Effect of oral administration of different concentrations *Lactobacillus acidophilus* on growth performance and digestive enzyme rainbow trout fish (*Oncorhynchus mykiss*) in the face of lead toxicity in the diet

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Abstract

The present study was conducted to evaluate the effects of probiotic *Lactobacillus acidophilus* on the growth performance and digestive enzymes activity of juveniles *Oncorhynchus mykiss* after lead poisoning. 375 fish about 16±3.8 g of weight were selected and after being physically examined and ensuring their health were divided randomly in to 5 groups including 3 groups which were fed by healthy food containing 5×10^6, 5×10^7 and 5×10^8 CFU/g *Lactobacillus acidophilus* for 45 days And also the fourth group (negative control or uncontrolled control) were fed and stored throughout the experiment with food without any additives And the fifth group (positive control or control group with lead), at first were fed without any additive to the diet for 45 days, and then, until the end of the experiment period, with three probiotic groups for 21 days were fed with a diet containing 500 µg/kg lead nitrate. Intestine samples after anesthesia were collected on days 0, 45, 52, 59 and 66 for digestive enzymes were examined. Results showed that In the Treatment 1 and 2, Specific Growth Ratio, Daily Weight Growth and Relative Growth Rate, after 45 days beginning of experiment, improved considerable that compared to control group had significantly difference (P<0.05). Activity of digestive enzyme in trial treatment (1, 2, and 3) after 45 days, were increased significantly compared to control group (P<0.05). But after challenge with lead, trypsine and α-Amylase decrease significantly in groups 1 and 2 but in upper than the other groups. The lipase enzyme and alkaline phosphatase activity in all the probiotic groups after exposure to lead to a significant decrease but more than control group was challenged to lead. According to obtained results, it might be concluded that the feeding of rainbow trout by 5×10^7 CFU / gr *Lactobacillus acidophilus* isolated from the intestinal *Tor grypus* could be used as a probiotic supplement and can have a positive impact on improving growth performance and digestive enzymes and in addition are preventing of heavy metal poisoning which exist in diet.

Key word: Probiotic, *Lactobacillus acidophilus*, *Oncorhynchus mykiss*, Enzyme, Lead

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