



SHORT COMMUNICATION

New identity and neotypification of the mysterious *Anethum involucratum* (Umbelliferae) from the western Pamir-Alay (Uzbekistan)

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ABSTRACT

Anethum involucratum is the last species of the Umbelliferae in the flora of Uzbekistan which remains taxonomically obscure due to the loss of its type material in Tashkent (TASH) where it should have been stored according to the protologue. A comparative study of descriptions of *A. involucratum* and species of *Galagania* was undertaken with a special attention to *G. tenuisecta*, a widely distributed and common species, with examination of herbarium collections from Kashkadarya viloyat, a type province of *A. involucratum* and adjacent Samarquand viloyat. This study demonstrated that the described features of both species are almost identical, and *A. involucratum* is placed in the synonymy of previously described *G. tenuisecta*. The previously proposed synonymization of *A. involucratum* with *G. neglecta* is rejected, and its previously designated neotype is superseded. The genus *Anethum* is excluded from the native flora of Uzbekistan.

Key words: *Anethum*; Apiaceae; *Galagania*; Herbaria LE and TASH; Central Asia; Pamir-Alay; typification; Umbelliferae; Uzbekistan

Introduction

Anethum involucratum Korovin is one of very few enigmatic Central Asian species of the Umbelliferae whose identity remains obscure due to the loss of its type material. The species was described by E.P. Korovin (1947) on the basis on one cited gathering collected in 1928 by I.A. Linczevski (TASH, № 273) in the vicinities of Karshi Town (formerly Bek-Budi) in present-day Kashkadarya province (viloyat) of Uzbekistan. According to Korovin, it is the only native species of *Anethum* in Uzbekistan.

Later B.K. Schischkin (1951), who did not have an opportunity to study the characters of the type specimen(s) of *A. involucratum*, repeated Korovin's diagnosis and his note that the type was in Tashkent. He, however, doubted the taxonomic placement of the species to *Anethum*, a genus whose origin is rather obscure but possibly western Mediterranean (s.str.). Searches for the type in the present-day TASH, which became the National Herbarium of Uzbekistan, were unsuccessful. Until the type is found, we are limited in our conclusions to the original species description and some information on its type locality.

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This study aims at resolving the taxonomic and nomenclatural problems with the enigmatic species *Anethum involucratum*. It was undertaken in connection with the forthcoming publication of the treatment of Umbelliferae in the second edition of the Flora of Uzbekistan (Sennikov et al. 2016).

The identity of *Anethum involucratum*

E.V. Kljuykov (in Tojibaev et al. 2020) transferred *A. involucratum* to the genus *Galagania* and validated a new nomenclatural combination for the species, *G. involucrata* (Korovin) Kljuykov. He also regarded *Galagania neglecta* M.G.Vassiljeva & Kljuykov as a synonym of *Anethum involucratum* (*Galagania involucrata*).

While agreeing with the assignment of *A. involucratum* to the genus *Galagania*, I however, assume its identity with another member of this genus, *Galagania tenuisecta* (Regel & Schmalh.) M.G.Vassiljeva & Pimenov (*Peucedanum tenuisectum* Regel & Schmalh.). The basis for the assignment of *A. involucratum* to *G. tenuisecta* is its annual life-form, narrow-linear terminal lobes of leaf blades, developed involucre leaflets, and the fruits compressed dorsally, with broad marginal ribs. In last character *G. neglecta* differs from both *Anethum involucratum* and *G. tenuisecta*. In general, this set of characters corresponds to morphology of *Anethum*.

Galagania Lipsky is a small genus of geophytic Umbelliferae, subendemic to the botanical Middle Asia sensu Kamelin (1973). Described as monotypic (Lipsky 1900), it currently numbers 7 species (Pimenov 2020), which can be divided into two groups (sections) based mainly on fruit structure characters:

Galagania sect. *Galagania*, includes the type species *G. fragrantissima* Lipsky, *G. gracilis* (Kamelin & Pimenov) Kamelin & Pimenov, and *G. neglecta* M.G.Vassiljeva & Kljuykov. The species of type section having dorsally uncompressed mericarps with a truncated base, approximately equal dorsal and marginal ribs without large cell parenchyma,

their root tubers are spherical, located in the upper soil layer.

