MORPHOGENETIC CHARACTERISTICS AND BIOGEOCHEMISTRY OF THE MEDICINAL CAPPARIS SPINOSA

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Abstract. *The article studies the morphogenetic features, the composition of macro- and microelements, the coefficient of biological absorption in medicinal Capparis spinosa in light serozems, and also proved the high demand of macro elements of phosphorus, of microelements zinc.*

Keywords: *medicinal Capparis spinosa, genus, morphogenetic, light serozems, composition of macro- and microelements, Clark concentration, coefficient of biological absorption.*

Introduction. The flora of Uzbekistan is extremely rich, and its rational and effective use and preservation of biological diversity for future generations is one of the urgent tasks before us. Since the first years of independence, special attention has been paid to the development of the preparation of natural medicines based on the study, reproduction, protection and processing of medicinal plants belonging to the local flora in our country.

In order to ensure the implementation of the Decree of the President of the Republic of Uzbekistan dated April 20, 2017 No. PD-2911 "On measures to create favorable conditions for the rapid development of the pharmaceutical industry of the Republic", culturalization and cultivation of medicinal species of natural flora and foreign flora introduced into medical practice Targeted research is being conducted on the development of technology. In particular, projects are being implemented to study the medicinal properties of plants, their rational use, and to expand the scale of cultivation. Capparis spinosa L. is one of the important types of medicinal plants that grow naturally in our conditions.

Capparis spinosa belonging to the Capparidaceae family, according to Engler [1], Capparidaceae is a family of dicotyledonous plants, including shrubs, trees, lianas and perennial grasses, which are widely distributed in dry, tropical and subtropical regions of the earth, 36 genera, 385 species, Kosimenko includes 37 genera, 400 species, Takhtadjian 45 genera, about 900 species, Eshankulova 40 genera, 850 species [1, 2].

From a geographical point of view, the cranberry plant is naturally distributed in the Mediterranean Sea, southern Europe, the Caucasus, Crimea, Central Asia, including Azerbaijan, Turkmenistan, Kazakhstan, Uzbekistan, Pakistan and India [3,4]. This plant is cultivated in France, Spain, Italy, Algeria, Cyprus, Greece and North America.

In Uzbekistan, the natural distribution of the kovol plant has different geographical environments. In particular, it can be found on stony and gravelly hills, sometimes in fields, roadsides, ditches, hills, railways, dry banks of canals and canals, under walls [1]. When studying the biological and ecological properties of any plant, first of all, it is necessary to study its condition in natural conditions.

Botanical characteristics, biochemical composition, agrotechnics of cultivation of agro-techniques of the kovul plant distributed on loess and loess-like sand, proluvial and alluvial-proluvial deposits and eluvial-deluvial rocks and soils formed on them of the river terraces of Uzbekistan K.Z.Zokirov, R. Khudoyberganov [1], N.T. Eshankulova [4], X.P.Fu, H.A.Aisa, M.Abdurahim, A.Yili [5] and others have studied widely. The analysis shows that the elemental composition and biogeochemical properties of the medicinal plant distributed in the area of light gray soils of the arid climate region have not been studied in relation to the soil properties.

Research object and methods. Capparis spinosa *(Capparis spinosa L.)* is a common plant in the area of light gray soils formed on alluvial-proluvial, loess and medium sand rocks in the south of the Fergana Valley. The morpho-biological characteristics of the studied species *Capparis spinosa L.* were used from the "Descriptive Atlas of Morphology of Higher Plants". The morphogenetic, pedogeochemical approaches of M.A. Glazovskaya and A.I. Perelman were used as the main method of research. Elemental analysis of soil and plant was carried out by neutron-activation method.

Results of research. According to information, more than 8100 species of plants are found in Central Asia, including Uzbekistan. 750 of these species are medicinal plants. *Capparis spinosa L.* - thorny capybara is also a type of perennial medicinal shrub growing in our conditions [7]. In our field and laboratory observations, the length of the stem reaches 70-180 cm, depending on the growing conditions. The tip of newly formed young stems is covered with fine short hairs, but the hairs are shed during the growing season as the branch grows. The color of the stem is green, and the underside of the leaf band has curved spines. One plant has 6-10 main stems, 3-6 side branches, 10-15 cm long. Stem diameter 7-12 mm. The leaves on the stem of the plant differ in shape, width and length. Usually, the leaf shape is round, inverted ovate or elliptic, 2-7 cm long, green, glabrous or sparsely hairy on the underside, arranged in a row on the main stem and side branches through a short leaf band.

The flowers are large, 5-8 cm, fragrant, located in the axil of one leaf, 4 sepals, bent, ovoid, green, covered with small short hairs on the outside. Petals are 4, but 2 are joined to the middle, white color, many male stamens, different length (6-9см), anther bent, brown (flowers turn red after pollination). The length of the flowers is 4-6 cm. It blooms in April-May depending on the amount of rainfall in the study area.

The fruit is a multi-seeded berry. It is green in color with white stripes along its length. The shape is inverted ovoid, oblong, nut-like or round with many seeds, long banded. The outside has a smooth surface, the inside is dark red in color. The fruit looks like a watermelon. When the fruits are ripe, the skin of the fruit turns outwards and opens. The length of the fruit is 3-5 cm, the width is 1.3-2.7 cm. The fruit has more than 310 seeds (on average 235), the length of the seed is 2.8-3.3 mm, kidney-shaped, brown. The fruit ripens in July-August.

