

The potential of microalgae meal as an ingredient in the diets of early juvenile Pacific white shrimp, *Litopenaeus vannamei*

Abstract

This study evaluated the potential of green water meal (GWM) as an ingredient in the diets for early juvenile Pacific white shrimp, *Litopenaeus vannamei*. Five isonitrogenous and isolipidic diets were formulated with 0 % (control diet), 10, 20, 30, and 40 % (GWM0, GWM10, GWM20, GWM30, and GWM40, respectively) of GWM replacing fish meal protein and fed three times daily to triplicate groups of shrimp with an average initial weight of 1.73 ± 0.003 g. In general, growth of the shrimp decreased with increasing level of GWM substitution. Except for the final weight (g) and weight gain (%), no significant differences were detected in specific growth rate (% day⁻¹), daily feed intake (DFI), and feed conversion ratio (FCR) of GWM10 and the control diet. Replacing fish meal protein with 20-40 % GWM resulted in significantly poorer performance than the control diet. Survival rate was above 95 % in all treatments with no significant difference detected. The whole-body proximate composition of shrimp fed experimental diets was significantly affected by the inclusion of GWM with no definite trend. Interestingly, the GWM-based diets (GWM10, GWM20, GWM30, and GWM40) produced shrimp with more intense red/orange color and significantly higher total carotenoid concentration than the control diet. The present findings suggest that GWM is a good source of carotenoid and an acceptable alternative protein source for shrimp which can be included in the diet at a level of about 10 % without significant negative effect on survival, FCR, and SGR.