World Academy of Science, Engineering and Technology
International Journal of Chemical and Materials Engineering
Vol:8, No:06, 2014

Preventive Effect of Zinc on Nickel Hepatotoxicity and Nephrotoxicity in Albino (Wistar) Rats

Authors : Zine Kechrid, Samira Bouhalit

Abstract : Aim: We studied the effect of intraperitonial zinc treatment on nickel sulphate-induced hepatotoxicity and nephrotoxicity in Wistar strain male albino rats. Materials and Methods: Liver and kidney dysfunction parameters represented by aspartate transaminase (AST), alanine transaminase (ALT), alkaline phosphatase (ALP), blood glucose, serum total protein, serum urea, serum creatinine, and serum belurebin were estimated. Liver glutathione level, catalase and GPx activities were also determined in liver as indicators of oxidative damage. Result: Nickel treatment led to high serum glucose concentration and produced hepatotoxicity and nephrotoxicity characterized by increasing GPT, GOT and alkaline phosphatase activities, serum total protein, serum urea, serum creatinine and serum belurebin concentrations. In addition, liver glutathione level, catalase and GSH-Px activities diminished due to high lipid peroxidation. The simultaneous administration of zinc with nickel sulphate resulted in a remarkable improvement of the previous parameters compared with rats treated with nickel alone. Conclusion: In conclusion, nickel sulphate led to liver and kidney dysfunctions and hepatic lipid peroxidation in animals, but simultaneous treatment with zinc offers a relative protection against nickel induced hepatotoxicity, nephrotoxicity and lipid peroxidation.

Keywords : nickel, zinc, rats, GOT, GPT, nephrotoxicity, hepatotoxicity
Conference Title : ICC 2014 : International Conference on Chemistry
Conference Location : Istanbul, Türkiye
Conference Dates : June 19-20, 2014