International Journal of Academic and Applied Research (IJAAR)
ISSN: 2643-9603
Vol. 4, Issue 8, August – 2020, Pages: 1-4

Distribution of Scutellaria Cordifrons Juz. (Lamiaceae) in The Flora of Uzbekistan

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Abstract: *The article provides a brief overview of large-scale studies of species of the genus Scutellaria L., discussion about the need for targeted studies of species of the genus found in the Ferghana Valley, including the distribution of the species Scutellaria cordifrons Juz.in the botanical and geographical areas of Uzbekistan, based on field studies, literature, herbarium samples stored in the funds, brief information about this species is presented.*

Keywords: Ferghana valley analysis, region, species, genus, areal, herbarium, botanical and geographical region, flora, fund, map.

Introduction

Currently, a comprehensive study of the flora of the Republic of Uzbekistan, the determination of plant resources, the identification of botanical territories of particular importance, the development of scientific foundations for the conservation of rare and endemic species of the plant world, the development of a national information and analytical database, the inventory of wild plant species that are rare and are on the verge of extinction, monitoring of the Red Book of the Republic of Uzbekistan and the world of vegetation, development of the geographical foundations of introduction and acclimatization plant species promising and cost-effective value creation of a bank of genetic information of rare plants, the study of the dynamics of the devastation in the evolution of vegetation and climate, as well as the development of practical recommendations are the main tasks before the Uzbek botanist scientists.

Identified medicinal and economically beneficial plant resources and assessment of the current state, their fruitful use is considered one of the topical problems of botanist scientists involved in the resources of the plant world. The transformation processes occurring in ecosystems as a result of the influence of biotic, abiotic and anthropogenic factors in nature, in particular, the determination of the composition of species, as well as the study of bio-documentation of plant world objects require special attention.

The protection of plant world objects, the maintenance of the state cadastre, the conservation of biological diversity and its fruitful use is increasing day by day; attention to this direction is increasing 3 in the course of the implemented program measures certain results have been achieved.

These are such as identifying the composition of species of local flora, ensuring the creation of natural conditions and growth, protecting them, determining the reserves of the raw material base of plants, as well as for species of plants that are threatened with extinction, creating *ex-siti* collection conditions, identifying the composition of rare and endemic plant species and mapping of their distribution.

At the present time, a new edition of the flora of Uzbekistan is being published by scientists from the Institute of Botany of the Academy of Sciences of the Republic of Uzbekistan. The state cadastre of higher plants growing in the regions of the republic is being drawn up. The composition of the endemic species of the flora of Uzbekistan has been specifically determined, and most importantly, a reliable list of the highest plants of the flora of Uzbekistan has been drawn up. According to these data, 4,404 species of higher flowering plants are now registered in the flora of Uzbekistan.

Objects and methods of research

These works were directly carried out during field studies, as well as using the results of studying materials from large funds TASH, MW, LE, AA, TAJ, FR and herbariums from the Samarkand and Ferghana State Universities. Names of species are given according to the “Key to Plants of Central Asia” (2015) [2] and the International Plants Names Index (www.ipni.org) [3], The Plant List (www.theplantname.com) [4].

Based on the manual “Authors of Plant Names” R.K. Brummit, C.E. Powell (1992) [5] determined the coordinates of the species using the Google Earth programs, displayed the distribution of GAT maps using the ArcMap 10 programs. Distributed the

species among the botanical and geographical areas according to the developed scheme by K.Sh. Tazhibaev and other authors (2016) [6].

