

STUDY OF THE CHEMICAL COMPOSITION OF *BETA VULGARIS L* PLANT.

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Abstract.

It has been observed that 19 elements are present in fruits out of 43 elements in the leaves of *Beta vulgaris L*. The natural tendency of the amount of the element to decrease with increasing weight is shown. It has been established that the leaves and fruits of *Beta vulgaris L* contain hundreds and tens of thousands more macroelements than microelements.

Key words: *Beta vulgaris L*, macro- and microelements, inductively coupled plasma mass spectrometer.

Botanical description. The root of wild and leaf beet species is taproot, woody, completely immersed in the soil. The wild form has a thin root; annual plant. In bred, the root is fleshy and juicy, thick (root crop), in most varieties it protrudes above the soil surface; biennial plant [1].

In the first year, it develops only a root and a rosette of basal bare large, ovate, blunt, slightly heart-shaped at the base, along the edge of wavy leaves on long petioles; in the second year, and sometimes by the end of the first year, a leafy stem appears on a fleshy root from the middle of a leaf rosette, reaching 0.5 and even 1.25 meters in height [2]. Stem herbaceous, erect, strongly branched, furrowed-faceted; the leaves on it are alternate small, almost sessile, oblong or lanceolate; in the axils of the upper leaves, bunches (2-3) of small, dim, sessile flowers appear, forming complex long leafy spikes [3]. The flowers are bisexual, consisting of a green or whitish cup-shaped five-lobed perianth, of five stamens attached to a fleshy ring surrounding the ovary, and of a pistil with a semi-inferior one-celled ovary and two stigmas. Cross-pollination by small insects [4]. The fruit is a compressed one-seeded plant, growing together with the perianth when ripe. Since the bunches of flowers are mutually fused, a whole seed with 2-6 fruits (“beet seed”) is obtained [5].

Chemical composition. Common beet roots contain sugars, proteins, organic acids, mineral salts (magnesium, calcium, potassium, iron, iodine and others), dyes, vitamins, folic acid, betaine [6].

Vitamins	Quantity	%DV†
Vitamin A equiv.	2 µg	0%
beta-Carotene	20 µg	0%
Thiamine (B ₁)	0.031 mg	3%
Riboflavin (B ₂)	0.04 mg	3%
Niacin (B ₃)	0.334 mg	2%
Pantothenic acid (B ₅)	0.155 mg	3%
Vitamin B ₆	0.067 mg	5%
Folate (B ₉)	109 µg	27%
Vitamin C	4.9 mg	6%
Minerals	Quantity	%DV†
Calcium	16 mg	2%
Iron	0.8 mg	6%
Magnesium	23 mg	6%
Manganese	0.329 mg	16%
Phosphorus	40 mg	6%
Potassium	325 mg	7%
Sodium	78 mg	5%
Zinc	0.35 mg	4%
Other constituents	Quantity	
Water	87.58g	

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For this, the inductively coupled plasma mass spectrometry method was used on the ICP-MS AT 7500 instrument. 43 elements were quantified in the leaves and fruits of *Beta vulgaris* L [7]. It was observed that 19 elements are present in the fruit of 43 elements in the leaf of *Beta vulgaris* L plant. The natural tendency of the amount of an element to decrease with increasing mass is shown [8]. It has been found that the leaves and fruits of *Beta vulgaris* L contain hundreds and tens of thousands of macroelements more than microelements.

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