According to the data, the nutritional value of 100 g of dry marinated kovull is as follows: carbohydrates-4.89 g, proteins-2.36 g, fat-0.86 g, folic acid-23 μg, rutin-0.32 mg, quarcetin-0.43 mg, sugar-10 mg, glycoside-25 mg, vitamins: V1-0.018 mg, V2-0.139 mg, A-138 mg, E-0.88 mg, K-24.6 μg, RR-0.652 mg, V6- It is stated that it consists of 0.023 mg, V5-0.027 mg, S-4.3 mg, V4-6.5 mg [8].

According to the information of folk medicine, the kovul plant is polypharmagenic in terms of medicinal properties. Its role in medicine is multifaceted. In particular, tincture made from its root bark is used to treat wounds, paralysis, neurosis, liver disease and jaundice. Flower and leaf -

in the treatment of white spots on the body and skin wounds, inflammation of lymph nodes, salivary glands, parotid glands; from its fruit - pain reliever in gum and tooth diseases, in the treatment of epilepsy, gastrointestinal diseases, asthma and goitre; Its seeds are used as a natural medicine in the treatment of gastrointestinal diseases, worms (trematode, cestode, nematode, mobile forms of lamblia). The resistance of the human body to external environmental conditions increases and the activity of the immune system increases [3], using the products of the cranberry plant. Abu Ali Ibn Sina treated diseases such as gout, joint pain, and radiculitis with the root of capparis spinosa.

If we look at it from this point of view, today in the world pharmaceutical industry, the preparation of drugs based on these recommendations is widely established. In particular, in 1955, for the first time in medicine, the drug Liv-52 was developed and tested for the treatment of liver diseases by the Himalayan Drak company, and it is now effectively used in medicine. The main part of the drug, i.e., 65%, is made up of capparis spinosa products [9, 10].

Kovul contains K-40·10-3, Ca-40·10-3, Cu-37.4·10-5, Fe-16.7·10-4, Mg-33·10-3, Mn-7, Contains 8·10-5, P-10·10-3, Zn-32·10-5, Se-1.2·10-6 mg/kg and other macro- and microelements. If we pay attention to the classification of the studied elements in terms of their biological role [6], they are included in the series of biogenic, essential elements necessary for life, and according to their amount in the body, they are grouped into the group of macro- and microelements.

The protected pale gray soils that were studied were formed on loess, deluvial proluvial deposits, and according to their morphogenic characteristics, they are distributed on undulating, flat plains in the hills of Fergana. Light gray color, mechanical composition is medium and light sand, fine sand (0.1-0.05) particles prevail. Plants are mainly ephemeroids and grow covering the surface of the soil, stones and gravels of different sizes are found, a stone-gravel layer is observed on the bottom side, carbonates vary from 5.2 to 11.4% in the soil cross-section, spots, mold, white pores appear in the pores, gypsum concretions Strongly manifested from 26 cm, it boils strongly from above in HCl acid.

Salts that are easily soluble in water in the upper layer of soils percentage, i.e. dry residue, fluctuates between 0.12-0.24%, unsalted, reaches 0.36-0.87% below 1 meter. The amount of humus is 0.74-1.03% in the upper sod layer, it is observed that it decreases towards the lower layers of the section, and it sharply decreases below 52 cm. Total nitrogen ranges from 0.027 to 0.098% in a 1 m layer, while phosphorus and potassium vary from 0.11 to 0.21, 1.72 to 2.26, respectively. According to the amount of mobile phosphorus in the upper 0-28 cm layer, it belongs to the low supply group. With exchangeable potassium, it corresponds to the moderately supplied group in the upper layer of the studied pale gray soils. The ratio of C:N ranges from 5.7 to 7.2 in the studied reserve light ash gray soils and belongs to the upper group according to the nature of occurrence. The amount of elements in the soil varies depending on the properties and characteristics of the soil, in particular the composition of the elements. We can also see these changes through the table below.

Table 1.

Chemical content and biogeochemical properties of Light gray soil and Capparis spinosa L. (n=4)

№	Element, symbol			Оч тусли	Capparis spinosa	Coefficient of biological absorption (10^{-4})

		Ground bark, mg/kg*	Soil clarck, mg/kg*	бўз, мг/кг	L., mg/kg* (10^{-3})	In relation to the earth's crust	In relation to soil clarck	Compared to light gray soil
1.	Potassium, K	25000	15000	272	40	0,016	0,027	1,471
2.	Phosphorus, P	930	800	13,7	10	0,110	0,125	7,299
3.	Copper, Cu	47	20	2,10	0,4	0,850	0,200	1,905
4.	Manganese, Mn	1000	850	167,1	0,08	0,008	0,001	0,005
5.	Zink, Zn	83	50	1,40	0,3	0,036	0,060	2,143

** - according to A.P.Vinogradov*

As can be seen from the table data, the coefficient of biological absorption increases in the pale gray soil with the presence of sedum plants in relation to the amount of macro- and micronutrients in the soil and soil crust. The intercorrelation of light-colored gray soil and elements of the sorghum plant was positive, and the correlation coefficient was high, i.e. r=+0.76.

To conclude, the study of morphogenetic and biogeochemical properties of medicinal plants, limit of chemical elements in the soil, permissible concentration of nutrients and a number of macro- and microelements in medicinal plants is an important scientific research. Elaboration of quantitative provision of nutritional elements in the composition of capparis spinosa and other medicinal plants will further increase the productivity and medicinal properties of medicinal plants.

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