

The soil bulk density in the 0–30 cm layer is 1,305 g/cm³, in the lower layers there is an increase in the bulk density up to 1,40–1,6 g/cm³.

Studies have shown the effectiveness of this method to increase the yield of vegetables. The yield in areas with drip irrigation at an irrigation rate of 80% of the NV was: onion – 44,67 t/ha, radish – 36,56 t/ha, lettuce – 7,96 t/ha.

Conclusion. Despite the fact that drip irrigation is inferior to sprinkling in comparative quantitative indicators, with its local application on highly profitable vegetable crops, the greatest production and economic results are achieved with full payback in the first year of operation.

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THE ACTIVITY OF CATALASE IN THE TISSUES OF HYDROBIONTS OF THE VITEBSK REGION

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Keywords: catalase activity, pulmonary mollusks, coil horn, hepatopancreas, Vitebsk region.

At the present time for assessing the status of ecosystems using the methods of biological indication. While great attention is paid to the use for these purposes of live objects. As such objects, using freshwater mussels. Working with them is less time consuming and the most expedient in economic terms. The study of biochemical parameters of these organisms give us a theoretical basis for the qualitative assessment of the system under investigation [1]. Widely used one of the most common types of pulmonary mollusks – coil horn (*Planorbarius corneus*).

The aim of this work was to determine activity of catalase in hepatopancreas *Planorbarius corneus* depending on season and habitat.

Material and methods. The experiments were conducted on 162 individuals of *Planorbarius corneus*. Molluscs were gathered in the spring (april-may), summer (july) and autumn (september-october) from reservoirs in six districts of the Vitebsk region (table 1). The water bodies of selected districts were at a distance of no more than 30-40 km from the regional center. In each study subgroup was kept for 9 clams.

Table 1 – sampling sites of water, soil and shellfish.

| District shellfish molluscs | Gathering place | Pond |
|-----------------------------|----------------------|-----------------|
| Vitebsk district | Vitebsk | the river Vitba |
| Dubrovensky district | the village Lyady | lake Mordovia |
| Beshenkovichi district | the village Sokorove | Small lake |
| Ushachi district | the village Dubrovka | lake Dubrovskoe |
| Shumilino district | a/g Tower | lake Budapest |
| Senno district | Senno | lake Sennenskoe |

The catalase activity of hepatopancreas were determined by spectrophotometric method. The hepatopancreas homogenate was centrifuged for 20 minutes at 3000 rpm (4^oC) and diluted to a dilution of 1:150 (40 µl of homogenate+160 µl 0,025 Tris-HCl buffer), to 0.2 ml homogenate were added to 2.0 ml of 0.03% H₂O₂. Incubated 10 min at room temperature. Was added 1.0 ml of molybdate ammonium. Measured optical density at a wavelength of 410 nm against distilled water. Control sample contained everything except the homogenate, which was used instead of 0.2 ml of distilled water [2]. Mathematical processing of obtained results was carried out by methods of parametric and nonparametric statistics using statistical software package Microsoft Excel 2003, STATISTICA 6.0.

Findings and their discussion. After the study *Planorbarius corneus* collected at different times of the year shellfish, indicators are aggregated and listed in table 2.

Table 2 – Activity of catalase activity (µmol/g) in hepatopancreas tissue of pulmonary mollusks of the genus *Planorbarius corneus* (M±m)

| District shellfish district | The season of the year | | |
|-----------------------------|-------------------------|--------------|-----------------------|
| | Spring (n=9) | Summer (n=9) | Autumn (n=9) |
| Vitebsk district | 82,4±1,4 ^{1,2} | 31,2±1,2 | 52,3±1,3 ¹ |
| Dubrovensky district | 64,5±2,1 ^{1,2} | 27,4±1,4 | 48,6±1,7 ¹ |
| Beshenkovichi district | 70,9±2,3 ^{1,2} | 29,5±1,3 | 57,3±2,0 ¹ |
| Ushachi district | 78,7±7,6 ^{1,2} | 29,7±1,8 | 49,8±2,4 ¹ |
| Shumilino district | 67,4±2,8 ^{1,2} | 26,7±3,8 | 47,8±1,7 ¹ |
| Senno district | 69,5±1,6 ^{1,2} | 28,7±1,2 | 48,8±1,4 ¹ |

Note – ¹P<0,05 in comparison with summer period, shellfish gathering; ²P<0,05 in comparison with the autumn period, shellfish gathering

In comparison with the summer period of collection of the shellfish increased activity of catalase in the spring 2,64% Vitebsk district, 2,35 times the dubrovensky district, 2,41 times the Beshenkovichi district, 2,65 times Ushachi district, 2,52 times Shumilinsky district, 2,42 times Senno district. In comparison with the summer period of collection of the shellfish increased activity of catalase in the autumn 1,68% Vitebsk district, 1,77 times the dubrovensky district, of 1.94 times the Beshenkovichi district, 1,68 times Ushachi district, 1,79 times Shumilinsky district, 1.7 times Senno district. Compared with the autumn period of activity of catalase coil horn with a spring period

of statistically significant differences obtained in the Vitebsk region 1.58 times, Dubrovno district of 1,33 times, Beshenkovichi district 1.24 Shumilinskiy area of 1,41 times in Ushachi 1,58 times, Sunanskom district 1,42 times (table 2).

Conclusion. The study identified a pattern. Namely: catalase activity prevails in the cold season. Catalase is an enzyme that destroys free radicals of the peroxide of hydrogen produced during the different oxidation processes. Therefore, in the cold season the clams are experiencing oxidative stress, in which stands out an excessive amount of hydrogen peroxide, the neutralization of which occur due to the increase of catalase activity.

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ENVIRONMENTAL ACTIVITIES AND STUDENT VOLUNTEERSHIP

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Volunteering is an important part of modern society. It helps to reveal the socially significant qualities of the individual. Volunteering is of particular relevance in our time. Volunteer detachments, organizations and movements are being created in our country. Volunteering includes various areas: social, sports, medical, environmental and others. Student youth play an important role in the development of volunteering; volunteer activities are being developed in many educational institutions and volunteer teams of various directions have been created. On the basis of the Faculty of Chemical, Biological and Geographical Sciences of VSU named after P.M. Masherov, the Ecological Patrol volunteer detachment operates, of which I have been a member since 2020 [1, p. 39]. The main direction of the work of the detachment is environmental volunteering, participation in environmental activities and involving the general population in it.

The purpose of the work is to study the main directions of environmental protection activities of the student volunteer group "Ecological Patrol".

Material and methods. The work uses analytical, comparative and descriptive research methods. The analysis of these reports and published materials of the work of the Ecological Patrol volunteer detachment over the past five years was carried out [1, 2]. The experience of personal participation in the work of a volunteer team is systematized and described. The main directions and forms of work in the field of nature protection are determined.

Findings and their discussion. Student brigade "Environmental Patrol" in the period from 2017 to 2022. took part in a number of environmental events: annual environmental campaigns; environmental campaigns for cleaning and improvement of