BIOECOLOGICAL CHARACTERISTICS OF THERAPEUTIC PLANT *SCUTELLARIA COMOSA JUZ*

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Abstract. *In this article therapeutic Scutellaria comosa Juz. the results of the field research conducted to study the bioecological properties, botanical description, distribution of the plant are presented. Also, the article describes the biomorphological characteristics of the seeds of this plant, information on the study of seed germination in field and laboratory conditions.*
Keywords: *scutellaria, therapeutic, blueberry, seed, leaf, flower, fruit, ontogenesis, bioecology.*

Due to the sharp increase in demand for natural medicinal plant products, their reserves in nature are decreasing. Therefore, studying the biological basis of the process of their regeneration in nature, using their reserves on a scientific basis is an important urgent task. It is especially important to study the formation of their populations scattered in different ecological environments and their place in the vegetation cover. Because the main indicator that determines the place of a plant in the vegetation cover is its senopopulation status, that is, the characteristic of going through periods and stages of ontogenetic development. Therefore, it is impossible to make a fully scientifically based conclusion about the place of the plant species in the vegetation cover, the state of regeneration and the use of their reserves without analyzing the plant species from the senopopulation point of view.

The representatives of the *Scutellaria L.* family, which are the source of new medicinal preparations, are among such plants. Regeneration - the plant reproduces only from seeds. In world practice, methods of propagation from seeds are widely used in the reproduction of perennial plants and restoration of natural ecosystems. Biology of seed germination includes multifactorial processes, exogenous (temperature, moisture, light, storage conditions) and endogenous (structure of seed coat, physiological condition during germination) factors are its main components. On the basis of these components, exogenous, endogenous and combined dormancy states are distinguished in seeds.

From this point of view, studying the biomorphological characteristics of *Scutellaria* comosa in nature is of great scientific and practical importance.

Scutellaria comosa Juz.- blueberry is a promising medicinal plant belonging to the mint family (Lamiaceae). Valuable medicinal flavonoids and glycosides were isolated from species belonging to the *Scutellaria L.* family.

Today, worldwide, great attention is being paid to the study of the chemical composition of plant species rich in biologically active substances. These include plants belonging to the genus *Scutellaria L.,* the chemical composition of more than 65 species of them was studied, and phenol carboxylic acids, phenylpropanoids, iridoid glycosides, diterpenes, flavonoids, lignans and other natural compounds were isolated from them [1]. In medicine, several substances such as lacrizid, lespeflan, flacarbin, flakumin, rutin, liquiriton, datiskan, flamin, silibor are widely used in medicine as effective medicinal agents.

Maple (Scutellaria L) is a large polymorphic genus belonging to the mint family (Lamiaceae). According to A. Paton, the category includes about 350-425 species. The species is distributed almost all over the earth, except for the Arctic and South Africa, they are not found in desert regions and the Amazon River basin. The greatest diversity of species is recorded in the Iran-Turan province, in the mountainous regions of Central Asia, and in the Yunnan and Sichuan provinces of China [3,5].

Another necessity of conducting research on *Scutellaria L.* species is that in recent years, it can be seen that the scope of research aimed at studying the chemical composition of Scutellaria L. species distributed in the flora of Uzbekistan by chemists working in our country is increasing. A.M.Karimov and G. U.Siddikov (2018) isolated new flavonoids, glycosides and aglycones for the first time from some species of Scutellaria L. distributed in the flora of Uzbekistan [2,4]. The biological activity of these substances, such as paracetamol and heliotrin alkaloids, has been determined to be anti-inflammatory and anti-toxic, soothing, blood pressure-regulating, in addition to the technology of dyeing semi-wool, wool, silk and other fabrics using these substances. invited. Scientists collect Scutellaria species directly from nature during this work. Scientific substantiation of the procedure for collecting species from nature, identification and surveying of their natural reserves, assessment of the current state of senopopulations, development of recommendations for preserving the gene pool in order to ensure its stability in the future, drawing up maps reflecting the distribution and vitality of species that need protection it is appropriate to develop measures to preserve the natural populations of species [6].

In Uzbekistan, a number of scientific studies have been conducted to study the biomorphological characteristics of perennial grasses, shrubs, and herbaceous plants in natural and cultured conditions. However, there is insufficient research on Scutellaria comosa.

