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Abstract

A 12-week long feeding experiment was initiated to evaluate the effect of dietary supplementation of red algae, *Gracilaria arcuata*, on the growth performance, feed utilization and body composition of Nile tilapia *Oreochromis niloticus*(Linnaeus, 1758). The fish were fed with an algae-free control diet (C) and three experimental diets which replaced conventional fish meal with varying levels of dried *G. arcuata* (20%, 40% and 60%, represented as G20, G40 and G60, respectively). The growth parameters of final weight (FW), weight gain (WG), percentage of weight gain (WG %), daily growth rate (DGR) and specific growth rate (SGR) were significantly reduced ($P<0.05$) at all levels of algae incorporation compared to the control diet. Moreover, the negative impact of *Gracilaria* meal on the growth performance of Nile tilapia increased as the proportion of algae in the diet increased, with fish on diet G20 exhibiting a significantly higher growth performance than the fish on either of the G40 and G60 diets. On the other hand, the feed utilization parameters feed conversion ratio (FCR) and protein efficiency ratio (PER) did not show significant differences between the fish in the control group and those on diet G20, although poorer FCR and PER outcomes were achieved in the case of fish on diet G60. The content of moisture, protein and ash in muscle and carcass increased as the