

**МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ  
БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ»**



## **МАТЕРІАЛИ**

**105-ї підсумкової науково-практичної конференції  
з міжнародною участю  
професорсько-викладацького персоналу  
БУКОВИНСЬКОГО ДЕРЖАВНОГО МЕДИЧНОГО УНІВЕРСИТЕТУ  
присвяченої 80-річчю БДМУ  
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Матеріали підсумкової 105-ї науково-практичної конференції з міжнародною участю професорсько-викладацького персоналу Буковинського державного медичного університету, присвяченої 80-річчю БДМУ (м. Чернівці, 05, 07, 12 лютого 2024 р.) – Чернівці: Медуніверситет, 2024. – 477 с. іл.

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У збірнику представлені матеріали 105-ї підсумкової науково-практичної конференції з міжнародною участю професорсько-викладацького персоналу Буковинського державного медичного університету, присвяченої 80-річчю БДМУ (м. Чернівці, 05, 07, 12 лютого 2024 р.) із стилістикою та орфографією у авторській редакції. Публікації присвячені актуальним проблемам фундаментальної, теоретичної та клінічної медицини.

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**Results and their discussion.** It was established that during the specified period, the unstable nature of the purchase amounts of DR drugs was observed, both in terms of value and in kind. Thus, in 2017, the state purchased DR drugs at the expense of the central budget in the amount of 15,176.05 UAH, and in the following year, 2018 – only 5,909.25 UAH. In natural indicators (conditional packages), in 2017, 27,145 packages of DR drugs were purchased, and in 2018 – 20,200 packages. Thus, the conditional cost of one package of DR in 2017 was 559.07 UAH, and in 2018 – 292.54 UAH. The decrease in the cost of one package of DR drugs by almost two times according to the data of 2018 should be evaluated as an important positive characteristic of the process that we studied in the dynamics of the years. In 2019 we observed a significant decrease in procurement data to 1,478.20 UAH or 2,388 conditional packages. The positive thing is that since 2020, the amount of DR drugs purchases has steadily increased. Thus, in 2020 drugs were purchased in the amount of 3,418.27 UAH, and in 2021 – 8,909.44 UAH. It is worth noting the fact that due to the increase in purchase amounts, the number of conditional packages that were purchased during 2020-21 significantly decreased. For example, in 2020 the state purchased 504 conditional packages of DR drugs, and in 2021 - 752 packages DR.

**Conclusions.** The analysis of state purchases of DR drugs demonstrated the unstable nature of their changes, which requires separate consideration in the context of the organization of effective pharmaceutical support for cancer patients under the conditions of a decrease in the purchasing power of the majority of the population in Ukraine.

**Melnychuk S.P.**

## **THE INFLUENCE OF CHRONIC HYPOBARIC HYPOXIA ON THE ACID-REGULATORY FUNCTION OF KIDNEYS OF RATS**

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**Introduction.** Kidney diseases remain a serious and urgent problem of the health care system, because there is not only a significant increase in the frequency of acute kidney pathology, but also chronic kidney diseases, in the pathogenesis of which hypoxia plays an important role. Oxygen homeostasis is an important mechanism in the vital activity of eukaryotes, its changes are the trigger for many pathological processes of various genesis. However, as a result of the action of the lack of oxygen factor to organisms already at the early stages of evolution, the mechanisms of adaptation to it are well developed and allow the organism not only to survive in conditions of acute and chronic lack of oxygen, but also increase its resistance to other types of stress, therefore it is important to study the mechanisms of damaging effects of hypoxia at all levels of the body, as well as mechanisms of adaptation to lack of oxygen. At the same time, the functional state of the kidneys under the influence of chronic hypoxia in the dynamics of its development remains practically unclear.

**The aim of the study.** Study of the influence of chronic hypobaric hypoxia in the dynamics of its development on the state of the acid-regulatory function of the kidneys of rats.

**Material and methods.** Experiments were conducted on white laboratory nonlinear male rats of reproductive age weighing 120-180 g. Hypobaric hypoxia was simulated in a modified flow-through pressure chamber imitating the ascent of rats to an altitude of 4000 m above sea level at a speed of 24 km/h. The animals were kept in the chamber for 2 hours daily from 1 to 4 weeks. The acid-regulatory function of rat kidneys was characterized by the excretion of titrated acids, ammonia, hydrogen ions and the pH indicator.

