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## A NEW LOCATION OF FERULA SUMBUL (KAUFFM.) HOOK.F. AND MOSSES IN THE TURKESTAN RIDGE

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**Anatatsiya:** Maqolada *Ferula turiga* 185 ga yaqin tur kiradi, ularning aksariyati Markaziy Osiyoda tarqalgan. Barcha kovraklar ko'p yillik o'simliklardir, ularning ba'zilari juda baland bo'lib, gullash davrida balandligi ikki metrga yetadi. Barcha kovraklar efemeroidlar guruhiga kiradi. Yo'sinlar *Brachythecium rutabulum* (Hedw.) Schimp., *B. Salebrosum* (Hoffm. Ex F. Weber & D. Mohr) Schimp., *Bryum Schleicheri* DC., *Amblystegium Serpens* (Hedw.) Schimp., *Fontinalis hypnoides* Hartman., *Conocephalum conicum* (L.) Dum. yo'sinlar turlari keltirilgan.

**Kalit so'zlar:** ferula, o'simlik, ildiz, tibbiyot, zarafshan, zaxiralar, moxlar.

**Аннотация:** Род Ферула включает около 185 видов, большинство из которых распространено в Средней Азии. Все ферулы – многолетние травянистые растения, среди которых есть довольно крупные, в период цветения достигающее двух метров в высоту. Все ферулы относятся к группе эфемероидов. В результате было обнаружено виды мхов *Brachythecium rutabulum* (Hedw.) Schimp., *B. Salebrosum* (Hoffm. Ex F. Weber & D. Mohr) Schimp., *Bryum Schleicheri* DC., *Amblystegium Serpens* (Hedw.) Schimp., *Fontinalis hypnoides* Hartman., *Conocephalum conicum* (L.) Dum.

**Ключевые слова:** ферула, растение, корни, медицина, зарафшан, ресурсы, мхи.

**Abstract:** The *Ferula* genus includes about 185 species, most of which are distributed in Central Asia. All *Ferula* are perennial herbaceous plants, some of which are quite large, reaching two meters in height during the flowering period. All *Ferula* belong to the group of ephemerides. As a result, the species of mosses *Brachythecium Rutabulum* (Hedw.) Schimp., *B. Salebrosum* (Hoffm. Ex F. Weber & D. Mohr)

Schimp., Bryum Schleicheri DC., Amblystegium Serpens (Hedw.) Schimp., Fontunalis hypnoides Hartman. , Conocephalum Conicum (L.) Dum.

**Keywords:** Ferula, plant, roots, medicine, Zarafshan, resources, mosses.

**Introduction.** The Ridge of Turkistan is a high-altitude ridge of a latitudinal direction, about 340 km long, belonging to the Gissar-Alay mountain system. The Ridge joins the Alay range in the east through the Matcha mountain knot and is extended to the Samarkand flatland in the west. The northern slope is long and gentle, with juniper forests and woodlands, the southern one is short and steep, with rocks and talus. In the south, the valley of the Zeravshan River is separated from the Zaravshan Range. The highest points are Skalisty Peak (5621 m above sea level) and Pyramidalny Peak (5509 m above sea level). The Geben ridge, especially in the eastern part, is covered with mountain glaciers. The largest glaciers such as Tolstoy, Shurovsky, and Zaravshan are located at the beginning part of the Zaravshan River. The Dushanbe-Khujand highway passes through one of the mountain passes - Shakhristan at an altitude of 3378 meters. The slopes are dissected by river valleys of the Isfara, Ak-Suu, Kara-Suu rivers. On the northern slope, there is a mountain lake Ai-Kel. The border of Tajikistan with Uzbekistan and Kyrgyzstan runs along the ridge [1].

The problem of drug provision for the population of the Republic of Uzbekistan is of current interest. The shortage of medicinal products is associated with the collapse of the USSR, disrupted economic and economic ties, the suspension of some chemical-pharmaceutical plants, factories, and workshops with outdated equipment and technology that pollutes the environment. It is impossible to solve the problem by exporting medicinal products from abroad.

In this regard, the botanists of sovereign Uzbekistan have been assigned an urgent task of comprehensive study, development of measures for the rational use of raw materials, and the development of medicinal plant growing. In solving this problem, an important place is occupied by the determination of the rate of recovery of the thickets of a medicinal plant after harvesting.

