

**Results and their discussion.** Data's final processing was carried out using the analytical tools of the MapInfo Professional platform. We also used the possibility of GIS to connect more familiar software products (MS Excel), which differ in their availability and ease of use for constructing graphs, charts, and pivot tables.

The analysis of Liozno district helps us to make the following conclusions:

1. about 95,88% of the land are agricultural purposes, about 1,17% are the affected areas are the lands of settlements, 2,18% are the mini-municipal waste and only 0,77% are land along roads and roadside belts;

2. 67,63% of colonies dominate the occupied territory, 14,4% of colonies progress, 16,52% have some degree of depression, the remaining 1,44% are stable;

3. about 25% of cases invasive plants are destroyed by mowing, about 1% by herbicide and plowing, and the struggle with other colonies is not conducted;

4. the main recommendations for control in 77,41% of cases are based on regular cropping and plowing in combination with the use of herbicides, also in 19,35% – it is possible to use the technology of crop rotation and only 3,22% – mowing;

5. colonies of *Heracleum sosnowskyi* can expand their space for 15–20% in near future if the spread preserve as at this time

The obtained data of the Liozno district were transferred to the Vitebsk Regional Committee for Nature and Natural Resources Protection, the Institute of Experimental Botany named after V.F. Kuprevich National Academy of Sciences of Belarus"; included in the database of the Republic of Belarus' ZIS and make a basis for the development of planned measures to combat invasive species in the areas of the Vitebsk region.

**Conclusion.** The creation of customs thematic GIS is a progressive method for conducting research, which allows solving many practical problems without attracting large investment resources, and optimizes labor costs.

## THE ACTIVITY OF CATALASE IN HEPATOPANCREAS

### *Planorbarius corneus*

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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 324 pulmonary freshwater molluscs, divided into two groups: 162 individuals of *Lymnaea stagnalis* and 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 molluscs.

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
Beshkovichi 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<sup>0</sup>C) and diluted to a dilution of 1:150 (40 µl of homogenate+160 mkl 0,025 Tris-HCl buffer), to 0.2 ml homogenate were added to 2.0 ml of 0.03% H<sub>2</sub>O<sub>2</sub>. 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.

**Results 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* ( $M \pm m$ )

District shellfish district	The season of the year		
	Spring (n=9)	Summer (n=9)	Autumn (n=9)
Vitebsk district	82,4±1,4 <sup>1,2</sup>	31,2±1,2	52,3±1,3 <sup>1</sup>
Dubrovensky district	64,5±2,1 <sup>1,2</sup>	27,4±1,4	48,6±1,7 <sup>1</sup>

Beshenkovichi district	70,9±2,3 <sup>1,2</sup>	29,5±1,3	57,3±2,0 <sup>1</sup>
Ushachi district	78,7±7,6 <sup>1,2</sup>	29,7±1,8	49,8±2,4 <sup>1</sup>
Shumilino district	67,4±2,8 <sup>1,2</sup>	26,7±3,8	47,8±1,7 <sup>1</sup>
Senno district	69,5±1,6 <sup>1,2</sup>	28,7±1,2	48,8±1,4 <sup>1</sup>

Note – <sup>1</sup>P<0,05 in comparison with summer period, molluscs district; <sup>2</sup>P<0,05 in comparison with the autumn period, molluscs district

In comparison with the summer period of collection of the molluscs 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 molluscs 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 district 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 molluscs 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.

Reference list:

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**QUANTITATIVE DETERMINATION OF THE FLAVONOID AMOUNT IN LEAVES OF *Taraxacum officinale* DEPENDING ON CONDITIONS OF DISEASE**

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Currently, for the treatment of various diseases, biologically active substances of vegetable origin, which have a lesser side effect than synthetic preparations and are similar in structure and action to the natural components of the human body, acquire great importance. Dandelion officinalis