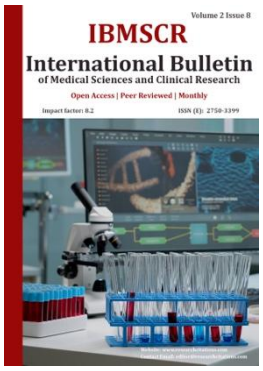

THE POSITION OF HELICHRYSUM SPECIES IN "FLORA OF UZBEKISTAN" AND THEIR ANALYSIS, CASE STUDY OF HELICHRYSUM NURATAVICUM

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Abstract. This article provides an overview of Helichrysum nuratavicum Krasch, an endemic species in Uzbekistan, belonging to the Helichrysum genus within the Asteraceae family. It discusses the significance of genus, with a focus on its medicinal properties and the plant's habitat in the Pamiro-Alai region, found in wormwood-grass thickets at altitudes of 1,500 to 2,000 meters. The article highlights the importance of further research on this species, as its medicinal benefits and unique endemic nature make it a valuable subject for scientific study and conservation efforts.

Key words: Helichrysum nuratavicum, medicinal plant, endemic, Flora of Uzbekistan, Flora USSR.

Introduction: The genus Helichrysum Mill, belonging to the Asteraceae Bercht. & J.Presl family, which is the largest family of vascular plants in the world, containing more than 1.900 genera and more than 32.000 individual species. Many members of the Asteraceae are important for medicinal, ornamental, and economic purposes[1]. The four Helichrysum species-H. tianschanicum, H. mussa, H. nuratavicum, and H. maracandicum-represent the genus in Uzbekistan [5].

The genus, known as everlasting flowers or immortelles worldwide, is a member of the Asteraceae represented by about 600 species over the world. One of the species of this genus indigenous plants in Uzbekistan is *Helichrysum nuratavicum* [7].

Wormwood-grass thickets on hilly slopes between 1500 and 2000 m a.s.l. Pamiro-Alai is endemic throughout Central Asia, according to Uzbekistan [2]. As well as, this species is considered important medicinal plant in Uzbekistan (Fig. 1.). Due to its endemic nature and medicinal properties for Uzbekistan, studying this plant is considered one of the most relevant topics today.

Literature Review and Methodology

The publications "Flora of the USSR" (1959), "Flora of Uzbekistan" (1962), and literature on the genus were utilized to analyze the place of *Helichrysum* species in the flora system of Uzbekistan.

Result and discussion

The *Helichrysum* has 559 species in the genus, and they are mostly located in the Old World. Perennial or annual herbs, sometimes shrublets. Leaves alternate, often hairy, usually with flat, entire margin. Capitula disciform, in terminal corymbs or solitary; receptacle flat, usually epaleate; phyllaries in several to many series, papery, brown, yellow, pink or white, with divided stereome. Outer florets female, yellow, filiform, in 1–several rows, with 3–4 lobes; inner florets usually more numerous than the outer ones, hermaphrodite, yellow, lobes 5, erect, anthers tailed and with a flat apical appendage, style with truncate branches. Achenes small, oblong, sparsely hairy with short, clavate mucilaginous hairs, or with long normal hairs, or

glabrous; pappus of barbellate to subplumose bristles, 1-seriate, free or basally slightly connate with cilia, caducous in groups or individually (POWO 2025).

