THE EFFECT OF ZINC ON THE ACTIVITY OF THE LIVER

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Introduction. Zinc (Zn) is essential for normal liver function; conversely, the liver plays a central role in Zn homeostasis. Hence, liver diseases affect Zn levels, whereas Zn deficiency may be involved in their pathogenesis, and reduced liver Zn levels are correlated with impaired liver function and regeneration. Zinc also plays an important role in the treatment of several liver diseases and, has been shown to attenuate or protect against various hepatotoxins such as carbon tetrachloride, bromobenzene, and several metals. Zinc has various effects on biological activity that may explain this hepatoprotective effect. Here they are: Zn stabilizes membranes and inhibits lipid peroxidation (sex) Zn induces hepatic metallothionein (mt), which is rich in sh groups and binds some toxic metals such as cu; Zn is required for p450 activity, which is important for the metabolism of toxic drugs; Zn improves the function of protein synthesis in the liver; and the hepatoprotective effect of Zn administration against oxidative stress (OS) has been realized through the regulation of the metabolism of superoxide dismutase (SOD), MT, reduced glutathione (GSH), and other antioxidants such as vitamins E and C.

The dietary status of Zn has a strong influence on the extent of damage caused by agents that cause oxidative damage of the free radical type. Several lines of circumstantial evidence also support this concept. Zinc inhibits oxidative damage to molecules, organelles, and cells in vitro and inhibits damage in rodents caused by ccl4, endotoxin, or radiation. However, the effect of Zn on oxidative damage caused by tert-butyl hydroperoxide (t-bhp) has not been systematically investigated.

Zn, which indicates the interaction between them. It was considered appropriate to test whether these interactions are bidirectional by examining the Zn dose response to vitamin status. In addition, these interactions can take different directions under the conditions of the OS. Consequently, the effect of Zn supplementation on vitamin availability in the presence of wasps has been investigated.

Aim of thr study. Study of the effect of changes in zinc content in the diet on liver function.

Materials and methods of research. Male Wistar rats weighing 50 ± 10 g. The animals were kept separately in polypropylene cells in the vivarium of the Bukhara State Medical Institute. During the study period of 3 weeks, the rats received a modified diet.

Dietary zinc status (Zn) has a strong influence on the degree of oxidative damage caused by free radicals. We examined the effect of dietary changes in Zn with oxidative stress (wasp) treatment on antioxidant status, liver function and vitamin status in male wistar rats. Oxidative stress was induced by intraperitoneal injections tert-butyl hydroperoxide; and dietary changes in Zn were made: Zn deficiency, normal and excess, with 8, 30 and 60 mg of Zn per kilogram of diet, respectively. After a 21-day dietary regimen, the animals were euthanized; and assessments of plasma aspartate aminotransferase, alanine aminotransferase, hepatic antioxidant enzymes were made.

Results of the study. After 21 days of the experimental period, body weight and food intake records showed no significant difference between the different treatment groups and their subgroups. Slight reductions in weight (125.51 ± 3.29 g) and intake (148 ± 3.2) were observed in animals compared to animals with a normal Zn diet (129.45 ± 1.3 g; 152.3 ± 2), which may be due to the effects of marginal Zn deficiency.

Alanine aminotransferase and aspartate aminotransferase levels were elevated in wasp rats with a Zn-deficient diet, which were restored to normal levels with excess dietary Zn. Levels of liver antioxidant enzymes and reduced glutathione were significantly reduced with a concomitant increase in sex due to wasp induction in animals on a Zn-deficient diet A dose-dependent increase in the accumulation of nicotinic acid in the liver was observed as the level of dietary Zn increased from insufficient to excess; however, there was no effect on the status of riboflavin and ascorbic acid. The results suggest that Zn may have therapeutic potential in the treatment of oxidative liver damage along with increased absorption of nicotinic acid.

Conclusion. Adequate Zn levels are critical for optimal functioning of the oxidative defense system, supported by abundant evidence showing that Zn deficiency is associated with an increased risk of oxidative tissue damage. Increased levels of lipids, proteins, and DNA oxidation have been described in various models of Zn deficiency. In the testicles of rats fed a Zn-deficient diet for 14 days, the researchers found several indicators of wasps, including increased cell oxidation

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