MACRO- AND MICROELEMENTS OF THE PLANT *OXYTROPIS MACROCARPA*

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Abstract: The plant *Oxytropis macrocarpa* growing in the Namangan region of Uzbekistan was studied for the content of macro and microelements.

Key words: *Oxytropis macrocarpa,* Macro- and microelements, biologically active substances, elemental analysis.

МАКРО- И МИКРОЭЛЕМЕНТЫ РАСТЕНИЯ *OXYTROPIS MACROCARPA*

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Аннотация: Изучено растение *Oxytropis macrocarpa* произорастающий в Наманганском вилояте Узбекистана на содержание макро и микроэлементов.

Ключевые слова: *Oxytropis macrocarpa*, Макро- и микроэлементы, биологически активные вещества, элементный анализ.

OXYTROPIS MACROCARPA O'SIMLIGINING MAKRO- VA MIKROELEMENTLARI

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Annotatsiya: O'zbekiston Respublikasi Namangan viloyatida o'suvchi *Oxytropis macrocarpa* o'simligini makro va mikroelement tarkibi aniqlandi.

Kalit so'zlar: *makro- va mikroelementlar, biologik faol moddalar, element tarkibi, kul miqdori*

Oxytropis is also known as "*Locoweed"* as an important species of family *Leguminosae* and subfamily *Papillionoideae*. About 350 species can be found in different parts of the world [1-2]. About 150 species are found in China, and more than 80 species are mainly distributed in the northwestern and northeastern parts.

More than 127 substances have been isolated from the species *Oxytropis*, and these are; flavanoids, flavanones, chalcogens, isoflavonones, hydroflavonones, alkaloids, saponins, lignans and other substances. Many plants are used in folk

medicine to treat colds, skin swelling or ulcers, and various types of bleeding. In addition, it has been proven to be effective against swelling, antiseptic drugs, the effects of the neuroendocrine system, and immunity.

According to the research of ecologists, in the former Soviet Union, in particular, Siberia is the center of origin and distribution of *Oxytropis* on a global scale. More than 90% of *oxytropis* can be found in this area, and 30% of the species are endemic. At the same time, China, especially the Qinghai-Tibet region and the Himalayas, are centers of distribution of other species [3]. There are about 150 species in China, and more than 80 species are distributed in the northwestern and northern parts of Gansu, Qinghai, Tibet, Inner Mongolia, Ningxia, and Sichuan [4-5].

Oxytropis is mainly distributed in temperate climates with temperatures below 150C and rainfall less than 400 mm. Plants of the *Oxytropis* species are widespread and grow in marshes and among gravels as a well-adapted and thin-layered wrapper. Some *Oxytropis* can be used as animal feed, but most are described as one of the most harmful plants for livestock. Examination of pharmacists showed effects on anti-inflammatory antiseptics, excitability, hemostoses, neurosystems, and immune system [6].

Phytochemical studies have shown that alkaloids, flavonoids, saponins, lignans, volatile substances and polysaccharides can be isolated [7-8].

The raw material is dried in the shade and in a ventilated room. There is no big difference in broadcast plants [9].

The plants have been collected from the mountains and slopes of Nanay village, Yangikurgan district, Namangan region. D.Turdiyev, scientific worker of the Institute of Botany, compared their species with herbariums of the institute.

The purpose of this study is to study the elemental composition of the plant *Oxytropis macrocarpa*. First, the moisture in the stem of the plant *Oxytorpis* macrocarpa was determined.

Oxytorpis macrocarpa has been found to contain 5.76% of water in the above-ground part of the plant.

Ash, like moisture, is an indicator that helps determine product quality. *Oxytorpis macrocarpa* ash is 10.6 percent. The composition of macro- and microelements of plant ash was determined in a high-efficiency energy-dispersive X-ray fluorescence spectrometric device (Japan Rigaku NEX CG EDXRF Analyzer with Polarization in set - 9022 19 000 0) and the following results have been obtained.