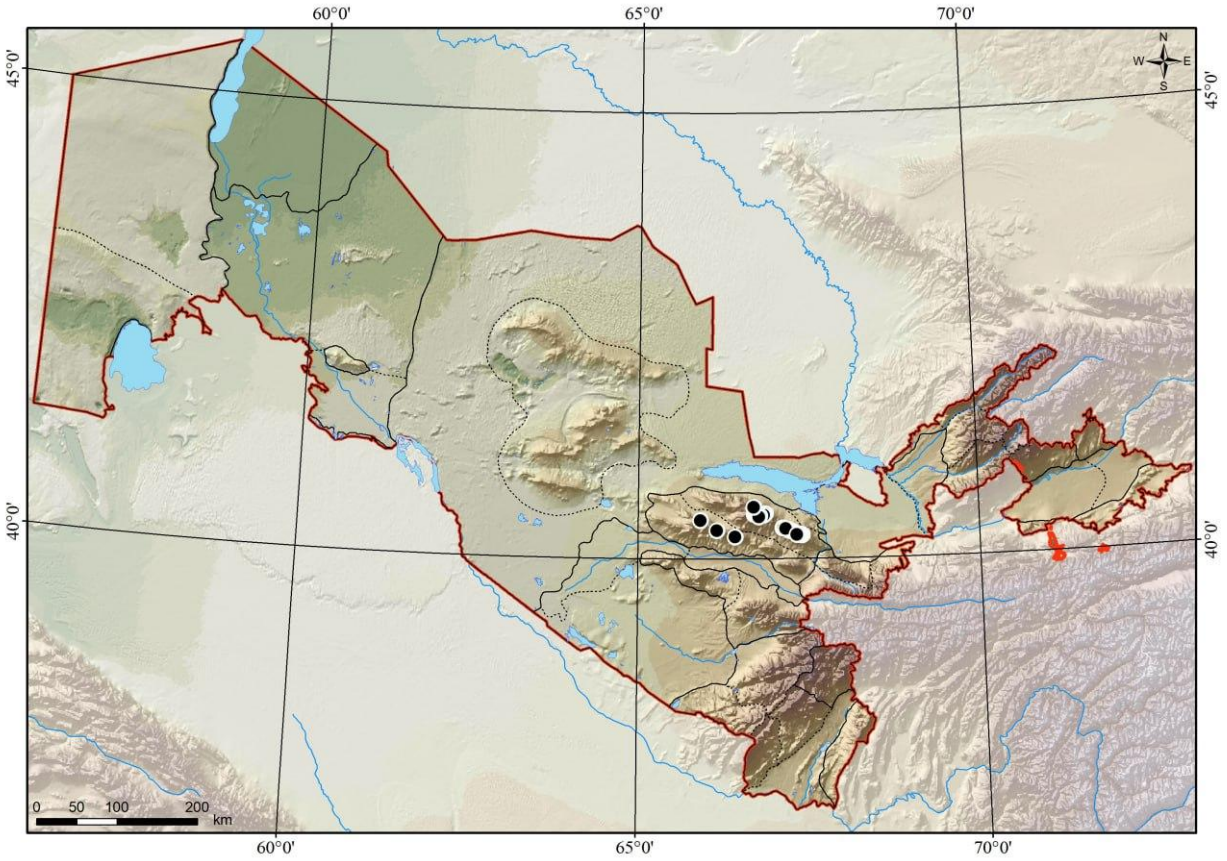

Figure 1. The distribution of *Helichrysum nuratavicum* in Uzbekistan

Botanical institute was founded in 1940 as a division of the Uzbek Academy of Sciences. The six-volume book "Flora of Uzbekistan" was produced between 1941 and 1962 and was based on field observations and the examination of plant specimens stored in the Uzbekistan National Herbarium (TASH). The scientists who worked at this institute also planned scientific plant research missions. Under the direction of A.I. Vvedensky (1889–1971), this endeavor produced a study that details 4,230 plant species from 138 families that are found in Uzbekistan.