Results and discussion

In recent years, the chemists of our country have paid considerable attention to the study of the chemical composition of species of the Scutellaria L. group, which are widely distributed in the flora of Uzbekistan. In particular, the studies conducted by A.M. Karimov (2017) [7] and G.U. Siddikov (2018) [8]. In the course of research by scientists from the separated species of Scutellaria L. (S. cordifrons Juz., S. phyllostachya Juz., S. comosa Juz., S.haematochlora Juz., S. immaculata Nevski ex Juz., S. ocellata Juz.) new flavonoids, glycosides and aglycones were recovered. It was determined that these plants with biological activity, such as paracetamol and heliotrin alkaloids, have therapeutic effects on inflammation and poisoning, they are soothing, they keep the blood pressure at the proper level; besides this, the technology of these types of plants suggests the coloring of woolen, semi-woolen, silk and other materials. (Karimov (2017) [7] va G.U. Siddikov (2018) [8].

Registration of the natural reserves of all plant species that are the object of these studies, assessment of the current state of cenopopulations, and also in order to ensure their future stability, develop recommendations on preserving the gene pool, mapping reflecting the distribution of species and vitality, to develop measures for the conservation of species populations in need of protection, research is being carried out on the topic “Bioecological features and natural reserves of species Yes Scutellaria L. (Lamiaceae), common in the Ferghana Valley”.

Field studies conducted in the Ferghana Valley, the study of samples stored in large funds and the results of an in-depth analysis of the available scientific literature show that 10 species of this genus are found in the Ferghana Valley, in the Uzbekistan part of the valley. Of these, Scutellaria cordifrons Briq. It is comparatively widespread in a wider range and its peculiar population has been revealed.

Currently, over 350 species of Scutellaria L. are distributed on the globe (Paton, 1990) [9]. Species of the genus are widespread on the hills of foothill slopes, mountain belts of Eurasia, it is distinguished from other belts by a high variety of species, in particular, if the regions of Iran-Turan, Central Asia and Afghanistan are considered one of the centers for the appearance of species of the genus, then the eastern part of the coastal territories of the Srezemnoe Sea is considered the second center (Safikhani, 2017) [10].

Species of the genus in the flora of the former union are divided into subgenus: Euscutelleria Brig., Cystaspis Juz., Anaspis (Reching.fil.) Juz. and Apeltanthus (Nevski) Juz. 148 species recorded. In Central Asia, 84 species of the genus are found (Abdullaeva, 1987, 1991) [11]. Of these, 32 species are found in the flora of Uzbekistan (Vvedensky, 1969). Field studies in recent years, and taxonomic changes in the flora of Uzbekistan revealed the presence of 40 species (www.floruz.uz) [1].

In the flora of Kazakhstan, 32 species (Pavlov, 1964) [12], in the flora of Kyrgyzstan, 30 species (Shpota, 1960, Lazkov, 2016) [13], in the flora of Tajikistan, 35 species (Kochkareva, 1986) [14], 7 species are widespread in the flora of Turkmenistan (Shishkin, 1954) [15].

Over the past 10 years, research has begun to be widely carried out around the world to identify new species of this genus, to study the chemical composition and morphology of ontogenesis. But the volume of research on the geography of species, natural reserves, and the current state of cenopopulations is somewhat insufficient.

For science, the identification of new species, relatively larger, is from the flora of Turkey, Iran and China. The main reason for this circumstance is that in these countries, along with the high availability of various species, modern methods are applied qualitatively.

In 2011, Scutellaria ketenoglui M. Cicek & Yaprak, Scutellaria anatolica M. Cicek & O. Ketenoglu was transferred to the science fund from the flora of Turkey [16], and in 2013, the species Scutellaria hsiehii T.H. was introduced from Tsiny-Hsin Hsieh's Xinyi region of Central Taiwan. Hsieh [17], in 2017 Fei Zhao and others introduced the species Scutellaria wuana C.L. Xiang & F. Zhao from the Xiugan Province of China [18], in 2017 K. Safihani and others conducted complex studies, phylogenetic, morphological, molecular and systematic analyzes of the species Scutellaria multicaulis Boiss., Widespread in the Iranian flora, with this introduced new species of Scutellaria patonii Jamzad & Safikhani, Scutellaria arakensis Jamzad & Safikhani, Scutellaria multicaulis Boiss. subsp. multicaulis var. gandomanensis Jamzad & Safikhani [10].

