

# PECULIARITIES OF BLOOD BIOCHEMICAL DISORDERS IN EXPERIMENTAL PULMONARY EMPHYSEMA

**V. I. Korzhov, B. O. Osipenko, M. P. Budennaya, M. G. Palivoda**

## *Abstract*

Experimental studies are among the important and promising approaches in the studying of the pathogenesis of pulmonary emphysema (PE). They make it possible to trace and understand the sequence of metabolic disorders which occur in this condition.

The *aim* of the trial was to study the nature of biochemical changes in blood plasma during the course of experimental PE.

*Materials and methods.* The study was carried out on 36 sexually mature, outbred, white rats of both sexes, weighing 180-200 g, which were kept on a standard vivarium diet. Experimental papain PE in white rats was induced by a single intratracheal administration of 0.5 ml of papain solution (Merck KGaA, Germany) at a dose of 100 mg / kg body weight under light ether anesthesia. The rats were withdrawn from the experiment by decapitation under light ether anesthesia 10, 20, 30, 50 and 60 days after the onset of the disease.

Biochemical studies of blood plasma - the content of alanine aminotransferase (ALT), aspartate aminotransferase (AST), protein, urea, creatinine, total bilirubin, glucose were carried out using automatic biochemical analyzer Selectra Pro-M (Netherlands).

*Results.* It was found that 10 days after the onset of the disease, the levels of ALT and AST significantly decreased by 37%. The trend towards a decrease in ALT persisted after 20, 30 and 60 days; AST — after 20, 30, 50 and 60 days. It was found that the blood plasma protein significantly decreased 10 and 20 days after the onset of the disease by 33% and 38%, respectively. At the same time, the urea also decreased after 10 days by 36% and by 32% after 20 days. A similar trend of changes was found when studying the level of creatinine in blood plasma. After 10 and 20 days, creatinine decreased by 36% and 37%, respectively. As for total bilirubin, its blood plasma concentration increased by 68% after 10 days, and by 38% after 20 days. There were no changes in plasma glucose levels 10, 20, 30, 50 and 60 days after the onset of the disease.

*Conclusions.* Experimental PE is characterized by the most pronounced changes in blood plasma biochemical parameters 10 and 20 days after the onset of the disease, which is manifested by a decrease of aminotransferases — ALT and AST, a decrease in total protein, urea, creatinine, and an increase of total bilirubin.

**Key words:** experimental pulmonary emphysema, alanine aminotransferase, aspartate aminotransferase, protein, urea, creatinine, bilirubin, glucose.

**Ukr. Pulmonol. J. 2021; 2: 69–71.**

*Vitaly I. Korzhov*

*National institute of phthisiology and pulmonology  
named after F. G. Yanovsky NAMS of Ukraine*

*Laboratory of Microbiology and Biochemistry*

*Leading research associate doctor of medicine, professor*

*10, M. Amosova str., Kyiv, 03038, Ukraine*

*Tel.: +380506423139, korzhov@ifp.kiev.ua*