

Abstract

Lead Toxicity in all animals, and aquatic organism is important. In this study, the protective effect of vitamin E and selenium on lead Toxicity and its impact on the activity of antioxidant and liver enzymes in the grass carp (*Ctenopharyngodon idella*) were discussed. For this purpose, 150 grass carp with an average weight of $12/42 \pm 1/31$ g were distributed randomly in five treatments and three replicates in per treatment. The first treatment was considered as control treatment and a second treatment received to the 0.05 of LC50 96h (37/72 mg) lead acetate. Other treatments in addition to received this amount of lead acetate, 200 mg per kg of vitamin E (third treatment), 4 mg per kg of selenium (fourth treatment) and 200 mg per kg vitamin E plus 4 mg per kg of selenium (fifth treatment). After the 15 day experiment period were measured antioxidant enzymes CAT, SOD and MDA and too liver enzymes ALT and ALP. The results showed that MDA enzyme activity in any of the treatments no significantly decreased compared to control and lead acetate. According to the results, vitamin E causes significant reduction in CAT and ALP enzyme activity was compared to lead acetate treatment. The selenium decrease only two enzymes CAT and ALT, while the combination of vitamin E and selenium has been significantly reduced enzyme activity of CAT, SOD and ALT compared to the control and lead acetate. Pathological study of liver, kidney and gills showed that lead acetate can cause damage in these tissues, while vitamin E and selenium decreases considerably damage to the tissues. The results showed the vitamin E and selenium and their combination improving blood biochemical parameters as well as improved tissue damage in the grass carp is exposed to lead acetate.

Key words: Antioxidants, Vitamin E, Oxidative stress, Grass carp, Lead acetate



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**Protective effect of combined vitamin E
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carp (*Ctenopharyngodon idella*)**

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