ABSTRACT

Probiotics play a vital role in aquaculture as they enhance the growth, immunity, and survival rate of fish. The current study evaluated the impact of probiotics (*Lactobacillus rhamnosus* and *Bacillus clausii*) on the growth performance, digestive enzymes, hematological, biochemical parameters and gut histomorphology of *Pangasius hypophthalmus* fingerlings. Total 140 fishes were divided into seven groups with n=20 in each group. The study was conducted in replicates. Two different doses of *Lactobacillus rhamnosus* and *B.clausii* (LL:2g/Kg, HL:4g/Kg, LB: 2g/Kg, HB:4g/Kg, LC:2g/Kg, HC:4g/Kg) were given to the seven groups of fish for a duration of 10 weeks. A combination of probiotics in treatment fish improved growth rate, weight gain (WG) (2.24±0.35 to7.02±0.38), specific growth rate (SGR) (0.24±0.01 to 0.48±0.06), protein efficiency ratio (PER) (7.47±1.19 to 23.40±1.29), condition factor (CF) (0.49±0.08 to 0.94±0.20), survival rate (SR%) (100.0±0.0 to 100.0±0.0) and increased in feed conversion ratio (FCR) (12.30±0.47 to 4.32±0.25) of control group. In combination group of probiotics fish showed improved digestive enzymes amylase (30 unit/L to 75 unit/L) and lipase (17 unit/L to 44 unit/L) levels. Similary, the combined probiotics improved hematology Hb (2.9 g/dl to 5g/dl), RBCs (2.90g/dl to 6.1g/dl), HCT (9g/dl to 13g/dl) and decrease in WBCs ((25g/dl to 20g/dl) MCV (93g/dl to 90g/dl), MCH (69g/dl to 51), MCHC (62g/dl to 59g/dl), plt (140x103/ul to 91x103/ul) in all treatment groups as compared to the control group. Fish treated with a combination of probiotics (*Lactobacillus rhamnosus* and *B.clausii*) exhibited improved levels of AST from (440 U/L to 490 U/L), ALT from (41 U/L to 92U/L) and ALP (231 U/L to 245 U/L). A combination of probiotics in treatment fish improved urea (3.9 mg/dl to 3.8 mg/dl) and creatinine (1.2 mg/dl to 2.4 mg/dl) levels. Fish treated with *Lactobacillus rhamnosus* and *B.calusii* exhibited a significantly higher growth rate in comparison to the control group. The high combination (HC) group, administered with 4g/kg, demonstrated the overall favorable outcomes. The current results we concluded that the addition of probiotics boosts the development and strengthens the immune system of *P.hypothalamus*. Hence, this study suggest that probiotics have the potential to serve as effective feed additives for enhancing fish yield in aquaculture. Future research may explore the effect of this probiotic on the intensive cultivation of the same species.

Keywords: digestive enzymes, hematology, gut histology, *Pangasius. Hypophthalmus,* probiotics.