Abstract

Oxidative stress is an imbalance between the generation of activated oxygen species and the antioxidant defense system of the body. The aim of our experiments is to study the effect of titanium oxide nanoparticles (TiO_2) on kidney cells and the evaluation of the opposite effect of diferulyol methane (Curcumin) on this toxicity. Rats *Wistar* control or treated with both substances were used to measure out the stress parameters (GSH, MDA, and GPx) and biochemical tissue parameters (carbohydrates, proteins and lipids). After the analysis of the results, this study shows that titanium oxide has provoked nephrotoxicity by the presence of a globally pro-oxidative effect, this revealed by the decrease in protein, lipid, GSH and enzymatic activities GPx . On the other hand, we have recorded an increase in carbohydrate and MDA levels. These results also showed that curcumin supplementation improved the detoxification equilibrium and decreased the deleterious effects of TiO_2. Curcumin appears to be an effective antioxidant to reduce the imbalance between free radical formation and the body's antioxidant systems and therefore to reduce the intensity of oxidative stress induced by titanium oxide.

Key words: Titanium oxide, kidneys, oxidative stress, diferulyol-methane.