Scutellaria comosa Juz. - Moldy blueberry. 15-40 cm tall. The stem is woody from the base, the branch is covered with glandular hairs. The leaves are triangular, oblong or triangular-ovate, the tip of the leaf is sharp or blunt, the edge is large serrated, the upper leaf veins are twisted, thickly hairy, dull dark green, gray below, short banded. The petals are egg-shaped, the tip is sharply pointed, thickly hairy. The flowers are 2-4 cm long, many-flowered, thickly arranged in a long, elongated peduncle with fruits, during the fruiting period, the unopened flowers at the tip of the peduncle extend up to 10 cm. Floral leaves are 0.7-1.2 cm long, 2.5-4.5 mm wide, lanceolate or ovate-lanceolate, boat-shaped, with long tips gradually narrowing upwards, gray-green due to glandless thick fine felt hairs , often purple. Petal 2-2.5 mm long, pubescent hairy, upper lip oval, concave thyroid gland 1.5-1.8 mm long, sparsely adherent hairy. Petal 1.2-3 cm, tuber 1.5-2 cm long, throat diameter 5-6 mm, finely curved, upper lip 6-7 mm, orange color, lower lip 5 -6 mm, yellow-brown speckled, outside serrate, downy hairy, fruit triangular nut, almost ovoid, 15 mm long, downy hairy. It blooms in May-June and seeds in June-July

This medicinal plant is distributed in the Fergana Valley, Mirzachol, Tiyanshan (Chotkal, Fergana, Mogoltog ranges), Pamir-Aloy (Aloy Valley, Turkestan, Nurota, Aloy, Zarafshan ranges) of our country.

Among the regions where the species is distributed, there is no information on its occurrence in Bobotog and Kurama ridges. As a result of the analysis of the samples stored in the fund, it was found that they are distributed in both regions, which is evaluated as floristic findings.

Figure 1. Scutellaria comosa Juz. Hills of Damkol village, Fergana district (M. Akbarova 2020).

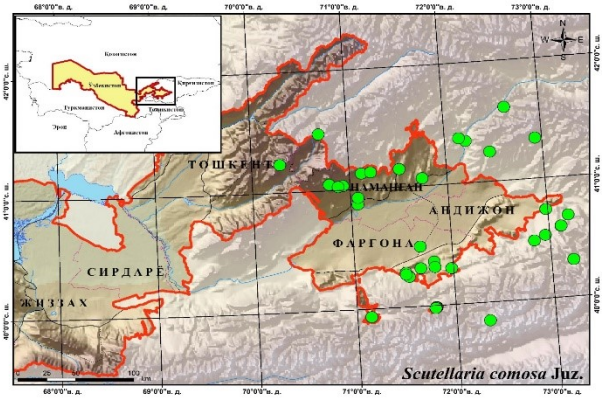

Figure 2. Distribution map in Fergana Valley (M. Akbarova 2020).

One of the main factors determining the regeneration of a plant in the vegetation cover is the biological characteristics of its seed state. In order to study the biomorphological characteristics of *Scutellaria comosa* seeds, plant seeds in the middle generative stage growing in the hills around Damkol village of Fergana district of Fergana region were taken as a basis. The soil of these hills is gray soil, and the annual rainfall is 240-250 mm.

It is known that the productivity of seeds depends on a complex of internal and external factors. Internal factors include, first of all, the number of seedlings in a nodule, hormonal balance, the transport of some elements, and external factors - the genotype, which determines the weather conditions of a certain season and agrophone (Levina, 1980). Potential and real seed productivity, as well as the productivity index, reflect the suitability of the population's biological characteristics and living conditions.

Weather conditions during the growing season are important for Scutellaria comosa seed productivity. Seed yield increases in favorable weather conditions, and decreases in unfavorable weather conditions. The following indicators were recorded for the growth period in 2020-2021: the average number of seeds per nut was 2.7 ± 0.005, the number of generative branches per plant was 6.73 ± 0.03 on average. organized.

The presence of seeds is one of the main indicators of the suitability of the growing conditions for the biological needs of the species. Seed fertility is quantitative, and germination is a qualitative characteristic of seeds. Seed germination is the emergence of a seed from a dormant state, the formation of a niche - a tumor from the vegetative growth of a shoot. The quality indicator of seeds is determined by seed size, weight of 1000 seeds and germination.

The seed of Scutellaria comosa is flattened, almost ovoid, 1-1.5 mm long, and elliptical in cross section. The color is gray, slightly dark. In order to determine the absolute weight of the seed, 20 plants of almost the same age of middle generative age were selected and collected at the end of September 2018. After the seeds were separated from the fruits and cleaned, they were counted 5 times out of 1000 seeds, and when they were weighed, the average weight was 1.1 g. Fertilization of Scutellaria comosa seeds in laboratory conditions was determined at temperatures of +200, +250, +300 [6].

The experiment was carried out by placing 100 seeds in Petri dishes and 3 replicates of each temperature indicator. According to the results of the experiment, the highest germination rate of Scutellaria comosa was 65.5% at +250.