In Central Asia, including Uzbekistan, until recently, targeted research was not conducted on the distribution of

species of the genus Scutellaria L., on the study of ecology, phytocenology, and taxonomy. Only the numbers and names of species studied in floristic studies conducted in recent years in local flora of 18 species in the flora of the Baysun botanical and geographical area (Turginov, 2017) [19], 10 species of the genus in the flora of the Malguzar ridge (Azimova, 2017) [20].

By the degree of distribution of Scutellaria L. species found in the flora of Uzbekistan, the Pamir-Alai and West Tien Shan mountain ranges and their foothill regions stand out. Some species of the genus are found in both zones and the flora of these two zones connects them together. One of these species is Scutellaria cordifrons Briq.

Scutellaria cordifrons Briq. shrub with woody stems at the base. The stems are (10) -15-25- (30) cm tall, branched or almost simple, grayish-gray from a curly gun. The leaves are triangular oblong or more often triangular-shaped, island-like, coarse-pilgriminate, edged along the edge, wrinkled from the pressed veins, densely pinned down on top, sometimes almost felted, grayish densely felted on the bottom, short petiolate, upper almost sessile. Bracts are almost membranous, very broad-ovoid, gradually pointed "lower particular denticles, with protruding veins, short densely yellowish and non-ferruginous hairy, with a considerable admixture of long non-ferrous hairs. Flowers in thick, sometimes elongated hands, on shaggy pedicels, usually significantly exceeding internodes. Calyx with fruits of 3-3.5 mm in length, glandular hairy, with an admixture of longer non-gallous hairs; upper lip with a very broad obovate, almost flat appendage, 5-6 mm high, Corolla yellow, sometimes with a purple subsequently lip, densely glandular hairy outside, with a bundle of longer non-galling hairs on the upper lip, 22-25 mm long. Nuts are angular, almost ovoid, mm long., Fluffy. Blossoms in May – June; bears fruit in June – July.

Scutellaria cordifrons Briq. grows in gravelly and rocky slopes in the lower and middle zones of the Pamirs - Alai, Turkestan, Nurata, Zerafshan, West Tien Shan, Chatkal, Fergana, Mogoltava, Zeravshan, Gissar, Karategin, Peter the Great, Darvazlov, 1987) [11].

The distribution of this species among the botanical and geographical regions of Uzbekistan is carried out in the article. Based on the study of the samples stored in the funds, the growth and distribution of Scutellaria cordifrons Juz.is confirmed. in the following botanical and geographical areas of Uzbekistan:

I-1. Western Tien Shan District. I-1-b. West Zapadnachkal district: Chatkal ridge (Chintenboo above the Yangiabad camp site, 1990, Umarov);

I-1-e. Chorkesar district: Kuraminsky ridge (Western Tien Shan. Kuraminsky ridge of the southern slope along the Kyzatasai path, 06.1989, Umarov; Sredn. Tech. Gusshaya. Flat watershed at 1100 m above sea level Mixed variegated steppe with single bushes Amygdalus spinov, 06/14/1963, Bulgakova), Left side of Almaly-Say. On the watershed. The rarefied ephemeral-pyrein assemblage in juniper is rarely a forest on granodiphyte porphyrates.

I-2. Ferghana district. I-2-a. South Chatkal region: Chatkal ridge (Khazratbuva village, upper reaches of Kasansay terrace, 08/04/1930, Skorokhodov, Azatyan 939; (outskirts of Kassan, 07/31/1936, Skorokhodov, Azatyan 893).

