

Original Paper

Short term effect of Fe₂NiO₄ nanoparticles on kidney function indices in rat

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Abstract

Background and Objective: Iron oxide nanoparticles, including nanoparticles is important in industry and medicine. Nanoparticles affect on detoxification of environmental pollutants such as Pesticides and chlorinated organic solvents. This study was done to evaluate the short term effect of Fe₂NiO₄ composite nanoparticle on kidney function indices in wistar rats.

Methods: In this experimental study, Twenty four Wistar rat were randomly allocated into three groups, including: control, treated groups 1 and 2. Animals in control, treated groups 1 and 2 were received 0.5cc of saline, 0.5cc of solution containing 100, 200 ppm Fe₂NiO₄ for 7 days, respectively. Uric acid, ceratinine and urea (BUN) were measured at day 2, 7 and 14.

Results: BUN level in treated groups 1 and 2 significantly reduced in comparison with control group at day 7, 14 after intervention (P<0.05). Uric acid level in treated groups 1 and 2 significantly increased at day 7 and 14. 2 week after intervention, the mean creatinine levels in treated group 2 group significantly reduced in compare to the in treated group 1 and controls (P<0.05).

Conclusion: It seems that the application of Fe₂NiO₄ nanoparticles in biological system has no toxic effect on the kidney function indices.

Keywords: Nanoparticle, Fe₂NiO₄, Kidney, Urea, Uric acid, Creatinine, Rat

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