

togenes, bioregulation.

Appliance of human and animal organism to environmental influences of temperature is one of the most meaningful problem in science and practice. It is a well-known fact that boost of human adaptation to temperature factors of influence on organism is possible with pharmacological means that are often chemical substances; they are not deprived of side effects and bear ecological burden on organism that complicates their widespread use.

One of the newest prospective directions in regulation of metabolic processes in influence of low and high temperatures is miscellaneous substances with use of adaptogenic products of animal and plant-packed origin scientifically stipulated use in human nutrition. Whereby the most important role can be given to pants of dappled deer and digidrokverzitin.

System of test evaluation of use of these products as bioregulators of individual adaptation of organism in conditions of longtime freeze and heat on experimental model (lab animals) was worked out and used. **Materials and methods** Research on exclusion of toxicity of foods from pants were conducted in accordance with generally accepted methodical approaches (I.V. Sanozkii and coauthors 1979). For study of antioxidant features of foods from pants and digidrokverzitin, they selected biochemical methods letting evaluate the participation of researched foods in the processes of peroxidized lipid oxidation (POL). Physical working capacity was identified according to the swimming time, working capacity of experimental rats on tertiary. The study of adaptive reactions of animals towards cold were conducted with the use of model of long cold influence with the use of climatic cell of the firm "Fentron" – GDR. The study of adaptive reactions of animals towards heat were conducted with the use of model of long heat influence with the use of climatic cell of the firm "Binder GmbH" (Germany). The researched elements of pants and digidrokverzitin are safe according to the criteria of common-toxic influence. They respond to the demands of safety according to ecological and hygienic concept of human nutrition. The following foods from pants and digidrokverzitin are increasing the stability of animals towards fatigue in conditions of adaptation to coldness and heat. They are effective as antioxidant means for prevention of pathogenic influence of low and high temperatures in the periods of long freeze and heat. That is adaptogenic elements from pants and digidrokverzitin are recommended for use in human nutrition for correction of cold and heat stress on organism.

Complex research identified and proved that scrutinized natural adaptogenes contain complex of amino acids, as well as flavonoid combinations, whereby they are safe according to criteria of ecological and hygienic concept of human nutrition. The following adaptogenes in the experiments of *In vivo* possess huge antioxidant activity as well as dosages 150-300 milligram on kilogram during daily consumption increasingly heighten resistance of lab animals towards fatigue in conditions of temperature stress. Pants of dappled deer and digidrokverzitin normalize morphofunctional changes in trachea, liver and myocard of lab animals of heat and cold influence on organism. That is high effectiveness of usage of mixture of nature adaptogenic products of pants and digidrokverzitin for prophylaxis of pathogenic influence of heat and cold on organism is identified.

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MINERAL BONE DENSITY IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Abstract Chronic obstructive pulmonary disease (COPD) is characterized by a progressive course with an unfavorable prognosis. To date, COPD affects about 10% of the population at the age of 40 (11.8% for men and 8.5% for women). In recent years, much attention has been paid to the study of systemic effects in COPD and the manifestation of concomitant pathology [3], among which the violation of bone mineral density (BMD) is of particular importance. In patients with COPD, the IPC state was studied by many authors. In particular, the study by J. Praet and co-authors showed that BMD in patients with chronic bronchitis is reduced. The high incidence of osteopenia (OPN) and osteoporosis (OP) in COPD patients has been proven to reach 60%, and as the disease progresses, OP is detected more often [4]. The logical result of the development of OP are fractures. The emergence of fractures adversely affects the quality of life of any patient, but for COPD patients, fractures are associated with impairment of pulmonary function and a significant weighting of the underlying disease. OP spine with the development of vertebral fractures increases the risk of exacerbations of COPD.

Key words: osteoporosis, osteopenia, bone mineral density.

Goal To study the state of bone mineral density in men with COPD of different risk categories without considering the degree of severity.

Materials and methods A comprehensive clinical evaluation was performed to assess the anthropometric data (height, body weight, BMI), smoker index in 50 patients with COPD aged 45 to 65 years in the ABCD category (GOLD, 2017), without regard to the severity level, which were divided into three equivalent groups. The duration of the disease was determined retrospectively. Indicators of bone mineral density (BMD) were determined by the method of dual X-ray absorptiometry (DRA), in the spine area (T-test and Z-test). T-test - the number of standard deviations above or below the average peak bone mass. Z-test - the number of standard deviations above or below the average for a given age [2]. DRA

was performed on a densitometer «LUNAR 8743» from GE Medical Systems Lunar (USA). Diagnosis of OP and osteopenia (ARF) was conducted using WHO diagnostic criteria (1994), based on the quantitative evaluation of BMD, as the determining factor of bone strength. The diagnosis of OP in men 50 years and older was established in the presence of a T-test <-2.5, ARF at T-criteria from -1.0 to -2.5, the norm is the value of the T-test from -1 to +1. For men younger than 50 years, the use of the Z-criterion is necessary, since the diagnosis of OP in this group can not be established solely on the basis of the IPC data. The Z-criterion above -2.0 was regarded as expected indicators for this age group, and the Z-criterion -2.0 or less indicates the presence of bone loss [2]. The statistical analysis was carried out using the STATISTICA 6.1 software package. Differences were considered significant at $p < 0.05$.

