

عنوان مقاله:

Acute toxicity and effects of titanium dioxide nanoparticles (TiO₂ NPs) on some metabolic enzymes and hematological indices of the endangered Caspian trout juveniles (*Salmo trutta caspius* Kessler, ۱۸۷۷)

محل انتشار:

مجله علوم شیلات ایران، دوره 19، شماره 3 (سال: 1399)

تعداد صفحات اصل مقاله: 15

نویسندگان:

F.E. Kaviyani - *Department of Biology, Faculty of sciences, University of Guilan, Rasht, Iran*

A.S. Naeemi - *Department of Biology, Faculty of sciences, University of Guilan, Rasht, Iran*

A. Salehzadeh - *Department of Biology, Rasht Branch, Islamic Azad University, Rasht, Iran*

خلاصه مقاله:

Titanium dioxide nanoparticles (TiO₂ NPs) have been incorporated into a large range of materials for different usages and they are very likely to come in wastewater and sewage, finally reaching the aquatic ecosystems. Therefore, valuating the impact of TiO₂ NPs on aquatic environment is a major concern. The aim of this work was to study the effects of TiO₂ NPs on metabolic enzymes activity and haematological indices of the Caspian trout juveniles. After determining ۹۶h-LC₅₀, juveniles have been exposed to ۰.۱ LC₅₀-۹۶h TiO₂ NPs in three replicates for ۲۸ days. The blood samples were collected from fish after acute (۲۴، ۴۸، ۷۲، ۹۶ hours) and sub chronic (۷، ۱۴، ۲۱ and ۲۸ days) exposure to the TiO₂ NPs. The analysis showed that the red blood cells count (RBC), haemoglobin (Hb), haematocrit (Hct), white blood cells count (WBC) and lymphocytes have been increased after acute and sub chronic exposure to TiO₂ NPs. Levels of neutrophils and monocytes were increased mostly in acute treatments. Mean Corpuscular Volume (MCV), Mean Corpuscular Haemoglobin (MCH) and Mean Corpuscular Hemoglobin Concentration (MCHC) showed no significant differences. According to analysis of metabolic enzymes activities, levels of Alkaline Phosphatase (ALP) and Aspartate Amino Transferase (AST) after acute and sub chronic exposure as compared to control group were increased/decreased, respectively. Alanine Aminotransferase (ALT) levels showed significant decrease ($p < 0.05$) after ۲۸ days. Lactate Dehydrogenase (LDH) enzyme level increased mostly after acute exposure. The obtained results indicated that the presence of very low amount of TiO₂ NPs could affect most haematological and metabolic enzymes of Caspian trout juvenile.

کلمات کلیدی:

Metabolic enzyme, Haematological indices, Titanium dioxide nanoparticles, Caspian trout

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1401638>



