

Effect of Sesame Seed Cake Meal as an Alternative Protein Source in the Diets of Juvenile Guppy Fish Reared in Outdoor Farming Conditions

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Replacing expensive fish meal component in fish feeds using alternative protein sources is necessary for sustainable aquaculture industry. A six week feeding trial was carried out to evaluate the effects of inclusion levels of sesame seed cake meal (SS) to replace commercial fish meal (FM) in diets for Guppy (*Poecilia reticulata*) reared in outdoor tanks. Four experimental diets were prepared and control diet (CD) contained 18% FM and 0% SS. The other three diets were 10SD (10% SS + 8% FM), 15SD (15% SS + 3% FM) and 20SD (20% SS + 0% FM). Additionally, a commercial diet (ED) was also used as one treatment to compare growth, feed performance and survival of fish. Fish (0.06 ± 0.01 g and 1.80 ± 0.11 cm) were randomly allocated across 15 cement tanks (120 x 90 x 40 cm) at a stocking density of 80 fish m⁻³ with three replicates per treatment and fed adlibitum three times per day for 6 weeks period. Final total length was significantly higher in fish fed on 10SD (3.18 ± 0.18 cm), 15SD (3.12 ± 0.23 cm) and 20SD (3.14 ± 0.24 cm) diets compared to fish in CD (2.92 ± 0.22 cm) and ED (3.00 ± 0.19 cm) treatments. Percentage SGR of fish were significantly higher in all SD treatments and ED treatment compared to control treatment. Feed consumption (% Body weight day⁻¹) and FCR were ranged from 5.31 ± 3.08 to 5.67 ± 3.51 and 1.29 ± 0.06 to 1.41 ± 0.12 for SS included diets respectively. Fish fed on CD and ED diets showed higher feed consumption (% Body weight day⁻¹) and FCR values than SS included diets. Fish in SD treatments showed better growth performances and feed utilization without any negative effects on their survival compared to fish fed on commercial feed. Total cost (1 kg) of ED was Rs 250 while cost for the other four diets were Rs 176, 149, 136, 127 for CD, 10SD, 15SD and 20SD respectively. Present study indicates that sesame seed cake meal can be successfully included up to 10-20% as a low cost alternative protein source in practical diets for guppy reared in farm conditions.

Keywords: Sesame seed cake, Fish meal, Guppy, Gow cost feed