Effect of Diets Incorporated with Dried and Autolyzed Shrimp Waste on Growth Performance of Goldfish *(Carassius auratus)*

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The shrimp processing industry turns out tons of head, tail and shell waste every year and this is a rich source of protein that could be used to prepare aquaculture feeds. The efficiency of different methods for extracting protein from shrimp waste were observed. This study has been designed to assess the possibility of partial replacement of fish meal with shrimp waste in diets formulated for goldfish. Known amount of shrimp waste samples were subjected to autolysis and subsequently subjected to oven drying and make fine powder. Crude protein, crude lipid, ash and moisture were estimated for both autolysed and powdered dried shrimp waste (purchased from Agri-Star Compost private limited). Two different diets were prepared by incorporating autolysed shrimp waste powder and dried shrimp waste powder as supplementary source of protein. Commercial feed that contains 42% protein was used as the control diet. Uniform sized glass tanks were stocked with twenty individuals with an initial mean weight of 0.13 f 0.00 g per tank. Fishes were hand-fed daily three times per day for 30 days with three diets. Wet weight of the fish were measured weekly. Feed Conversion Ratio (FCR), Specific Growth Rate (SGR), Protein Efficiency Ratio (PER) and Condition Factor (K) were calculated for each diet. The highest protein level (65.55%± 0.60) and lowest ash level was observed (11.35% ± 0.03) in autolysed shrimp waste. Significantly higher SGR, PER and survival rate (91.25% + 3.15) were observed in individuals fed with diet incorporated with autolysed shrimp waste while significantly low FCR was observed in the same ($P<0.05$). Condition Factor was not significantly changed among the test diets ($P>0.05$). The findings of this study indicate that autolysis is the best method to extract protein form shrimp waste. During the process of autolysing meat part was detached from the shell and extracted to the aqueous medium. This process will facilitate to collect comparatively pure source of protein with compared to the dried shrimp meal. Therefore, autolyzed shrimp waste powder that contains significantly higher protein percentage can effectively enhance the growth parameters while use as protein supplement in the diet of goldfish.

Keywords: FCR, SGR, Fish feed, Fish nutrition, Ornamental fish.