In this work, the following information about the plant *H. nuratavicum* is provided: Perennial plant has sterile stems that form a small but dense tussock; the root is woody, usually tap-root, about 5 mm in diameter, usually short, many-headed, and produces many sterile and few (usually three to five) flowering stems (3)

Figure 2. *Helichrysum nuratavicum*. Photo by N. Beshko.

that are 5–20(35) cm high, covered with grayish arachnoid tomentum, sometimes mixed with a few glandular hairs (Fig.2). The leaves are typically 1-2 mm wide and 0.5-2.5 cm long, and they can be linear, linear-lanceolate, linear-spatulate, or revolute. 4-6 mm long by 3-4 mm wide, capitula 2-6 (rarely more, some underdeveloped), obconical or thin campanulate, typically on short, densely white tomentose peduncles, terminal in compressed, almost capitate corymbs. About 40 involucral bracts are brownish-yellow or pale straw-yellow, even whitish, imbricate, and five to eight rowed; the inner bracts on the back tomentose are linear-spatulate or linear, to 5 to 6 mm long; the bracts of the outer two or three rows are broad lanceolate, elliptical or ovate, and very short (1-2 mm long), densely arachnoid pubescent. There are roughly 20 flowers in the capitulum, and the pappus has about 25 tiny, white hairs that are nearly as long as the corolla [3]. However, significantly different information about this plant is given in another piece of literature:

Woolly, sedose, tussocky, and thickly cobwebby. With short, sterile shoots, caudex spreads. Simple, erect, foliated, shorter, ascending, and 5–12 cm tall are stems 1–6. Sterile branch and stem leaves are nearly spatulate, obtuse, 5–15 mm long, 1-2 mm wide, and have a sharply projecting midrib underneath. Anthodia are 4-5 mm length, 3-4 mm in diameter, and obliquely conical. The involucral leaflets are glossy, membrane-bound, many, imbricated, pale, straw-yellow, and whitish-yellow. The middle ones are obovate, internal linear, and the outer ones are ovate, 1-1.5 mm long. It has a white tuft. It produces fruit in July and August after blooming in June and July (Table 1) [8].

Table 1. Comprise of informations about *H. nuratavicum* in 2 main literatures.

FLORA OF THE USSR (1959)	ФЛОРА УЗБЕКИСТАНА Т.VI (1962)

stems	has sterile stems that form a small but dense tussock, are 5–20(35) cm high, covered with grayish arachnoid tomentum	With short, sterile shoots, caudex spreads. Simple, erect, foliated, shorter, ascending, and 5–12 cm tall are stems 1–6. Sterile branch
leaves	The leaves are typically 1-2 mm wide and 0.5-2.5 cm long, and they can be linear, linear-lanceolate, linear-spatulate	leaves are nearly spatulate, obtuse, 5–15 mm long, 1-2 mm wide, and have a sharply projecting midrib underneath
Flowers	There are roughly 20 flowers in the capitulum, and the pappus has about 25 tiny, white hairs that are nearly as long as the corolla	blooming in June and July
involucral bracts	About 40 involucral bracts are brownish-yellow or pale straw-yellow, even whitish, imbricate, and five to eight rowed, the bracts of the outer two or three rows are broad lanceolate, elliptical or ovate, and too short (1-2 mm long), densely arachnoid pubescent	The involucral leaflets are glossy, membrane-bound, many, imbricated, pale, straw-yellow, and whitish-yellow. The middle ones are obovate, internal linear, and the outer ones are ovate, 1-1.5 mm long.

The plant decoction is used as an anthelmintic, as well as a diuretic, laxative, nephritis, cystitis, dyspepsia, vomiting, and colitis in the Altai and Middle Asia. Artherosclerosis, hypertension, rheumatism, gout, arthritis, respiratory conditions, venereal diseases, rabid dog bites, sciatica, and external eczema and dermal diseases are among the conditions it treats in the Northern Caucasus [6].

Conclusion: In conclusion, the significance of *H. nuratavicum* in the flora of Uzbekistan is primarily based on the fact that this species is found only in Uzbekistan and its medicinal properties. Therefore, the risk of this species declining is considered to be very high. In addition, to prevent this situation, it is essential to conduct sufficient research on this species, particularly molecular studies. Moreover, the information provided about this species is somewhat outdated, as it mainly relies on data from the years 1959-1960. Therefore, it is crucial that we do not delay studying this species.

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