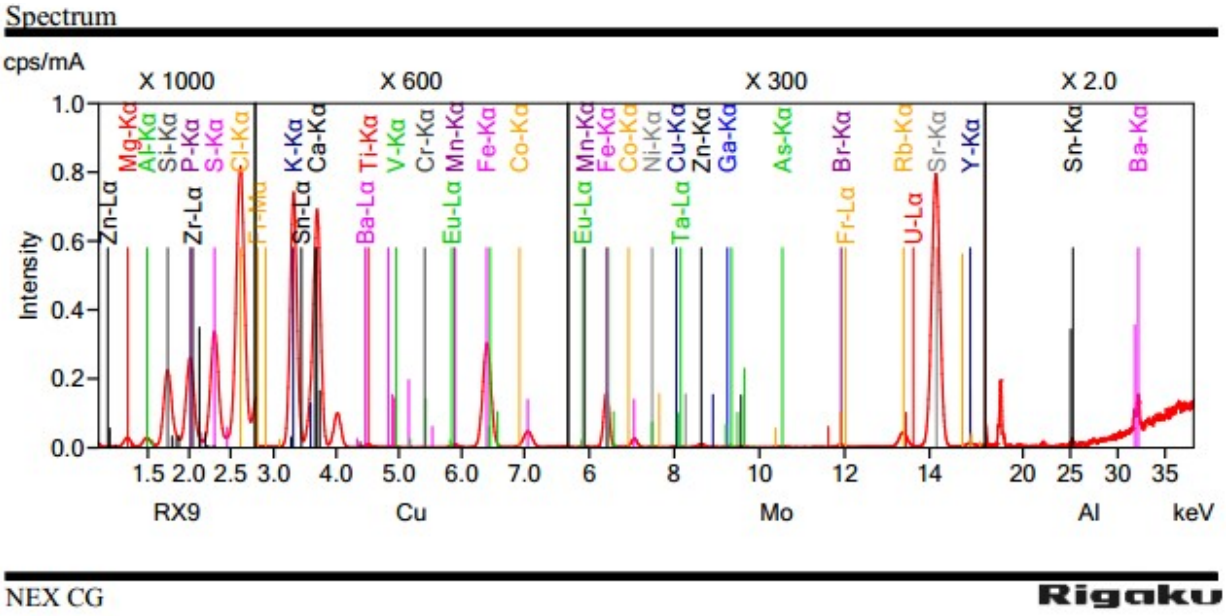

Figure 1. Spectrum of ash of *Oxytropis macrocarpa* plant

The results of the analysis showed that plant ash contains 30 different micro and macro elements, 7 of them belong to the family of s-elements, 9 belong to the family of p-elements, 12 belong to the family of d-elements and 2 belong to the family of f-elements.

Table 1

Results of elemental analysis of *Oxytropis macrocarpa* plant

№	The symbols of the elements	The names of the elements	Mass fraction	№	The symbol of the elements	The names of the elements	Mass fraction
1	Cl	Chlorine	1,86	16	Ni	Nickel	0,0038
2	Br	Bromine	0,0041	17	Cu	Copper	0,0056
3	Mg	Magnesium	4,58	18	Zn	Spirit	0,0179
4	Al	Aluminum	1,41	19	Ga	Gallium	0,0009

5	Si	Silicon	4,32	20	As	Arsenic	0,0015
6	P	Phosphorus	1,90	21	Rb	Rubidium	0,0222
7	S	Sulfur	1,44	22	Sr	Strontium	0,346
8	K	Potassium	16,1	23	Y	Yttrium	0,0014
9	Ca	Calcium	16,0	24	Zr	Zirconium	0,179
10	Ti	Titan	0,102	25	Sn	Tin	0,0013
11	V	Vanadium	0,0040	26	Ba	Barium	0,0146
12	Cr	Chrome	0,0013	27	Ta	Tantalum	0,0014
13	Mn	Manganese	0,0247	28	Fr	French	0,0009
14	Fe	Iron	0,905	29	Eu	European	0,0311
15	Co	Cobalt	0,0035	30	U	Uranus	0,0009

When analyzing the table and spectrum, it shows Mg (4.85), Si (1.44), K (16.1), Ca (16.0), Cl (1.86), Al (1.41), Fe (0.905) which can attract attention.

Of the 30 elements identified in the *Oxytropis macrocarpa* plant, 10 are essential and 3 are estimated to be useful elements in daily life. In addition, 5 elements of unknown function have been identified. Biogenic elements Fe, Mg, Cu, Zn, Si, Cl, Ca have been identified in the plant, they perform photosynthesis, nitrogen exchange and metabolic properties. In general, macro- and micronutrients are qualitatively and quantitatively in the following order:

K>Ca>Mg>Cl>P>Al>S>Fe>Sr>Zr>Ti>Eu>Mn>Rb>Zn>Ba>V.

Br>Co>Cu>Ni>As>Y>Cr=Ta>Cr=Sn>Ca=Fr=U

Oxytropis macrocarpa contains equal amounts of calcium and potassium. Calcium cation plays the main role in the formation of the bone-muscle system and participates in the generation and transmission of nerve impulses in the body. This macroelement also participates in the activation of the enzyme system and the release of hormones. Silicon cation has a positive effect on formation of bone

tissue mineralization, collagen synthesis, improvement of skin, hair and nails, as well as atherosclerosis and Alzheimer's disease. Silicon has been proven to affect the elasticity, hardness and strength of tissues.

The abundance of potassium cations in the plant *Oxytropis macrocarpa* has an important effect on the propagation of nerve impulses, muscle contraction, and maintaining normal blood pressure in the heart.

Another important element magnesium is rich in is the magnesium cation because it is a cofactor in 300 enzymatic reactions. Magnesium participates in the synthesis of proteins, oxidation of saturated acids, energy production, and glucose metabolism.

Only on the basis of these data, it is recommended that the plant can be used in case of deficiency of elements in the body.

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