Galagania. sect. *Korovinia* (Nevski & Vved.) Pimenov comb. nov. (basonym: *Korovinia* Nevski & Vved., Trudy Bot. Inst. Akad. Nauk SSSR, ser. 1, 4: 272. 1937; type: *G. tenuisecta* (Regel & Schmalh.) M.G.Vassiljeva & Pimenov). The section includes *G. ferganensis* (Korovin) M.G.Vassiljeva & Pimenov, *G. platypoda* (Aitch. & Hemsl.) M.G.Vassiljeva & Pimenov, *G. margiana* Pimenov & M.G.Vassiljeva, and *G. tenuisecta*. The species of this section have dorsally compressed mericarps with thin dorsal and broader (dilatate) marginal ribs, reinforced by large cell parenchyma (or sclerenchyma as in *G. ferganensis*). They have cylindrical root tubers, extending vertically into the soil.

The distinction of two groups within *Galagania* is illustrated by mericarp cross-sections of *G. tenuisecta* (as *Korovinia tenuisecta*: Korovin 1951: Tab. 21, fig. 6), *G. fragrantissima* (Korovin 1959: Tab. 32, fig. 3), *G. margiana* Pimenov & M.G.Vassiljeva, and *G. ferganensis* (Pimenov, Kljuykov 2002: Tab. 10, fig. 3). *Anethum involucratum* with its «fructus (immaturi) oblongi, basi cuneati...jugis dorsalibus filiformibus, marginalibus dilatatis» corresponds carpologically to *Galagania* sect. *Korovinia*.

Comparing word by word the descriptions of *A. involucratum* (Korovin 1947, 1959) and *G. tenuisecta* (Korovin 1951; Schischkin 1951, Pimenov, Kljuykov 2002), I found an almost complete coincidence in characters of the life form, underground organs, stems, leaves, umbels, umbellets, flowers and fruits in both taxa, up to the absence of differences in wordings of many characters. *G. tenuisecta* differs from other species of section in synflorescence (corymbose or paniculate) and in stem leaf vaginas characters (Pimenov, 1983).

There are two considerations pro *G. tenuisecta* and contra *G. neglecta*, carpological and geographical. Firstly, Korovin's species was described in *Anethum*; this means the author suggested that its fruits is flat, compressed dorsally («peucedanoid»). He also

described immature fruits of *A. involucratum* with «jugis ... marginalibus dilatatis» and regarded *A. chryseum* Boiss. & Heldr. = *Peucedanum chryseum* (Boiss. & Heldr.) D.F.Chamb. (now *Dichoropetalum chryseum* (Boiss. & Heldr.) Pimenov & Kljuykov) from Turkey as the most similar species. On the contrary, fruits of *Galagania neglecta* are uncompressed on the dorsal side, with approximately equal dorsal and marginal ribs. Secondly, *G. tenuisecta* is rather common within the area (Kashka-darya viloyat, vicinities of Karshi), from which *A. involucratum* has been described. The ecology of these taxa is more or less similar; in particular both can be found as weeds in crop fields.

Of course, if a true Korovin's type of *Anethum involucratum* is found, though it becomes less and less likely as time passes, these considerations will lose their value. Nevertheless, even in the absence of the original type, I feel confident that the affinity of this species with *G. neglecta* previously designated by Kljuykov (Tojibaev et al. 2020), is incorrect and should be superseded as being contrary to the original description in its main diagnostic characters. A new neotype, collected near the original type area (locus classicus), is designated here in agreement with the original intention of Korovin (1947).

With this type designation, *A. involucratum* becomes a synonym of *G. tenuisecta*. This synonymy has already been tentatively adopted in Pimenov et al. (2022).

Taxonomic summary

Galagania tenuisecta (Regel & Schmalh.) M.G.Vassiljeva & Pimenov in *Opred. Rast. Sr. Az.* 7: 223 (1983) — *Peucedanum tenuisectum* Regel & Schmalh., *Izv. Obshch. Ljubit. Estestv.Moskovsk. Univ.* 34(2): 37 (1882) — *Korovinina tenuisecta* (Regel & Schmalh.) Nevski & Vved. in Nevski, *Trudy Bot. Inst. Akad. Nauk SSSR*, ser. 1, 4: 273 (1937) — *Eulophus tenuisectus* (Regel & Schmalh.) M.Hiroe, *Umbelliferae World*: 1603 (1979).

Type: Kazakhstan. In Turkestan e montibus karatavicis prope Boroldai,

03.06.1876, Regel (lectotype LE!, designated by Geldykhonov (1992: 117), isolectotypes G! [G00366891], K! [K000695718], P! [P02272044]).