I-3 Fergano-Alai District. I-3-a West Alai District: Alai Range (The right bank of the Sokh river, 3 km north of the village of Kshtut, h = 1300 m, 06/10/1984, Khalkuziev, Shermatov, Makhmedov, Gafarov)

I-3.Fergano-Alai District. I-3-b. East Alai District: Alai Range (Bass. Shakhimardan. Surroundings. Yardan Valley, Dugoba-sa River, Pyatayev, Students; Spurs of the Katran-Tau Mountains. Lesson. Selevel. 26.05.1954, Arifkhanova, Pamir-Alai. Western part of the Alai ridge. Surroundings of the village of Vuadyl. 04.29.1965, Shonazarov; District. Village. Shakhimardan).

II-1-b. East Ferghana region: (Ferghana region. Skobelevsky u. Ankhor site. Arpa ravine, returning part of the northern slope, 04/28/1916, Babenko)

I-3.Fergano-Alai District. I-3-b. East Alai District: Alai Range (Surrounding Satkak Village, 05/09/1965. Shonazarov).

I-5. Kuhistan district. I-5-b. Malguzar district: Malguzar range (usher. Sanzar river “Tamerlan gate”, 04/26/1975, Piminov, Baranova).

I-6 West Gissar District. I-6-c Baysunsky district (Spurs of the Southwest Gissar. Baysuntau. Machai-Darya river basin. Neighborhood to / from Darband, O. Turginov)

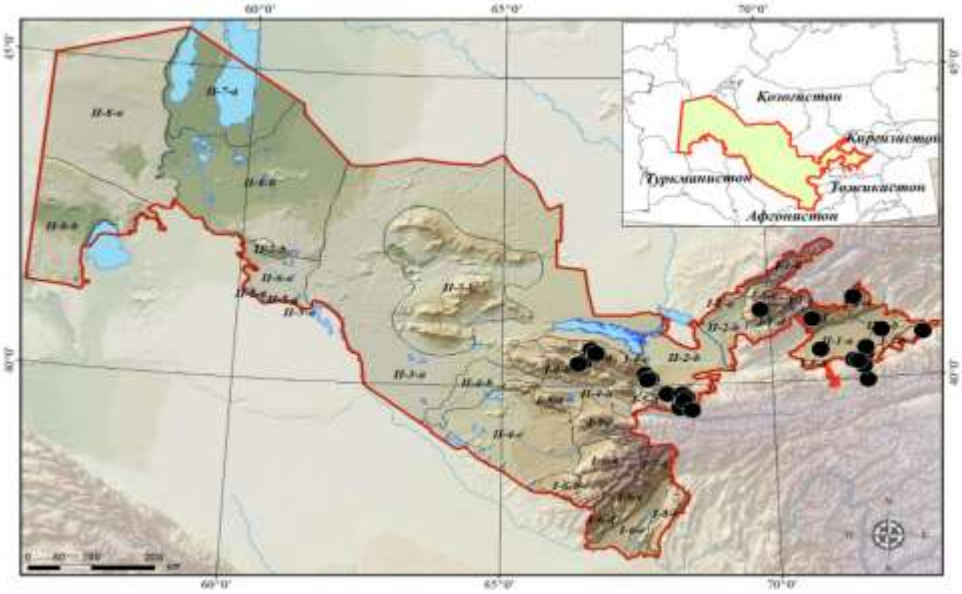
I-5 Kuhistan District. I-5-a North Turkestan region: Turkestan Range (Bass. R. Khoja-Bakirgan, Burikurmas mountains, 06.06.1984; rivulet Dzhetikupryuk, h = 1540, west-west., 04.06.1984, Khalkuziev, Shermatov, Makhmedov, Gafarov)

A map of the distribution of the species in the botanical and geographical regions of Uzbekistan is shown in Figure 1.

Conclusions

As a result of the distribution of the species in the botanical and geographical regions of Uzbekistan, it was found that this species also grows in the Kuramin ridge of the Western Tien Shan mountain system. This applies to the Charkesar bot.

Picture No 1. Map showing the distribution of Scutellaria adenostegia Brq. i n the botanical and geographical areas of Uzbekistan.



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