**Results.** Violation of the acid-regulatory function of the kidneys can occur due to changes in various mechanisms of regulation and, mainly, disorders of this function of the kidneys occur as a result of changes in the secretion of ions in the proximal tubules or the release of titrated acids and ammonia. During hypoxic stress, in the dynamics of its development (from the first to the fourth week), pronounced changes in the acid-regulatory function of the kidneys of rats were detected. According to the obtained data, the excretion of ammonia and titrated acids significantly decreased against the background of a decrease in the rate of glomerular filtration and diuresis with the

extension of the period of exposure to hypoxia. The tendency to decrease ammonia excretion was manifested already in the first week of the experiment, however, a reliable decrease of this indicator was observed in the second and third weeks of exposure to hypoxia (by a 1.3-fold), and this indicator was minimal in the fourth week (by a 1.7-fold less than the control) ( $p < 0.05$ ). Changes in the excretion of titrated acids were also unidirectional with the excretion of ammonia, and in all likelihood this indicator began to decrease from the second week of exposure to hypoxia (by a 1.4-fold), in the third week, the excretion of titrated acids increased slightly, but remained low compared to the control (by a 1.3-fold) and in the fourth week this indicator was minimal (by a 2.2-fold less compared to intact animals) ( $p < 0.05$ ). Excretion of hydrogen ions gradually decreased with prolonged exposure to hypoxia: already in the first week of the experiment, a tendency to its decrease was observed, but it did not acquire reliable values. In the second week of exposure to hypoxia, the excretion of hydrogen ions decreased by a 1.4-fold, in the third week by a 1.6-fold, and by a 2.2-fold in the fourth week ( $p < 0.05$ ). At the same time, significant changes in the increase in pH (toward alkalosis) were observed only in the fourth week of exposure to hypoxia.

**Conclusions.** Thus, the acid-regulatory function of the kidneys of rats, which is quite sensitive to any damage to the kidneys, under the influence of chronic hypobaric hypoxia underwent significant changes, which were most clearly manifested in the fourth week of the experiment – a reliable decrease in the excretion of ammonia and titrated acids, hydrogen ions and an increase in pH towards alkalosis.

**Muzyka N.Y.**

## **STUDY OF ANTIOXIDANT ACTIVITY OF ALTABOR SUBSTANCE IN VITRO**

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**Introduction.** The fundamental pathogenetic mechanism of cell dysfunction and cell death in various pathological conditions is damage to the outer cell membranes and membranes of subcellular organelles. In many cases, these disorders are based on hyperlipoperoxidation, which is considered to be one of the leading pathogenetic mechanisms of the formation of pathology of the liver Tannins, which are part of the altabor substance, belong to the BAS with known antioxidant properties determined by their chemical structure.

**The aim of the study.** To study the antioxidant properties of Altabor in various model systems, to determine the effect of Altabor on the process of abnormal lipoperoxidation of intact rat liver microsomes (antioxidant activity of Altabor was evaluated by the effect on the process of enzymatic lipid peroxidation of intact microsomes in the in vitro system), determination of the ID50 index - the concentration of the test substance that inhibits the process of peroxidative degradation of microsomal membranes by 50.0% and comparison of this index with that of altabore as a known phenolic antioxidant.

**Material and methods.** The model of  $Fe^{2+}$ ,ADP-induced NADPH-dependent lipid peroxidation in rat liver microsomes was used. The substance altan with proven antioxidant activity, which is analogous to altabor in origin and content of the predominant active substances - elagotannins, was chosen as a comparison drug in this series of experiments.

**Results.** During the experiment, it was determined that the concentration of altabor, which inhibits the process of microsomal lipoperoxidation by 50.0% (ID50), was 13.0  $\mu\text{g/ml}$ , and the reference sample was 10  $\mu\text{g/ml}$ . These data indicate the effect of altabor on  $Fe^{2+}$ ,ADP-induced NADPH-dependent ROS of intact microsomes at the level of the reference preparation.

Thus, in the model of  $Fe^{2+}$ ,ADP-induced NADPH-dependent LPO in rat liver microsomes, Altabor showed a distinct antioxidant activity, the severity of which is not inferior to altan, a drug based on alder elagotannins with distinct antioxidant properties that are clearly detected in the in vivo experiment at a dose of 1 mg/kg.

The antioxidant potential of Altabor was also evaluated under conditions of reproduction of hyperactivation of lipid peroxidation in yolk lipoproteins (YLP), which are model analogues of serum low-density lipoproteins (LDL) prone to peroxidative modification. Tocopherol (vitamin E)