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EFFECT OF POLYPHENOL EXTRACT ON RAT LIVER ANTIOXIDANT SYSTEM

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Oxidative stress refers to cell damage and death as a result of increased levels of oxygen free radicals. In this case, an imbalance in the antioxidant systems is manifested by the excessive formation of free radicals or by derailing the body's antioxidant capacity.

In toxic hepatitis, liver cells undergo degenerative and cell necrosis. The introduction of biologically active substances with antioxidant properties to experimental animals under such conditions helps to reduce the toxic effects of free radicals.

In the conditions of toxic hepatitis, it is important to identify disorders in the functional activity of liver mitochondria and the antioxidant defense system, and to correct them pharmacologically with herbal compounds. One such compound, quercetin, inhibits the respiration of rat liver mitochondria, causing a "mild" uncoupling of respiration and phosphorylation. Quercetin inhibits MRTP opening induced by Ca2+ ions at a concentration of 25-50 μM and may explain the well-known proapoptotic effect of quercetin.

In this work, under conditions of SSl4-induced toxic hepatitis, mitochondrial functional disorders and effects of polyphenol extracts isolated from plants on liver malondialdehyde (MDA) content, LPO process, superoxide dismutase, glutathione peroxidase and catalase enzyme activities were studied. The aim of the subject is to study the effect of polyphenols extract isolated from Glabra plant on the activity of antioxidant enzymes of rat liver mitochondria and on Fe2+/citrate-dependent LPO process in toxic hepatitis. Materials and methods: Fe2+/citrate-dependent mitochondrial swelling was induced by addition of 50 μM FeSO4 and 2 mM sodium citrate to a mitochondrial suspension and recorded at 540 nm on a Cary 60 Agilent technology spectrophotometer. Incubation medium (IM) contains (mM): sucrose-250, Tris-chloride-10, EDTA-1; pH 7.4. In this case, the amount of mitochondrial protein was 0.5 mg per 1 ml of incubation medium. The obtained results and their analysis.

Changes in SOD activity in liver mitochondria under conditions of toxic hepatitis and the effect of Glabra polyphenol extract on them were studied. According to the obtained results, SOD activity in liver mitochondria of group I healthy animals was 4.83±0.20 ed./mg of mitochondrial protein, we defined this indicator as 100%. It was found that the activity of SOD in the liver mitochondria of CCl4 injected group II rats was 2.86±0.10 units/mg of mitochondrial protein and decreased by 40.80±3.40% compared to the values of the control group. Thus, in toxic hepatitis, the activity of liver mitochondria SOD is reduced, the activity of this enzyme was partially restored under the influence of Glabra extracts. In toxic hepatitis, the increase in LPO products causes a sharp increase in hydrogen peroxide (N202) in liver mitochondria. In such conditions, another important antioxidant enzyme, catalase, is activated in the mitochondria and participates in the decomposition of N202 into oxygen and water. From this point of view, another experiment was conducted to determine the change of catalase activity in toxic hepatitis using polyphenol extracts.

According to the obtained results, catalase activity in liver mitochondria of control group I animals was 62.33±1.20 μKat/ml mitochondrial protein, this indicator was taken as 100%. It was found that the activity of catalase enzyme in the liver mitochondria of CCl4 injected group II rats was 37.90±1.32 μKat/ml of mitochondrial protein and decreased by 39.2±3.5% compared to the

values of the control group. Conclusion: according to the obtained results, glutathione peroxidase activity in the liver mitochondria of healthy group I rats was 80.11±1.75 mM/min gr of protein. It was found that the activity of glutathione peroxidase enzyme of the liver mitochondria of group II rats with toxic hepatitis was 60.88±1.40 mM/min g of protein and decreased by 24.1±2.1% compared to the control group. When group III and IV animals with toxic hepatitis were treated with pharmacotherapy with Glabra polyphenols extract, the activity of liver mitochondria glutathione peroxidase enzyme was 74.51±3.16 mM/min g protein and 75.98±3.56 mM/min g protein.

This indicates that glutathione peroxidase activity was restored by 17.1±1.20% and 18.85±1.17% compared to group II. Therefore, it was found that Glabra polyphenolic extract had an effective effect on liver mitochondria glutathione peroxidase activity in CCl4-induced toxic hepatitis and restored the enzyme activity.

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