

عنوان مقاله:

The hematological improvement of rainbow trout (*Oncorhynchus mykiss*) during dietary supplementation with vitamin C after exposure to zinc nano-particles

محل انتشار:

مجله علوم شیلات ایران، دوره 16، شماره 1 (سال: 1395)

تعداد صفحات اصل مقاله: 8

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خلاصه مقاله:

The aim of this study was to examine the adverse effects of zinc nanoparticles on hematological indices of trout and investigate the improvement of these indices after vitamin C treatments. This study assesses the protective role of vitamin C in fish exposed to ZnO NPs. Two concentrations of ZnO-NPs (40 and 80 mg L^{-1}) and two doses of vitamin C (400 and 800 mg per kg of feed) were used to treat 162 specimens of *Oncorhynchus mykiss*. No mortality was observed during the test. After 5 and 10 days of exposure, hematological data were analyzed according to routine clinical methods. Statistical analysis showed significant changes in WBCs and RBC on day 10 ($p < 0.05$). Values for HT and MCH were significantly higher in treatment 2 (normal diet + 40 mg L^{-1} ZnO-NPs) and 9 (800 mg/kg Vit + 80 mg L^{-1} ZnO-NPs), and lower in treatment 3 (normal diet + 80 mg L^{-1} ZnO-NPs) in comparison with the control group (normal diet + 0 mg L^{-1} ZnO-NPs) ($P < 0.05$). No significant differences of MCV and MCHC were observed ($p > 0.05$), while significant increase in neutrophils and monocytes, and decrease in lymphocyte cells were recorded ($p < 0.05$). ZnO-NPs stimulated the immune system of *O. mykiss*, but this effect did not have any lethality on this species at 40 and 80 mg L^{-1} . Vitamin C in different concentrations could help to prevent rainbow trout from the toxic effects of this nano metal

کلمات کلیدی:

Fish, Hematology, Nano particle, Toxicity, Vitamin C

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