**Literature Review.** "Sumbul" is a Persian and Arabic word that refers to different roots. The plant was discovered in 1869 by the Russian scientist Fedchenko in the mountains southeast of Samarkand. It is near the small town of Panjakent on the Zarafshan River. In 1871, the plant was described by Kaufman as a new species. At that time, the plant was grown in Moscow botanical gardens.

The main collectors of herbarium collections made in Uzbekistan in the twentieth century by Ferula Sumbul are N.K. Betger (1916), M. Ch. Popov (1916), M. Ch. Popov, A. Androsoy (1926), M.V. Kultiasov, A.I. Granitov (1927), V. Bochantsev, A. Butkov (1936), E. Demurina (1937), S.N. Kudryashev (1937), L. Nazarenko (1946), A. Pyataeva (1940, 1948, 1955), M.G. Pimenov (1983), I.U. Mukumov (1991), K. Taizhanov (1996), and others.

Regional works on bryophytes in Central Asia and part of Russia are quite numerous. According to our data, systematic comprehensive studies of Bryoflora were carried out for the first time, initial bryological studies in Central Asia were carried out by scientists A. Fedchenko and O. Fedchenko, subsequent studies were continued by A.E. Regel, V.L. Komarov, V.I. Lipsky, S.I. Korzhensky, B.A. Fedchenko, and after the revolution, scientists V.F. Brotherus, S.M. Vislouho, A.A. Elenkin and O.

Fedchenko. The Bryoflora of the Pamir-Alai was studied by A.S. Lazarenko, P.I. Ovchinnikov, K.S. Afanasyev [1,8]. O.F. Gaze, in his work devoted to the study of bryophytes in the Zarafshan valley, provides data on the floristic features of 49 species of mosses [6]. Large-scale studies aimed at studying bryophytes were carried out in the 60s of the last century by A.M. Muzafarov, A.L. Abramova, I.I. Abramov, E.K. Tyvel, M.S. Kozlova, M.I. Godvinsky, A.S. Lazarenko, E.M. Lesnyak, L.I. Savich-Lyubitsky, U.K. Mamatkulov, B. Boborajabov and others [7-9].

**Materials and Methodology of the research.** Floristic material was collected by us during the field seasons 2018-2021. The studies were carried out by the route method. Based on these studies, the author compiled a preliminary list of *Ferula* species and bryophytes [10,11]. At present, the list of Jum-Jumsay bryophytes has been significantly replenished. As a result, about 50 samples of bryophytes were collected on the territory of Jum-Jumsay. All samples are kept in the Herbarium of Samarkand State University (SSU). The nomenclature of bryophyte taxa corresponds to that accepted in the biological literature.

**Results and its discussion.** *Ferula Sumbul* (Kauffman) Hook f. *Ferula Sumbul* (F. Musk) or Musk root (lat. *Ferula Sumbul*) is a flowering plant of the Apiaceae family (Celery), up to 150 cm high. There are several stems, thin, in the upper part, corymbose branching. The root is thick, multi-headed. Leaves are harsh, slightly pubescent below, basal leaves are oval-triangular, with long petioles articulated with a plate, the leaf blade is three times persistor-countable, 20-30 mm long, 10-15 mm wide, stem leaves with a simplified plate, upper ones are narrow lanceolate sheaths ... The umbrellas are different. Central - 6-10 ray, 4-6 cm wide, lateral solitary or sitting in two. Umbels 10-15 flowered, calyx toothed, yellow petals, 0.7 mm long, oblong-oval. The fruits are small, 7 mm long and 4 mm wide. Blossoms in June; bears fruit in July. Propagated by seeds.



**Ferula sumbul in the nature**

*F. sumbul* is known to be one of the least studied medicinal herbs. It grows primarily in Eastern Europe, northern India, Uzbekistan (Nuratau, Zarafshan, Gissar, Turkestan), and Tajikistan. It is possible to find it in rocky slopes of the middle belt of mountains, among thickets of bushes.

The plant is valued for its medicinal roots. Interestingly, the name "Musk Root" was not easy given, because the plant has a fibrous cork bark, which emits a characteristic musky smell.



In general, the roots contain balsamic resins and essential oils, starch, gum, and wax. The main components of the musk root are oleic, palmitic, stearic, and linoleic oils, as well as dextrin, ash, and sucrose. Acetic acid, betaine, and fiber are also found in *Ferula Sumbul* [2-4].

