplementation on hybrid grouper juveniles, a crossbreed of tiger grouper (*Epinephelus fuscoguttatus*) and giant grouper (*Epinephelus lanceolatus*). Diets of 50% protein and 12% lipid were fed to the hybrid groupers, each supplemented with 0.5% of betel leaves; BL (*Piper betle*), turmeric rhizomes; TR (*Curcuma longa*) or tuhau stems; TS (*Etlingera coccinea*) and a control (CON) diet for 8 weeks. The hybrid grouper juveniles were cultured in 100 L fibreglass tanks and fed twice daily. Growth performance, feed efficiency, apparent digestibility coefficient (ADC), body condition and proximate composition were observed. The highest and lowest growth rate was recorded in TR and BL respectively. However, the growth rate in TR was not significantly higher ($p > 0.05$) than those TS and CON. Similar results were observed in the total feed intake, feed conversion ratio, protein efficiency ratio (PER) and net protein utilization (NPU). Although BL recorded significant higher total feed intake ($p < 0.05$), the PER and NPU were significantly lower ($p < 0.05$) compared with the other groups. Body condition indices were not affected by the inclusion of TR and TS; however, significantly lower results were recorded in BL ($p < 0.05$). The ADCs of protein and lipid were also significantly higher ($p < 0.05$) in TR and TS and significantly lower ($p < 0.05$) in BL compared with CON. The growth and feed efficiency of TR and TS supplementation were similar to CON. Nevertheless, the inclusion of these herbs increased the ADC of nutrient in the hybrid grouper.