Abstract No: BO-10

Effects of a commercial probiotic incorporated feed on growth performance and nutrient digestibility of fancy guppy, *Poecilia reticulata* (Poecilidae)

D. S. Dissanayake[*1], U. P. K. Epa[1] and K. R. P. S. Kumara[2]

[1]Department of Zoology and Environmental Management, Faculty of Science, University of Kelaniya, Sri Lanka
[2]Divron Bioventures Pvt Ltd, Sri Lanka
dura970210@gmail.com[*]

The ornamental fish industry is one of the most thriving industries worldwide. The incorporation of probiotics into the feeds to enhance the production performance of cultured aquatic organisms is a novel implementation of science and technology. The present study was conducted to investigate the effects of a commercial probiotic incorporated feed on the growth performance and nutrient digestibility of *Poecilia reticulata.* Three experimental diets (T1- 1.0 x 10^{-1} cfu/mL, T2- 1.0 x 10^{2} cfu/mL, and T3- 1.0 x 10^{5} cfu/mL of probiotic concentration with four strains of *Bacillus subtilis* and a control diet (without the probiotic) were fed to fish in three replication glass tanks (30 cm x 15 cm x 30 cm) for 75 days. In each tank, ten *P. reticulata* with weight and length of 0.09 ± 0.00 g and 0.9 ± 0.00 cm respectively, were stocked after one week of acclimatization. Fish were fed twice a day at 2% of their body weight. Dissolved oxygen (DO) and pH were measured weekly and the standard length and weight of fish were measured bi-weekly. Fecal matter was collected twice a week from each experimental tank. The nutrient digestibility of *P. reticulata* was determined using chromic oxide as an inert marker. The proximate composition of the diets was analyzed using standard methods. DO and pH were not significantly different between the treatment and the control tanks ($p>0.05$, One-way ANOVA) and were within the optimum ranges for guppy (DO> 6 mg/L, pH 6.8- 7.8). Incorporating the probiotic into the commercial feed positively affected the specific growth rate (SGR), average daily growth (ADG), % body weight increase (% BWI), and % total length gain (% TLG) of *P. reticulata*. T3 had the best growth performance with the highest final weight (3.25± 0.78 g), length (2.6 ± 0.06 cm), %SGR (1.69 ± 0.31), ADG (0.03 ± 0.01 g/day) and % BWI (71.28 ± 6.25). The lowest final weight (2.084 ± 0.22 g), length (1.8 ± 0.15 cm), % SGR (1.15 ± 0.14), ADG (0.02 ± 0.00 g/day), % BWI (56.51 ± 4.30) were recorded in the fish fed the control diet. All the growth parameters were significantly higher in the T1, T2 and T3 than in the control ($p>0.05$, One-way ANOVA). There was no significant difference in the nutrient digestibility of *P. reticulata* between each treatment and the control ($p>0.05$; One-way ANOVA). Further, the proximate analysis showed no significant difference in the crude protein and ash content among the different experimental feeds ($p>0.05$; One-way ANOVA). The commercial probiotic used in the study did not affect the nutrient digestibility of *P. reticulata*, water quality in rearing tanks or proximate composition of experimental feeds. The incorporation of a commercial probiotic into the diet of *P. reticulata* significantly increased its growth performance.

Keywords: Digestibility, Growth, *Poecilia reticulata,* Probiotic