Results and discussion The study found that in the general group of men with COPD, low bone mass was detected in 64% of cases. OPN was diagnosed in 15 (30%) patients, OP in 17 (34%) patients. When comparing groups of patients with COPD isolated according to the categorization of the disease, a statistically significant increase in the proportion of patients with OP was established. Thus, in patients with category B, OC was diagnosed in 15.8% of cases, category C - in 30.8% of cases, category D - in 55.6% of cases. At the same time, the incidence of OP in patients with category D was significantly higher than in patients in category B ($\chi^2 = 4.787$ $p = 0.029$) and there was a tendency for an increase in the frequency of OI in patients with category C, compared with patients in category B.

Conclusion Thus, the incidence of OP and ARF in men COPD aged 45 to 65 years is high. As the category of COPD increases, there is an increase in the proportion of patients with OP, which indicates the need for monitoring the IPC for early detection of an IPC violation. This will allow individualize the treatment of this category of patients and thereby prevent the destruction of bone tissue, improve the prognosis and quality of life of patients.

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EFFECT OF PHYTOPREPARATION ON THE INTENSITY OF PEROXIDATION PROCESSES INDUCED BY THE INTRODUCTION OF CARBON TETRACHLORIDE

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Summary. Antioxidant properties of liquorice syrup have been studied on the model of toxic

hepatitis induced by carbon tetrachloride damage. The introduction of the liquorice syrup to rats contributes to the reliable decrease in the blood and in the liver of lipid hydroperoxides by 6-23%, of diene conjugates – by 9-24%, and of malonic dialdehyde by 25-30% in comparison with the rats of the control group. The application of the phytopreparation in the conditions of introduction of carbon tetrachloride of the organism of animals under experiment leads to the stabilization of the processes of peroxidation against the increase of antioxidant system activity.

Key words: liquorice syrup, carbon tetrachloride, biological membranes lipid peroxidation, products of peroxidation (lipid hydroperoxides, diene conjugates, malonic dialdehyde), antioxidant system.

Currently there is an active search of funds, increasing the stability of liver pathological effects, reinforcing its neutralizing function, promoting its functional recovery after various injuries, including poisoning by industrial poisons. Therefore, the study of opportunities to reduce toxic liver damage by carbon tetrachloride introduction of synthetic and natural antioxidants is of interest.

Materials and methods. In experimental conditions the possibility to correct free radical lipid oxidation of rats' organism membranes was studied with the introduction of the liquorice syrup. The animals were divided into 3 groups and each of them had 10 rats: the group with intact animals which were held in standard conditions of vivarium; the control group in which rats were given carbon tetrachloride during 3 days daily; the experimental group in which before the introduction of carbon tetrachloride animals had a daily oral intake of the liquorice syrup a dose of 5 ml/kg. The intensity of peroxidation processes was assessed by examining the contents of hydroperoxides lipids, diene conjugates, malonic dialdehyde and the main components of the antioxidant system, (ceruloplasmin, vitamin E) in the in the blood and in the liver of animals. The results obtained were subjected to statistical analysis with calculation of parametric criteria Student.

It was found out that in the blood and in the liver of experimental animals a daily the introduction of carbon tetrachloride during 3 days contributes to the increase of lipid hydroperoxides level (by 24 – 43%), of diene conjugate (by 19 – 47%), and of malonic dialdehyde (by 61 – 81%) against the decrease of antioxidant system activity in the blood of intact animals. The introduction of the liquorice syrup to rats contributes to the reliable decrease in the blood and in the liver of lipid hydroperoxides by 6-23%, of diene conjugates – by 9-24%, and of malonic dialdehyde by 25-30% in comparison with the rats of the control group. While analyzing the effect of the phytopreparation on the activity of the components of antioxidant system it was shown that the level of ceruloplasmin in the blood and in the liver of animals was reliably higher by 10-47%, of vitamin E by 13-42% in comparison with the same parameters of the rats of the control group.

So, the application of the liquorice syrup in the conditions of introduction of carbon tetrachloride of the organism of animals under experiment leads to the stabilization of the processes of peroxidation against the increase of antioxidant system activity.

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