EFFECT OF THE ANTIOXIDANT – HERBAL DERIVATE ON BIOMARKERS OF OXIDATIVE STRESS AND ANTIOXIDANT SYSTEMS ON THE MODEL OF GASTRIC ULCER

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Relevance. A definite value in the pathogenesis of peptic ulcer belongs to the activation of lipid peroxidation (LPO) processes. The activity of LPO processes is controlled by antioxidant defense factors, which should have cytoprotective properties. However, with their functional insufficiency, oxidative stress develops, in which LPO products "attack" cellular structures, are accompanied by damage to the lipids of cell membranes, increased permeability and destruction of cells, and contributes to the formation of a ulcerative defect [1, 2].

Phenolic compounds – natural synergists of ascorbic acid, are widely represented in the plant world. Polyphenols of vegetable origin have a number of biological effects, in particular antioxidant and anti-inflammatory effects. Polyphenols of grape seeds are recognized as one of the most powerful among all known natural antioxidants. By activity, they are almost 50 times higher than vitamin E and 20 times – vitamin C. At the same time, these secondary metabolism substances have low bioavailability [3, 4].

The purpose of our study was to study the effect of the liposomal emulsion of grape seed polyphenols (LEGSP) on the state of the system of LPO and antioxidant enzymes of erythrocytes on the model of chronic hydrocortisone gastric ulcer.

Materials and methods. Peculiarities of the therapeutic effectiveness of LEGSP were studied in white rats with chronic ulcer caused by intramuscular injection of hydrocortisone acetate 2.5% twice daily for 10 days at a dose of 15

mg/kg [5]. LEGSP was administered at a dose of 115 mg/kg with a prophylactic treatment regimen once daily intragastric.

The state of lipid peroxidation (LPO) and the activity of antioxidant defense enzymes were determined on the eleventh day of the experiment. In erythrocytes, the content of diene conjugates (DC), lipid hydroperoxides, glucose-6-phosphate dehydrogenase and catalase (CA) activity of malonic dialdehyde (MDA) and total antioxidant activity was determined; activity of superoxide dismutase (SOD) of glutathione peroxidase (HP) and the content of reduced glutathione (RG); activity of glutathione reductase (GR) [6].

Results. In the course of this experiment, it was found that in the control group, the level of DC increased 2.5 times, lipid hydroperoxides 3.5 times and MDA 1.4 times, which indicates activation of this destructive process in gastric ulcer.

ELPVN contributed to a decrease in the processes of intoxication with peroxides, as evidenced by a decrease in MDA content – 1.3, DC – 2.1, lipid hydroperoxides – 2.3 times, significantly not differing from the indices of the intact group of animals, which indicates a significant decrease in intoxication peroxides.

With the LPO system, a directly interrelated oxidant-antioxidant balance, it was therefore advisable to study the state of the antioxidant system of erythrocytes under experimental pathology.

Analyzing the overall antioxidant activity of blood, under the influence of LEGSP, its increase was observed by 32.9% relative to the control pathology group.

All fat-soluble and water-soluble antioxidants neutralize free radicals either directly, or with the help of enzymes of CA, GR, HP, SOD. In the control pathology group, the most pronounced changes were revealed in relation to SOD and CA: the activity of SOD was significantly increased twice, and the activity of the CA decreased 1.85 times compared to the intact group of animals. The RH level decreased 3.1 times in comparison with the intact group, indicating a

significant decrease in the antioxidant potential in erythrocytes. The use of LEGSP in the experimental gastric ulcer was accompanied by a tendency to normalize the activity of all antioxidant enzymes studied. The level of SOD increased 1.3 times, CA – 1.6 times; GP – 1,1 times, GR – 1,7 times. The increase in the level of GH leads to the restoration of glutathione, the activity of which increased 2.8 times, which indicates its increased use to reduce the peroxide intoxication of the organism and update the activity of the glutathione antiperoxidase system.

Conclusions. On the model of chronic hydrocortisone gastric ulcer, the ability of emulsion of liposomes from polyphenols of grape seeds to reduce the activity of lipid peroxidation of red blood cells (decrease in malonic dialdehyde content, diene conjugates and hydroperoxide lipids) and increase the activity of enzymes antioxidant protection of red blood cells (increase in superoxide dismutase, catalase, glutathione reductase and reduced glutathione).

Prospects for further research. Determination of biomarkers of oxidative stress and antioxidant state in patients with peptic ulcer and study of the effectiveness of the use of plant antioxidants in complex treatment.

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