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Determination of Optimum Level of Commercial Probiotic, BioGaia™ on Growth Performance, Feed Utilization Efficiencies and Stress Resistance of Freshwater Angelfish, *Pterophyllum scalare*

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The present study was conducted to evaluate the effects of commercial probiotic, BioGaia™ on growth performance, feed utilization efficiencies and stress resistance of freshwater angel fish, *Pterophyllum scalare*. Relevant amount of probiotic for each diet was mixed with the ingredients before the pelleting process. Three levels of commercial probiotic as 0.1% (1ED), 0.3% (3ED), 0.5% (5ED) were incorporated into the basal diet and their dietary effects were compared with the diet containing zero probiotic (CD-Control). Thirty days old *P. scalare* purchased from a private ornamental fish farm at Kudawella were acclimatized to the experimental condition for one week. Twelve glass tanks (60x30x30 cm) were used as experimental units and this experiment was conducted as a static research system at a freshwater aquarium. Tanks were well cleaned and filled with dechlorinated tap-water up to 20 cm height and continuously aerated. Each treatment had three replicates were randomly assigned to the tanks and initial stocking density was 10 fish per tank (initial mean body weight of 0.29±0.00 g, initial mean body length of 2.50±0.00 cm and initial mean body height of 1.80±0.00 cm). Fish in all treatments were fed to near satiety twice a day and experiment was lasted for 35 days. Proximate composition of feed ingredients and prepared diets including moisture content, ash content and lipid content were analyzed separately. Final mean total length, final mean body weight, Percentage Specific Growth Rate (%SGR), Percentage Average Daily Gain (%ADG) and Feed Conversion Ratio (FCR) of angel fish (*Pterophyllum scalare*) fed experimental diets were analyzed to assess the growth performance and feed utilization efficiencies of fish. Results showed that, significantly higher final mean body weight of 0.99±0.05 g and final mean body length of 3.77±0.07 cm were observed in fish fed the diet containing 0.5% probiotic (5ED). Similarly, growth performance of angel fish in terms of %SGR of 3.46±0.15 and %ADG of 6.77±0.51 were significantly higher in 5ED. Significantly better feed utilization efficiency with lowest FCR value (2.65±0.24) was also observed in fish fed the diet containing 0.5% of probiotic (5ED). Significantly lowest %SGR and %ADG and significantly highest FCR value were observed from the fish in the control treatment. The survival rate of fish in all the treatments were high (90-100%) and it was not affected by the probiotic. At the end of the experiment, salinity stress test was conducted on eighteen fish from each treatment in duplicate by exposing them to a

20ppt salinity solution for two hours and Cumulative Mortality Index (CMI) was calculated for each treatment. Significantly lowest Cumulative Mortality Index (CMI) was observed in 5ED treatment. Therefore, the results revealed that the diet with 0.5% of BioGaia™ probiotic can be used as a feed supplement to enhance the growth performance and feed utilization efficiency of freshwater angel fish.

Keywords: Probiotic, growth performance, feed utilization, stress-resistant