

# OXIDANT AND ANTIOXIDANT SYSTEMS OF THE BLOOD IN EXPERIMENTAL PULMONARY EMPHYSEMA

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**Abstract.** Bronchial asthma (BA) is one of the most common diseases of the human respiratory organs and occupies one of the leading places both in the terms of the prevalence and the severity of manifestations. With a long duration of BA, concomitant smoking, the irreversible bronchial obstruction formation, some patients develop pulmonary emphysema. The pathogenesis of pulmonary emphysema is multifactorial and consists in the mechanisms of oxidative stress, imbalance of the protease/antiprotease system, activation of inflammatory cells and production of inflammatory mediators. Oxidative stress is one of the main processes in the formation of pulmonary emphysema, but its exact mechanisms, which could be targeted by pathogenetic therapy, have not yet been studied. The study of pulmonary emphysema pathogenesis in patients is often complicated due to the influence of a large number of random combinations of the various factors. One way to avoid such influence is experiment.

**The aim is** to study the nature of changes in the oxidant-antioxidant system of the blood in the experimental pulmonary emphysema.

**Methods.** Experimental studies were carried out on 24 mature, outbred white rats weighing 180-200 g, which were kept on a standard vivarium diet. To assess the intensity of lipid peroxidation in the animal blood, the content of its final product, malondialdehyde, was determined. The antioxidant system activity was assessed by the content of ceruloplasmin and catalase activity in the blood.

**Results.** The results of the conducted studies indicate a significant increase in the level of malondialdehyde in the blood in conditions of experimental pulmonary emphysema by 30 %. At the same time, a decrease in the content of ceruloplasmin in the blood by 20 % and catalase activity by 29 % was revealed.

**Conclusions.** In experimental pulmonary emphysema, enhanced generation of malondialdehyde leads to the development of oxidative stress and intoxication, disruption of the functions of the antioxidant and antiperoxide defense systems of the body, as evidenced by the significant decrease in the level of ceruloplasmin and catalase activity in the blood.

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