

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:

1. Shorets, M. A. evaluation of the degree of anthropogenic loading on soils of Vitebsk for the main diagnostic indicators / M. A. Shorets, D. A. Orlov, O. M. Balaeva-Tihomirova // Spring. Vit.state. University. – 2017. – № 2 (95). – P. 62–69.
2. Balaeva-Tikhomirova, O. M. Hormonal and metabolic interrelationships in the development of insulin resistance syndrome: monograph / O. M. Balaeva-Tikhomirov. – Vitebsk: VSU named after P. M. Masherov, 2013. – 177 c.

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

**K. Shenderova**

VSU named after P.M. Masherov, Vitebsk, Belarus

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

(*Taraxacum Officinale*) has long been used in folk medicine. In the literature, its wound-healing, choleric, antipyretic and antispasmodic properties are noted [1, 2, 3]. To date, the state pharmacopoeia of the Republic of Belarus describes only the roots of dandelion drug. But the above-ground part of this plant is also widely used abroad [1, 2]. It is known that the leaves of dandelion drug contain a lot of biologically active substances, for example, flavonoids, phenolic compounds, pigments [3, 4]. But information about the study of the chemical composition of dandelion leaves of medicinal plants growing on the territory of the Republic of Belarus is limited. *Taraxacum Officinale* is widely distributed and has a high growth rate of the aerial part. Consequently, this raw material is cheap and affordable. Therefore, the study of biologically active substances obtained from the leaves of a given plant is an important and urgent problem [4, 5].

Goal – to determine the quantitative content of the amount of flavonoids in dandelion leaves collected in a mixed forest and in a meadow near the Western Dvina River.

**Material and methods.** The material of the study is the leaves of the dandelion, collected in the spring of 2017 in the village of Ulanovichi, Vitebsk region. The raw material was harvested on two sites: a mixed forest (in the shade) and a meadow near the Western Dvina River (a well-lit section).

**Results and their discussion.** Sites with different lighting conditions are not chosen by chance. Sunlight is one of the factors influencing the accumulation of flavonoids in leaves [2].

The quantitative determination of the sum of flavonoids was carried out according to the following procedure. To 0.5 g of the feed was added 10 ml of 96% ethanol, left to stand for 24 hours, filtered through a paper filter. The extract was poured, the material was poured into 10 ml of 70% ethanol, placed on a water bath for 30 minutes. The extracts were combined, adjusted to 70 ml with ethanol to 10 ml. To 0.1 ml of recovery, 5 ml of a 0.05 M solution of aluminum chloride in ethanol was added, left for 30 minutes. The optical density of the extracted extracts was measured at a wavelength of 410 nm. As a standard, a 0.05 M solution of aluminum chloride in ethanol was used [5, 6].

Further, according to the formula, the content of the sum of flavonoids in percent (in terms of quercetin glycosides) was calculated [6]:

$$X = (E \cdot V_1 \cdot V_2 \cdot 100) / (V_3 \cdot m \cdot (100 - W) \cdot \epsilon),$$

where X – content of sum of flavonoids, %; E – is the optical density of the test solution;  $\epsilon$  – is the specific absorption index of quercetin glycosides in a complex with aluminum chloride in ethanol (at a wavelength of 410 nm), equal to 330;  $V_1$  – is the volume of the extract, ml;  $V_2$  – volume of the solution for spectrophotometry, ml;  $V_3$  – is the volume of the extract taken for determination, ml; M – is the mass of the raw material, g; W – is the loss in mass when the raw material is dried, %.

Among the various compounds that determine the therapeutic effect of plants, flavonoids occupy a significant place. These natural compounds have many biologically active properties – antioxidant, antimicrobial, vasoconstrictive, cardiogenic, hypotensive, antiulcer, wound-healing, antipyretic and astringent actions. In this case, flavonoids are not toxic to humans in any way of administration. One of the valuable properties of flavonoids is their positive effect on liver function: they strengthen bile secretion, improve its detoxifying ability in relation to substances such as barbiturates, arsenic.

The results of quantitative determination of the amount of flavonoids in dandelion leaves are shown in the table.