1-table.

Seed germination of Scutellaria comosa in laboratory conditions

t^0C	*days*										%
	1	2	3	4	5	6	7	8	9	10	
	1.09.	4.09.	6.09.	8.09.	10.09.	12.09.	17.09	20.09.	25.09.	30.09	
20^0C	0	2	6	18	32	52	52	55	57	58	58
25^0C	0	4	10	22	38	56	60	63	64	65	65
30^0C	0	3	8	19	35	55	59	60	61	61	61

The germination capacity of seeds was 200-300 14%. The dormancy period of Scutellaria comosa seeds was short, the germination of the seeds obtained at the end of September 2020 was 65%, and after one year of storage, it sharply decreased to 17.6%, and after two years, it was 2.4%. Therefore, it is recommended to use freshly collected seeds in the establishment of artificial plantations of S. *comosa.*

In order to determine the fertility of *Scutellaria comosa* seeds in field conditions, the seeds collected at the end of September 2020 were planted in a specially prepared experimental field in October, November and March and April 2021. For this purpose, the soil was softened and leveled at a depth of 30 cm, furrows were made at a width of 40 cm, and 3 replicate seeds of 100 seeds per 2 meters were planted at a depth of 0.5-1 cm. Germination of *S. comosa* in field conditions was 40.5% in October, when temperature and humidity were sufficient, 37.8% in November, and 43.8% at the end of March next year. Therefore, it is advisable to sow Scutellaria comosa seeds in spring in March-April.

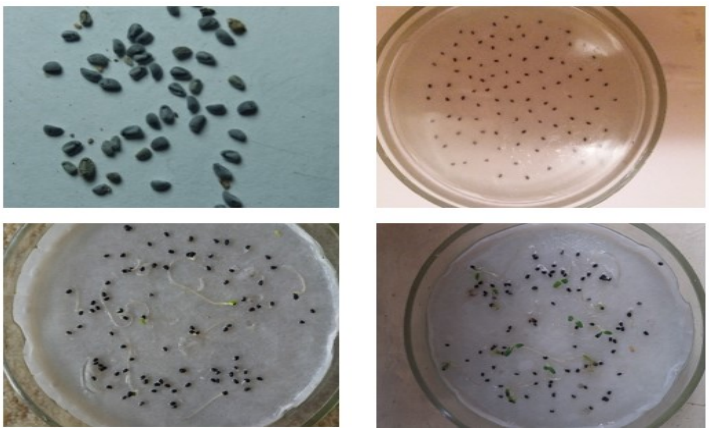

Figure 3. Germination of Scutellaria comosa seeds

In order to determine the place of the latent period in the natural recovery of Scutellaria comosa in the plant cover, seeds of the plant were collected in the soils of the hills of Damkol village of Fergana district and Gozalabad village of Torakorgan district of Namangan region. stock was analyzed. For this, in November 2020 and April 2021, an area of 1 m2 was determined around the plants belonging to the middle age generative stage, and the seed reserve was studied in the soil with a thickness of 5 cm. For this purpose, the soil sample was passed through a special sieve, washed and divided into fractions. On average, 60-65 seeds were preserved in 1m2 of soil samples

with a diameter of 0.5-1mm sieve in November, and 20-25 seeds were preserved in the sample taken in April.

From the obtained data, it can be concluded that the germination of Scutellaria comosa seeds is preserved in the soil from 1 to 5-6 months, and then it germinates. So, the seeds of Scutellaria comosa spend their dormant period in two different environments, i.e., the seeds that ripen and fall in the soil at the end of September, and the seeds that remain in the generative stem fall to the soil in February-March of the next year.

From the analysis of the seed reserve of the plant in the soil, it was found that the level of natural recovery in its vegetation cover, perennial shrubs dominating the vegetation cover: Kochia prostrata, Artemisia sogdiana, Perovskia angustifolia, Convolvulus hamadae, Lagochilus platycalyx; perennial herbs: Haplophyllum pedicellatum, Ferula lipskyi, Capparis spinosa, Poa bulbosa; it was found to be lower compared to annual grasses: Delphinium rugulosum, Glaucium fimbrilligerum, Erodium cicutarium, Avena fatua, Ziziphora tenuior [1, 7].

Therefore, the organization of Scutellaria comosa stock is carried out in two directions, firstly, a protective zone is established in its natural growing areas, and secondly, it is specially planted and propagated in forestry farms.

From the obtained results, it should be concluded that Scutellaria comosa is a promising medicinal plant, and for its natural recovery and organization in artificial plantations, scientific research of its ontogenesis periods and stages is necessary.

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