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The results of studies of the content of biologically active substances in actinidia fruits are presented. The high value of fruits as a product with preventive and curative properties was revealed. The level of ascorbic acid, carotene, squalene, tocopherol and polyphenols was determined for different varieties.

Key words: *fruits of actinidia, biologically active substances*

Introduction.

Actinidia can belong to the family Actinidiaceae, genus Actinidia Lindl. It is a shrub (liana). There are 3 types of actinidia of economic importance: colomycta, arguta, or sharp, or large, and polygamous, or nosy [10].

According to Ayurvedic philosophy, food should serve as medicine for a person. A clear confirmation of this can be actinidia berries, which without exaggeration can be called concentrates of valuable nutrients. According to the content of ascorbic acid, Actinidia can be black currant, orange, lemon and sweet pepper. Fruits contain vitamins B₁, B₂, P, macro- and microelements, fiber, lycopene, carotenoids, protease inhibitors and a complex of biologically active polyphenols [1, 3, 4].

Actinidia fruits are used for the treatment and prevention of diseases. To satisfy the human body's daily need for ascorbic acid, it is enough to consume an average of 240 g of cherries, 200 g of apples, 150 g of raspberries, 20 g of black currants and only 3-5 g of actinidia [4, 7, 9, 12, 14].

The purpose of the research is to determine the content of biologically active substances in actinidia fruits of different varieties.

Materials and methods.

The research was carried out at the Department of Fruit and Vegetable Storage and Processing Technology of the Uman National University of Horticulture, with the fruits of actinidia varieties: Sentyabrskaya, Kyivska hibrydna and Purpurna sadova, grown in the National Botanical Garden named after M.M. Hryshka of the National Academy of Sciences of Ukraine (Kyiv).

The berries of all studied varieties were fresh, clean, dry, whole, removable maturity, without diseases and damage by pests. The shape, size and color corresponded to the variety. The consistency is juicy, tender, the berries literally melt in the mouth. The taste of the fruits is pleasant, sweet and sour. The research was carried out using modern generally accepted methods of analysis in accordance with current regulatory documentation [2, 5, 6, 8, 11, 13, 15].

Results and discussion.

The high value of actinidia berries is given by ascorbic acid, which is contained in them in significant quantities. It is not for nothing that they are called the fruits of health - two or three berries are enough to satisfy a person's daily need for vitamin C. It is known that ascorbic acid or vitamin C is a water-soluble vitamin that is contained in products of plant origin and has the most important importance for the vital activity of the body. Most biochemists consider ascorbic acid one of the greatest wonders of living nature. The ascorbic acid molecule is so simple, active and mobile that it can easily overcome many obstacles, participating in various life processes. Ascorbic acid regulates redox processes, exhibits a pronounced antioxidant effect, participates in the regulation of carbohydrate metabolism, blood coagulation, normalization of capillary permeability, biosynthesis of steroid hormones, collagen and procollagen synthesis, hematopoiesis and tissue regeneration. Ascorbic acid improves the antitoxic function of the liver, stimulates the glands of internal secretion, regulates the pigment exchange of the skin, increases the body's resistance to infections [14].

The studied varieties of actinidia are characterized by a fairly significant content of ascorbic acid, on average - 96.6 mg/100g. At the same time, fruits of the variety Sentyabrskaya were noted to have a lower content

(72.45 mg/100g). The Kyiv hybrid variety (134.05 g/100 g) was distinguished by the highest content of AK (Table 1).

The content of vital nutrients in actinidia fruits

Variety	Mass fraction, mg/100 g of raw substance					Coefficient of antioxidant efficiency
	ascorbic acid	β -carotene	squalene	polyphenols	tocopherol	
Sentyabrskaya (K)	72,45	0,40	20,57	470	8,16	3,0
Kyivska hibrydna	134,05	0,55	11,56	940	-	5,0
Purpurna sadova	92,40	0,72	16,98	580	-	5,5
<i>HIP₀₅</i>	2,53	0,04	2,59	6,21	-	0,13

Beta-carotene is a yellow-yellow-hot plant pigment from a number of natural carotenoids, which is a provitamin of vitamin A. Beta-carotene is necessary, primarily, because of the body's need for vitamin A. This vitamin is simply necessary for the body because it has a stimulating effect. Everyone knows the antioxidant properties of vitamin A, because antioxidants reduce the negative effects of free radicals on the body. Vitamin A is able to reduce the reactivity of free radicals, prevent premature skin aging, and restore lost youth to your skin. The fruits of the Purpurna sadova variety prevailed over the fruits of other studied varieties of actinidia in terms of β -carotene content, in particular, the red-fruited variety of actinidia, which accumulated it by 0.17-0.32 mg/100 g of raw weight more than the fruits of other varieties.

Among little-known, but extremely important substances, squalene deserves special attention. This is almost a fantastic chemical compound, even a small amount of which allows you to get better. Squalene in the human body not only contributes to the saturation of cells with oxygen, but also provides: antimicrobial, anticarcinogenic and fungicidal effects. Squalene belongs to the group of carotenoids, the recommended consumption rate for an adult is 0.4 g per day [1]. The mass fraction of squalene in actinidia fruits was in the range of 11.56 - 20.57 mg/100 g, i.e. 2.9 - 5.1% of its daily requirement can be met by consuming 100 g of fruits.

Great importance in nutrition is also attached to flavonoids, which are widely represented in products of vegetable origin, including actinidia berries. It has been scientifically proven that regular use of bioflavonoids provides a reliable reduction in the risk of developing cardiovascular diseases. The high biological activity of flavonoids is due to their antioxidant activity. The important role of flavonoids in regulating the activity of enzymes involved in metabolism was also established. xenobiotics [12]. The main bioflavonoids in fruits and berries are substances with P-vitamin activity - catechins, anthocyanins and flavonols. In the studied varieties of actinidia berries, the fruits of the Kyivska hibrydna variety contained the most polyphenolic substances, while the Purpurna sadova variety contained

1.62 times, and the September variety contained 2 times less (table).

Tocopherol is an important nutrient. It is useful for immunity, skin and eye health. It is especially important that vitamin E helps protect skin cells from oxidation and damage, and this provides a noticeable antioxidant effect. An insignificant content of tocopherol was found in the fruits of the Sentyabrskaya variety (8.16 mg/100 g). Consumption of 100 g of fruits can satisfy half of the adult's daily need for this vitamin [10]. This compound was not detected in the fruits of other varieties. anti-aging effect.

The antioxidant efficiency of actinidia fruits is due to the content of ascorbic acid, β -carotene, squalene, phenolic substances, and tocopherol and ranges from 3.0 to 5.5 units.

Conclusions and suggestions.

The conducted studies allow us to characterize actinidia berries as a valuable crop with high taste qualities. Its berries have a high content of essential components. The high content of vitamin C in combination with vitamin P provides antioxidant and capillary-strengthening effects of berries. The antioxidant effect of fresh berries has been revealed, and therefore it can be considered a product that helps increase the protective properties of the human body against aggressive and harmful environmental factors. Research is currently being conducted into new types of processing products based on actinidia fruits.

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