

44. CARUM Linnaeus, Sp. Pl. 1: 263. 1753.

葛缕子属 ge lü zi shu

Pu Fading (溥发鼎 Pu Fa-ting); Mark F. Watson

Herbs biennial or short lived perennial, glabrous. Taproot tuberous, fusiform, elongate or cylindrical. Stem usually branched above, base with or without papery remnant sheaths. Basal leaves petiolate, narrowly sheathing; blade 2–4-pinnate; ultimate segments linear or lanceolate. Stem leaves gradually reduced upward. Umbels compound, terminal. Calyx teeth obsolete, rarely present, narrowly triangular. Petals broadly obovate, white, rarely pinkish or purplish, midvein yellow or yellow-green, base cuneate, with an inflexed apex. Stylopodium conic; styles recurved. Fruit oblong-ellipsoid or oblong-ovoid, slightly laterally compressed, glabrous; ribs 5, filiform, prominent; vittae 1(–3) in each furrow, 2–4 on commissure. Seed face plane. Carpophore 2-parted.

About 20 species: N temperate zone; four species (one endemic) in China.

This widespread genus has very uncertain limits.

- 1a. Bracteoles as long as or longer than umbellules, margins ciliate; calyx teeth prominent 4. *C. bretscheideri*
- 1b. Bracteoles shorter than umbellules or absent, margins entire; calyx teeth obsolete.
 - 2a. Base of stem without remnant sheaths; bracteoles absent 1. *C. carvi*
 - 2b. Base of stem clothed with papery remnant sheaths; bracteoles 5–8.
 - 3a. Basal leaves 3–4-pinnate; petals white; vittae solitary in each furrow 2. *C. buriaticum*
 - 3b. Basal leaves 2–3-pinnate; petals purplish-red; vittae 3 in each furrow 3. *C. atosanguineum*

1. *Carum carvi* Linnaeus, Sp. Pl. 1: 263. 1753.

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Carum gracile Lindley; *C. carvi* var. *gracile* (Lindley) H. Wolff; *C. carvi* f. *rubriflorum* H. Wolff.

Plants 15–70(–150) cm tall. Taproot cylindrical, to 25 cm. Stems solitary, rarely 2–8, base without remnant sheaths. Basal and lower leaves oblong-lanceolate in outline, 2–3-pinnate; ultimate segments linear or linear-lanceolate, 3–5 × 1–2 mm. Leaves reduced upwards. Umbels 2.5–6 cm across; bracts absent or occasionally 1–4, linear, 4–11 mm, entire; rays 3–10, 0.6–4 cm, extremely unequal; bracteoles absent; umbellules 4–15-flowered. Calyx teeth obsolete. Petals white or pinkish, base not clawed. Fruit oblong-ellipsoid, 3–5 × 1–2 mm; vittae 1 in each furrow, 2 on commissure. Fl. May–Jul, fr. Jul–Sep. 2n = 20.

Forests, brushy alpine meadows, riparian grasslands, ruderal areas; 1500–4300 m. Gansu, Hebei, Henan, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shandong, Sichuan, Xinjiang, Xizang, Yunnan [widespread in Asia, Europe, and the Mediterranean region; introduced elsewhere].

2. *Carum buriaticum* Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 17: 713. 1844.

田葛缕子 tian ge lü zi

Bunium buriaticum (Turczaninow) Drude; *Carum angustissimum* Kitagawa; *C. buriaticum* f. *angustissimum* (Kitagawa) H. Wolff; *C. curvatum* C. B. Clarke ex H. Wolff; *C. furcatum* H. Wolff; *C. pseudoburiaticum* H. Wolff.

Plants 50–80 cm. Taproots cylindric, to 18 cm. Stem solitary, rarely 2–5; base with papery remnant sheaths. Basal and lower leaves oblong-ovate in outline, 3–4-pinnate; ultimate segments linear, 2–5 × (0.3–)0.5–1 mm. Umbels 4–8 cm across; bracts 2–4, linear or linear-lanceolate, ca. 3 mm; rays 9–15, 1.5–5 cm, slightly unequal; bracteoles 5–8, lanceolate, ca. 1.5 × 0.3 mm; umbellules 10–30-flowered. Calyx teeth obsolete. Pe-

tals white, base not clawed. Fruit oblong-ellipsoid, 3–4 × 1.5–2 mm; vittae 1 in each furrow, 2 on commissure. Fl. May–Jul, fr. Aug–Oct. n = 11*.

