

Effects of copper overload on hepatic lipid peroxidation and antioxidant defense in rats

ABSTRACT

The influence of copper (Cu) overload on hepatic lipid peroxidation and antioxidation defense capacity was studied by overloading rats with copper sulphate orally (500 mg Cu/kg bw) 5 d/w for 8 w. Malondialdehyde (MDA), Cu-Zn superoxide dismutase (SOD), and Se-glutathione peroxidase (GSH-Px) were measured in serum and liver homogenate at 2, 4 and 8 w of dosing. Liver Cu concentration and alanine aminotransferase (ALT) activity were also determined. As Cu loading progressed, there were multiparameter changes with significant ALT elevation, increased MDA concentrations in serum and liver homogenate, and dramatic declines of SOD and GSH-Px activities in erythrocytes and whole blood respectively, along with marked elevation of hepatic Cu in the Cu-dosed group. Excessive Cu accumulation in the liver depressed SOD and GSH-Px activities and resulted in high MDA in serum and liver homogenate due to the lipid peroxidation induced by the Cu overload.

Keyword: Copper overload; Lipid peroxidation; Rats; Antioxidant activity