= *Anethum involucratum* Korovin, *Not. Syst. Herb. Inst. Bot. & Zool. Acad. Sci. Uzbekistan* 8: 11 (1947), syn. nov.; Schischkin in *Fl. URSS* 17: 211 (1951); Korovin in *Fl. Uzbekistana* 4: 453 (1959) — *Galagania involucrata* (Korovin) Kljuykov, *Phytotaxa* 455(1): 78 (2020), quoad nomen.

Type: Uzbekistan. Pamir-Alaj, vallis fluv.Kaschka-Darja, in regione urbis Karschi, 1928, Linczevski 273 (holotype TASH, presumably lost).

Neotype: Uzbekistan. W extremity of Zeravschan Range, vicinity of Aksai Village, road to Karshi Town, 31.05.1978, Pimenov, Kljuykov, Vassiljeva, Baranova 221 (neotype MW! [MW0859562], designated here).

Distribution:—Kazakhstan (Central: Kzyl-Orda prov.; S: S Kazakhstan prov., Zhambyl prov.), Kirghizia (Batken prov., Talas prov.), Tajikistan (Sughd prov.), Uzbekistan (Buxoro prov., Dzhizak prov., Qashqadarya prov., Samarqand prov., Surxondarya prov., Sirdarya prov., Toshkent prov.), Turkmenistan (Lebap prov.), Afghanistan (NW: Herat; N: Jowzjan, Sarepul, Baghlan; Centr.: Bamyan).

References

- Geldykhonov AM (1992) *Umbelliferae of Turkmenistan flora*. Ylym, Ashkhabad.
- Kamelin RV (1973) *Florogenetic analysis of the native flora of the Mountainous Middle Asia*. Science Publishers, Leningrad.
- Korovin EP (1947) *Species novae Umbelliferarum Florae Uzbekistanicae* 1. *Botaničeskie Materialy Gerbarija Instituta Botaniki & Zoologii Akademii Nauk Uzbekskoj SSR* 8: 3–24.
- Korovin EP (1951) *Korovinina* Nevski et Vved. In: Schischkin BK (ed.) *Flora USSR* 17: 211–214. Academy of Sciences of the USSR, Moscow & Leningrad.

- Korovin EP (1959) Umbelliferae. In: Vvedensky AI (ed.) *Flora of Uzbekistan* 4: 257–470. Academy of Sciences of the Uzbek. SSR, Tashkent.
- Lipsky VI (1900) Materialy dlja flory Srednei Asii. [Materials for the flora of Middle Asia]. *Trudy Imperatorskogo S.-Peterburgskogo Botaničeskogo Sada* 18: 1–146.
- Pimenov MG (1983) *Galagania* Lipsky. In: Adylov TA (ed.) *Conspectus florum Asiae Mediae* 7: 221–223. FAN, Tashkent.
- Pimenov MG (2020) Updated checklist of the Umbelliferae of Middle Asia and Kazakhstan: nomenclature, synonymy, typification, distribution. *Turczaninowia* 23: 127–257.
- Pimenov MG, Kljuykov EV (2002) *Zontichnye (Umbelliferae) Kirghizii*. KMK Scientific Press, Moscow.
- Pimenov M, Tojibaev K, Sennikov A, Khassanov F, Beschko N (2022) Taxonomic and nomenclatural inventory of the Umbelliferae in Central Asia, described on the basis of collections of the National Herbarium of Uzbekistan. *Plant Diversity in Central Asia* 1: 21–51.
- Pimenov MG, Vassilijeva MG, Kljuykov EV (1983) Generis *Galagania* (Apiaceae) duae species nova ex Asiae Mediae. *Novosti Sistematiki Vysshich Rasteniy* 20: 155–161.
- Schischkin BK (1951) *Anethum* L. In: Schischkin BK (ed.) *Flora of the USSR* 17: 208–211. Academy of Sciences of the USSR, Moscow & Leningrad.
- Sennikov AN, Tojibaev KS, Khassanov FO, Beshko NY (2016) The Flora of Uzbekistan Project. *Phytotaxa* 282: 107–118.
- Tojibaev KS, Beshko NY, Turginov OT, Laskov DF, Ukrainskaya UA, Kljuykov EV (2020) An annotated checklist of the endemic Apiaceae of Uzbekistan. *Phytotaxa* 455: 70–94.