

Thus, a significant increase in the incidence rate of digestive system pathology corresponding to older age was found, which can be attributed to the influence of preschool and school environment factors. This demonstrates the multifactorial nature of the pathology.

Considering the structure of the primary disability of children, digestive system diseases amounted to 1.1% in 2014 (11th place among the causes of primary disability among children), and comprised 1.7% in 2019 (10th place).

Background indicators of digestive system pathology incidence during the period from 2008 to 2017 in the administrative territories of the Vitebsk region were in the range between 5.6 and 66.3. The average regional level of the background indicator is 20.8. The highest rates were recorded in the Tolochin district – 66.3, Dokshitsy district – 49.5, Verkhnedvinsk district – 56.5; the lowest rates in the Senno district – 5.6, Liozno district – 6.5.

Regarding the total disease incidence among the adults (over 18 y.o.) in the republic, in 2014 digestive system diseases were diagnosed in 83.1 per 1000 adults (6th place in the overall morbidity pattern), and 82.1 per 1000 adults in 2018 (also 6th place).

Conclusion. Thus, given the prevalence of digestive system diseases, due attention to this problem is required. Considering the fact that many chronic diseases begin to occur in childhood, the importance of timely detection, treatment and prevention of diseases from childhood becomes clear. The issue of preventing this type of disease is among of the most significant ones. And correctly provided care in the initial stages is one of the keys to preventing from the transition of an acute disease into a chronic one. A variety of factors affecting the occurrence and course of diseases of the digestive system requires a diversified approach to solving the problem. Improving the quality of nutrition, educational work in relation to food hygiene, creating a healthy lifestyle, improving living standards, reducing stress factors, amelioration of the environmental situation are issues that require constant monitoring and improvement.

USING PULMONARY FRESHWATER MOLLUSKS IN SCIENTIFIC RESEARCH WORK OF SCHOOLCHILDREN

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There are currently a large number of studies on the effects of environmental factors on mollusks and the focus is on assessing survival, growth and behavioral responses [2, 4]. However, biochemical studies, related to metabolic changes in these test organisms are not enough.

The purpose of this study is to comparative analysis of metabolic parameters in the tissues of freshwater pulmonary mollusks, which differ in the mechanism of oxygen transport, under the influence of environmental factors.

Material and methods. Experiments to assess the influence of anthropogenic environmental factors on natural reservoirs were conducted out on 378 pulmonary freshwater mollusks of two species: 189 individuals of *Lymnaea stagnalis* and 189 individuals of *Planorbarius corneus*. Mollusks were collected in autumn (September-October) and spring (April-May) 2017-2018 in the reservoirs of four districts of Vitebsk region and three districts of Gomel region. Each research subgroup contained 9 mollusks.

Determination of uric acid in hemolymph was performed by standard biochemical reactions using the reagent kits NTPK "Analysis X" [3]. For quantitative determination of lipid peroxidation products (TBA-positive substances (TBA-PV), a test with 2-thiobarbituric acid was used [5]. Catalase activity (1.11.1.6) was determined by reaction with ammonium molybdate [1].

Statistical processing was performed using Student's t-test.

Findings and their discussion. It was found that seasonal changes in environmental conditions affect the antioxidant system of pulmonary freshwater mollusks, lead to activation of lipid peroxidation processes in the spring and autumn periods of the year, which is proved by an increase in the content of TBK-PV in all experimental groups. The content of TBA-positive substances in hepatopancreas reflects the general condition of mollusks, as it shows the level of free radical oxidation through the final product-malondialdehyde. It was found that the content of TBK-PV in the hepatopancreas *P. corneus* and *L. stagnalis* from the Gomel region is higher than in the Vitebsk region on average 2-2.5 times in the spring period of collection. Compared with the spring collection period in the *Planorbarius corneus*, the content of TBK-PV in the Vitebsk, Shumilin and Mozyr regions was reduced by 1.2 times in the autumn period. Compared with the spring collection period in the *Lymnaea stagnalis*, the content of TBK-PV in the Vitebsk and Shumilin regions was reduced by 1.3 times in the autumn period. There were no statistically significant differences in the content of reduced glutathione in mollusks depending on the type of oxygen transport in all the studied areas. The content of TBA-PV in *P. corneus* reaches the highest levels in the Rogachevsky district of the Gomel region in the spring, in the Rogachevsky district of the Gomel region in the spring, the minimum values are recorded in the Dubrovensky district of the Vitebsk region. Since the temperature indices at the collection sites of mollusks were approximately the same, it can be concluded that such a difference in the content of TBA-PV indicates the peculiarities of the anthropogenic load and radiation background in the reservoirs of the Gomel region.

When studying the uric acid content in the hemolymph of the *P. corneus* and *L. stagnalis*, a pronounced increase a pronounced increase of uric acid from the autumn to the spring period was found. An increase in the concentration of uric

acid in hemolymph may also indicate the activation of the catabolism of nucleic acids and nucleotides due to the influence of adverse environmental conditions in the spring season. Compared with the autumn period, the uric acid content in the hemolymph of the *P. corneus* increased 1.5 times in the Vitebsk region, in Dubrovensky - 1.8 times, in Ushachsky - 1.4 times, in Shumilinsky - 1.9 times, in Rogachevsky - 1.2 times in the spring period. Compared with the autumn period, the uric acid content in the hemolymph of the *L. stagnalis* showed statistically significant differences in the Vitebsk region - 2.9 times, in Dubrovensky - 2.2 times, in Ushachsky - 1.4 times, in Shumilinsky - 2, 1 time, in Rogachevsky - 1.2 times in the spring period. In Gomel and Mozyr districts, the indicator varies insignificantly, therefore it does not have statistical significance. It can be assumed that the effect of seasonal and annual biorhythms is manifested through a change in the content of uric acid in the hemolymph of *L. stagnalis* and *P. corneus*. In the study of catalase activity in the hepatopancreas of *L. stagnalis* and *P. corneus*, a pronounced increase in catalase activity from the autumn to the spring harvest period was found. Compared with the autumn period, the activity of catalase in the hepatopancreas of the *P. corneus* increased 1.2 times in the Vitebsk region, 1.3 times in Rogachev district in the spring period. Compared with the autumn period, the activity of catalase in the hepatopancreas of the *L. stagnalis* increased 2.5 times in the Mozyr district, 1.7 times in Rogachev district in the spring period. No statistically significant differences between the two species of mollusks were recorded in the remaining study areas. At the interspecific level, catalase activity in *Planorbarius corneus* is lower than in *Lymnaea stagnalis*. It can be assumed that the objective effect of seasonal and annual biorhythms is manifested through a change in the uric acid content and catalase activity in the hemolymph of *L. stagnalis* and *P. corneus*.

Conclusion. The obtained results confirm the possibility the use of marker indicators of the metabolism of pulmonary freshwater mollusks, differing in the type of oxygen transport, to assess the effects of adverse factors on natural ecosystems.

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