

THE CONTENT OF SUBSTANCES OF SECONDARY ORIGIN IN HORSERADISH LEAVES OF VITEBSK REGION

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Plants are autotrophic organisms capable of accumulating the solar energy and due to this the synthesis of organic substances. The resulting substances are used for the plastic and energy needs of the plant organism, ensuring its growth and development. Plants serve as a nutrient substrate for herbivores, and the substances of secondary origin. Substances of secondary origin produced by them have a stimulating effect on the organs and systems of animals. Functional substances produced in plant cells regulate the processes of germination and development of the body, participate in the mechanisms of lignin synthesis, ensure the functioning of mechanisms of adaptation to the action of anthropogenic factors and environmental factors, perform a detoxification function, protect plant cells from the action of free radicals, in particular from the action of reactive oxygen species. Plant species differ in structure; they can be divided into several groups: phenolic compounds, alkaloids, glycosides (cardiac glycosides, saponins, phenolic glycosides), essential oils and resins. A huge role among substances of secondary origin belongs to phenolic compounds [1, 2].

Aim: to determine the quantitative content of phenolic compounds in horseradish leaves.

Material and methods. As objects of study used horseradish leaves garden, collected in the flowering period 2019 in village Morozivschyna of Braslav district, village Derkovschina of Glubokoe district, village Olgovo of Vitebsk district, village Andreyevshchina of Orsha district. The study was carried out according to the generally accepted method [3].

Findings and their discussion. Phenolic compounds are involved in redox processes, are carriers of electrons and protons in the of photosynthesis and respiration (plastoquinone, ubiquinone). It has an effect on plant growth processes, sometimes activating, more often inhibiting. Phenols perform a protective function in plants: phenolic compounds give plants resistance to diseases.

Many phenols are antioxidants and protect membrane lipids from oxidative damage. Some of them are used in the food industry to protect fats from rancidity (gallic acid esters, flavonoids, etc.). The role of phenolic compounds in the process of plant reproduction is very important [4]. The results of the study are shown in the table.

Table-Quantitative content of the sum of phenolic compounds in alcohol extracts from the leaves of *Armoracia rusticana*, M ±m

District	Extracts	
	Fresh	2 weeks later
Braslav	31,18±0,93	36,38±1,90*
Glubokoe	35,78±1,54	37,73±1,29*
Vitebsk	37,22±1,93	39,51±1,12*
Orsha	45,75±1,57	49,81±1,87

Note: * – p < 0.05 compared to the fresh extraction

The content of phenolic compounds in horseradish leaves during storage increased as follows: Braslav district – 1.2 times, Glubokoe, Vitebsk and Orsha – 1.1 times. The highest content of phenolic compounds in the freshly prepared extract in Orsha district, which is 1.5 times more of the Braslav district, a 1.3 – Glubokoe and 1.2 times – Vitebsk. The highest content in the extract after 2 weeks of storage in the Orsha district, which is 1.4 times more than Braslav, 1.3- Glubokoe and Vitebsk.

Conclusion. Substances of secondary origin of plants are extremely necessary for animals and humans. Some of them are not produced in animals, but are extremely important for maintaining the functional activity of the body. The absence of these plant substances in the body of animals and humans can lead to various diseases in them.

Due to the high content of these substances in horseradish leaves collected in the Vitebsk region can be used in medicine for the treatment of various diseases, as well as in the perfume and food industries [4].

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