

Abstract

Nowadays, herbal products are as a new class of growth and immunity stimulators that provide an alternative feeding strategy to replace antibiotic growth promoters in aquaculture. This study was conducted to investigate the effects of different levels of *withania coagulans* (0, 250, 500 and 1000 mg/kg diet) on growth, liver enzymes activity, biochemical and immunity parameters of common carp (33.58 ± 1.40 g). After 56 days of feeding, the fish bleed and blood parameters including WBC, RBC, Hct, Hb, immunity parameters (IgM and lysozyme) and hepatic enzymes (ALT, AST, ALP and LDH). Results showed that growth performance including of weight gain, condition factor, specific growth rate and daily growth improved in fish fed with withania compared to control group ($p < 0.05$). Activity of hepatic enzymes (ALT, AST, ALP and LDH) showed significant difference in fish fed withania in compare to control. Lowest activity of hepatic enzymes observed in group fed by 1000 mg/kg withania. There was no significant difference among white blood cells ($p > 0.05$). The withania affect on red blood cells, lysozyme, hematocrit, MCV, MCHC, IgM and hemoglobin that 1000 mg/kg group showed significant difference with other groups ($p < 0.05$). The neutrophils increased in all treated groups ($p < 0.05$). The results of this study showed that addition of 1000 mg/kg withania to diet can improve immunity and growth parameters of common carp.

Keywords: *Cyprinus carpio*, *Withania coagulans*, Immune indices, liver enzymes activity.



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Subject:

Effects of different levels *Withania coagulans* extract on growth performance, biochemical activity of blood enzymes, hematological and immunity parameters of *Cyprinus carpio*

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