In medicine, Sumbul is used for mental disorders. First of all, with insomnia and nervousness.

It was originally imported to Russia as a substitute for musk. It was eventually incorporated into British pharmacological practice in 1867. It has been described as a digestive aid and a cure for hysteria [5].

Sumbul is used to treat a wide range of digestive ailments from flatulence to dyspepsia. Sometimes a local remedy is prepared from the root powder to relieve pain directly in the abdomen. It is excellent for relieving cramp pain and improving digestion.

In addition, due to its aromatic qualities, this herb is used for asthma. Besides, it is a good folk remedy for pneumonia, to cleanse the lungs and make breathing easier. As a result of field research in 2018-2021, a survey was carried out on the territory of Uzbekistan, and herbarium substances were collected, processing of this material. During the expedition, a new location *Ferula Sumbul* was found in the vicinity of the village of Jum-Jum, the right bank of the Jum-Jum (Bakhmal district, Jizzakh region).

The species was found in the Turkestan ridge, at an altitude of 1875 m above sea level, coordinates 67.836577 / p 39673161.

Recent researches showed that in Turkestan ridge which *Ferula Sumbul* takes part in the ferul-shrub association, the year 4.07.2021 was described for which *Ferula Kuhistanica* Korovin *Urtica dioica* L., *Codonopsis clematidea* Schronk, *Heracleum Lehmannianum* Bunge, *Juniperus pseudosabina* Fis. & C.A. Mey. (*J. Turkestanica* Kom.) *Ziziphora clinopodioides* Lam., *Origanum vulgare* (K. Koch) Jetsw. (*Origanum tutanthum* Gontsch.), *Hypericum perforatum* L., *Mentha longitolia* var. *Asiatica* (Boriss) Rech, f., *Polygonum coriarium* Grig, *Berberis oblonga* C.K. Schneid., *Adiantum capillus - Veneris* L., *Ephedra equisetina* Bunge, *Orchis pseudolaxiflora* Czerniak, *Carex enervis* C.A. Mey., *Hordeum bulbosum* L., *Thalictrum minus* L., *Onobrychis Grandis* tripsoy, *Cicer pungeus* Boiss, *Crataegus Songarica* C. Koch., *Rosa fedtschenkoana* Regel, *Geranium collinum* Stephan ex Willd., *Acer turkestanicum* Pax, *Ligularia tharkeomsonic* (CB ., in addition, from the bryophytes during the study when studying mosses in the Jum-Jumsay region of the North Turkestan ridge, it was for the first time revealed that there are 25 species of 15 genera belonging to 11 families for the region, and an article was published about this. Subsequent studies revealed taxonomic novelty for 5 more species. *Brachythecium rutabulum* (Hedw.) Schimp., *B. Salebrosum* (Hoffm. Ex F. Weber & D. Mohr) Schimp. (family *Brachytheciaceae*), *Bryum Schleicheri* DC (family *Bryaceae*), *Amblystegium Serpens* (Hedw.) Schimp. (family *Amblystegiaceae*), *Marshantia polymorpha* L. (family *Marshantiaceae*), *Fontinalis hypnoides* Hartman var. (*Fontinalis tenella* (Cardot) Cardot) (family *Fontinalaceae*).



***Bryum schleicheri* DC. in nature.** The decline in numbers was caused by centuries of intensive harvesting.

It is very rare, in small populations ranging from a few specimens to several dozen.

One of the reasons for the continued decline in numbers is severe damage to seeds by insect pests.

**Conclusion.** Thus, *Ferula Sumbul* is a valued plant, contains resin, essential oil, gums, carbohydrates and other substances. New location of *Ferula Sumbul* was found in the Turkestan ridge (Jum-Jum village). It is rare, in small populations, included in the Red Book of Uzbekistan, category 2. Today, 30 species of bryophytes from 17 genera and 13 families have been reliably registered in Jum-Jumsay. For the first time, 4 types (*Brachythecium rutabulum* (Hedw.) Schimp., *Brachythecium salebrosum* (Hoffm. ex F. Weber & D. Mohr) Schimp., *Amblystegium serpens* (Hedw.) Schimp., *Conocephalum conicum* (L.) Dum.) of bryophytes were found in the territory of Jum-Jumsay.

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