Forests, alpine meadows, fields, roadsides; 1500–3600 m. Gansu, Hebei, Henan, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Xizang [Mongolia, Russia].

This species has reputed medicinal value (in Shanxi).

3. *Carum atosanguineum* Karelin & Kirilov, Bull. Soc. Imp. Naturalistes Moscou 15: 359. 1842.

暗红葛缕子 an hong ge lü zi

Vicatia atrosanguinea (Karelin & Kirilov) P. K. Mukherjee & M. Pimenov.

Plants ca. 40 cm. Taproot slender, much-branched. Stem erect, base clothed with papery remnant sheaths. Basal leaves oblong-lanceolate in outline, 2–3-pinnate; ultimate segments lanceolate, 3–5 × 1.5–2 mm. Bracts absent, occasionally 1–2, linear to lanceolate, shorter than rays; rays 5–10, 2–4 cm, very unequal; bracteoles 2–5, linear, equaling pedicels; umbellules 6–10-flowered. Calyx teeth obsolete. Petals purplish-red. Fruit oblong-ovoid, 3–4 × 1.5–2 mm; vittae 3 in each furrow, 4 on commissure. Fl. and fr. May–Sep.

Forests, shady valleys, riparian grasslands; 1800–3600 m. Xinjiang [Kazakhstan, Kyrgyzstan, Russia].

Some authors consider this species to belong in *Vicatia*, but others disagree on the basis of the fundamental difference of a flat seed face in *C. atrosanguineum* compared to a sulcate one in *Vicatia*. Pending future work we here retain this species in *Carum*. The NW Himalayan (non-Chinese) *Tongoloa wolffiana* Fedde ex H. Wolff (*V. wolffiana* (Fedde ex H. Wolff) C. Norman) is included by some authors in synonymy under

V. atrosanguinea; however, further work is needed in order to confirm or reject this placement.

4. *Carum bretschnideri* H. Wolff in Engler, Pflanzenr. 90 (IV. 228): 369. 1927.

河北葛缕子 he bei ge lü zi

Plants 20–45 cm. Taproot elongate, slender. Stem solitary or 2–3, little-branched, base without remnant sheaths. Basal leaves ovate-lanceolate in outline, 2–3-pinnate; ultimate segments lanceolate, 5–7 × ca. 1 mm, pinnatifid. Bracts 1–6, linear, ca. 1 cm, ciliate on the margins; rays 8–12, 1–4 cm, slightly unequal; bracteoles 5–8, similar to bracts, as long as or longer than the umbellules; umbellules 15–25-flowered. Calyx teeth small, narrowly triangular, ca. 0.5 mm. Petals white, base shortly clawed. Fruit oblong-ellipsoid, ca. 4 × 1.8 mm; vittae solitary in each furrow, 2 on commissure. Fl. and fr. Jun–Sep.

- Shady moist places; 1500–2000 m. Hebei, Shanxi.

The following species have been described from Chinese material, but are imperfectly known as no specimens have been seen or the specimens are inadequate.

Carum seselifolium H. Wolff (Repert. Spec. Nov. Regni Veg. 27: 303. 1930), described from Shanxi (“Mienshan, Shuiwangping,” 1500–2400 m, *K. A. H. Smith 6531 & 7827*, syntypes, GB).

Carum takenakae Kitagawa (J. Jap. Bot. 26: 166. 1951 [“*takenakai*”]),

described from Hebei (“Hsiaowutaishan” [Xiaowutai Shan], *K. Takenaka 88*, holotype, T).

Carum wolffianum Fedde ex H. Wolff (Repert. Spec. Nov. Regni Veg. 27: 303. 1930), described from Jilin (*C. C. Chien 123*, holotype, unlocalized).

