EFFECT OF COMBINED EXPOSURE TO ETHANOL AND NICKEL ON DISTRIBUTION OF ZINC, COPPER AND IRON IN RATS

ABSTRACT

Introduction: The study was undertaken to investigate the influence of combined ethanol-nickel exposure to zinc (Zn), copper (Cu) and iron (Fe) concentrations in some organs of rats.

Material and Methods: Ethanol was given in the drinking water at a concentration of 5% for 60 days followed by 10% for 30 days and nickel (Ni) in the form of Ni (II) chloride • 6 H₂O at a concentration of 300 and 1200 ppm Ni. The essential metals were determined by flame atomic absorption spectrophotometry.

Results: The supplement of ethanol and nickel alone as well as in combination in drinking water resulted in a decrease in drinking solution consumption in all the treated groups, as compared to control rats. Levels of Zn, Cu and Fe in organs of rats treated with ethanol and Ni 300 alone as well as with a combination of Et + Ni 300 were generally within the range of control. The concentration of these elements in some organs of Ni 1200-exposed rats was changed in comparison to the control group. Similar distribution of Zn, Cu and Fe was observed in the rats co-exposed to Et + Ni 1200: zinc and copper content was significantly reduced in the kidney, whereas the iron level was elevated in the liver and kidney.

Conclusion: The results indicate that in experimental conditions, ethanol did not significantly influence zinc, copper and iron concentrations in rat organs under continued nickel exposure.

Key words: ethanol, nickel, combined exposure, essential metals, rats