Short-term exposure to titanium, aluminum and niobium (Ti-6Al-4Nb) alloy powder can disturb the serum low-density lipoprotein concentrations and antioxidant profile in vital organs but not the behavior of male albino mice

Ghulam Khadija

Bahauddin Zakariya University, Pakistan

Abstract:

Titanium, Aluminum and Niobium (Ti 6Al 4Nb) alloy are frequently used as surgical implant but regarding their compatibility in living systems is limited. A group of seven-week-old albino mice of both genders were orally administered with a suspension of 25 mg Ti-6Al-4Nb/ml of saline/kg body weight and evaluated in comparison with a control group of animals treated with saline. Evaluation of both the groups was conducted through behavioural tests (Rota rod, open field, novel object and light dark box test),blood biochemical tests [complete blood count and selected serum parameters ([cholesterol, high-density lipoproteins, low-density lipoproteins, creatinine and triglycerides)] and on the basis of measured concentration of antioxidant metabolites (superoxide dismutase, catalase and lipid peroxidation) in vital organs (brain, heart, liver, kidney and lungs). Based upon the results of these tests, it has been found that the applied dose of Ti-6Al-4Nb alloy powder has not effect on physical and neurological outcome of these animals. However, it can increase low-density lipoprotein concentrations as well as disturb the H2O2 and lipid peroxidation associated metabolic pathways, especially in male albino mice. Whereas all other hematological indices and antioxidative stress parameters were unaffected. As this alloy is part of surgical implants, so we recommend that their effects in living systems must be extensively explored under variable dose and exposure time conditions to know more about their biocompatibility.

Biography:

Ghulam Khadija has completed her Bachelor's Degree at the age of 21 years from Bahauddin Zakariya University, Multan, Pakistan and currently enrolled in Postgraduate progam at Quaid-I-Azam University, Islamabad, Pakistan. She has published 3 research papers in the field of toxicology under the supervision of Dr. Furhan Iqbal.

Recent Publications:

1. Ghulam Khadija, Experimentelle Pathologie und Pharmakologie, 2020
2. Ghulam Khadija, Genes & genomics, 2020
3. Ghulam Khadija, Toxicology reports, 2020
4. Ghulam Khadija, Drug and Chemical Toxicology, 2018

Citation: Ghulam Khadija: Short-term exposure to titanium, aluminum and niobium (Ti-6Al-4Nb) alloy powder can disturb the serum low-density lipoprotein concentrations and antioxidant profile in vital organs but not the behavior of male albino mice; 9th International conference on Neuroscience and therapeutics; August 31, 2020; Osaka, Japan