

THE POSSIBILITIES OF CORRECTION OF SOME BLOOD BIOCHEMICAL INDICATORS IN EXPERIMENTAL PULMONARY EMPHYSEMA

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Abstract

Pulmonary emphysema is a complex heterogeneous pathology. Regardless of the causes of its occurrence, it is characterized by a decrease in the elastic properties of the lung tissue, the destruction of the alveolar walls, their capillary network, and an increase in the air space of the lungs distal to the terminal bronchioles. Oxidative stress is considered one of the key mechanisms of the pathogenesis of pulmonary emphysema, therefore research on the use of cytoflavin, the components of which are natural metabolites of the body with antioxidant properties, is relevant in experimental pulmonary emphysema.

The aim of this study is to evaluate the effect of cytoflavin on the oxidant-antioxidant system of blood in experimental pulmonary emphysema.

Materials and methods. Experimental papain pulmonary emphysema in white rats was reproduced by a single intratracheal injection of 0,5 ml of papain solution (Merck KGaA, Germany) at a dose of 100 mg/kg body weight under light ether anesthesia. The study was conducted on four groups of animals. The 1st group — intact animals, the 2nd group — intact animals treated with cytoflavin, the 3rd — with experimental pulmonary emphysema, the 4th group — animals with pulmonary emphysema treated with cytoflavin. Cytoflavin succinate in a dose of 100 mg/kg (1 ml/kg) daily was administered to animals intraperitoneally for 21 days. The amount of malondialdehyde, catalase activity and ceruloplasmin content in the blood of the studied animals were determined.

Results. It was found that in pulmonary emphysema, the content of malondialdehyde in the blood of experimental animals was 18,63 % higher than in healthy animals. In animals with pulmonary emphysema, the activity of catalase and the content of ceruloplasmin in the blood were lower than in the group of intact animals by 29,2 % and 19,8 %, respectively. In animals with pulmonary emphysema, the use of cytoflavin led to a decrease of malondialdehyde concentration, and also contributed to the restoration of the catalase activity and the content of ceruloplasmin in the blood to the level of intact animals.

Conclusion. Cytoflavin led to the suppression of free radical oxidation, to an increase in antioxidant activity and a decrease in endogenous intoxication in experimental pulmonary emphysema.

Key words: pulmonary emphysema, oxidant and antioxidant systems, experiment.

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