Table – Results of quantitative determination of the amount of flavonoids in the leaves of *Taraxacum officinale*

Place of collection	X %
Mixed forest	0,64±0,09*
The bank of river Western Dvina	2,49±0,25*

The content of total flavonoids in the leaves of dandelion, collected in the mixed forest, is 0.64±0,09%. The content of total flavonoids in the leaves of dandelion, collected on the banks of the river Western Dvina is a 2.49±0,25%.

As can be seen from the table, the content of the amount of flavonoids is significantly higher 3.89 times in the leaves of a dandelion collected on the river bank.

This is due to the different lighting mode. Sunlight is one of the factors that influence the accumulation of flavonoids in the leaves. The plants are in a well lit area, accumulate a large number of flavonoids. For plants located in the shade, these figures are low.

Thus, the total content of phenolic compounds allows to detect connection with a specific ecological environment, the impact of which is determined by the nature moisture, and light.

The quantitative content of total flavonoids in the leaves of dandelion, collected in the mixed forest and in a meadow near the river Western Dvina. Raw materials collected in well-lit areas provide 3.89 times more flavonoids than raw materials collected in the shade.

Analysis of literature data indicates that the flavonoids contained in the leaves of dandelion drug promote wound healing and erosion. Extracts obtained from dandelion leaves can be applied externally (in dentistry, dermatology, otorhinolaryngology) and inward (treatment of diseases of the gastrointestinal tract).

Extracts from such affordable and inexpensive raw materials can be used in the manufacture of cosmetics (toothpastes, lotions for problem skin

care). Spasmolytic and choleric effect of flavonoids of this plant can be used in the treatment of diseases of the liver and gall bladder.

**Conclusion.** As shown in this work, the harvesting of medicinal raw materials from the leaves of the dandelion, it is advisable to collect plants in well-lit areas, as they the total content of flavonoids is higher.

Reference list:

1. Kurkin, V.A. Actual aspects of the creation of import-substituting medicinal herbal preparations / V.A. Kurkin, I.K. Petrukhin // *Fundamental research*, 2014. – № 11. – P. 366–371.
2. Kurkin, V.A. Pharmacognosy: A textbook for students of pharmacists. universities. – Samara: OOO “Etching”, SEI HPE “SamGMU”, 2007. – 1239 p.
3. Evstafiev, S.N. Biologically active substances of dandelion medicinal / S.N. Evstafiev, N.P. Tiguntseva // *Izvestiya Vuzov Applied Chemistry and Biotechnology*, 2014. – № 1(6). – P. 18–29.
4. Tiguntseva, N.P. Biologically active substances of *Taraxacum officinale* dandelion / N.P. Tiguntseva, R.A. Vorobyeva, S.N. Evstafiev // *Prospects for the development of technology for processing hydrocarbon, plant and meral resources: materials scientific-practical conference. with intern. participation.* – Irkutsk, 2013. – P. 183–185.
5. Kurkin, V.A. Fundamentals of phytotherapy: Textbook. Samara: OOO “Etching”, SEI HPE “SamGMU Roszdrav”, 2009. – 963 p.
6. Tolkacheva, T.A. Protective reactions of plant objects under stress under stress and methods of their evaluation / Tolkacheva TA, Morozova IM, Lyakhovich GV // *Modern problems of biochemistry. Methods of Research: Textbook. allowance / E.B. Barkovsky [and others]; Ed. prof. A.A. Chirkina.* – Minsk: Higher Education.school, 2013. – P. 438–469 pp.

## ASSESSMENT OF THE NATURAL POTENTIAL OF THE PSKOV REGION FOR THE DEVELOPMENT OF A NETWORK OF PROTECTED AREAS

**I. Slinchak**

Pskov State University, Pskov, Russia

The solution of problems related to the optimization of nature management is now extremely important for any region striving to preserve and develop its rich natural and cultural heritage. Unfortunately, on the whole, the conservative system of protection of natural areas has not justified itself. The existing specially protected natural areas have never become organic parts of the Russian economy and the culture of Russian society.

The purpose of this work is to assess the natural potential of the Pskov region of the Russian Federation for optimization and development of a network of protected natural areas.

**Material and methods.** The main objectives of the work involves the assessment of existing in the region of protected areas and identified s sites