

30. TRACHYDIUM Lindley in Royle, Ill. Bot. Himal. Mts. 1: 232. 1835.

瘤果芹属 liu guo qin shu

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

Herbs perennial, small. Taproot long-conic, rarely fusiform. Stem simple, usually very short and appearing acaulescent. Basal leaves petiolate, petioles sheathing. Leaves reduced upwards. Inflorescence branching, umbels compound, terminal on stem and branches; bracts entire, 2–3-lobed to pinnate or absent; rays 5–20, those of primary terminal umbel stout, spreading-ascending or diffuse; bracteoles similar to bracts or absent; umbellules 10–30-flowered. Calyx teeth usually minute or obsolete. Petals ovate or obovate, white or purplish-red, base cuneate or shortly clawed, apex incurved and notched. Stylopodium low-conic; styles spreading to reflexed. Fruit broadly ovoid, rarely oblong-ovoid, slightly laterally compressed, glabrous, sometimes with small tubercles between ribs; ribs filiform, conspicuous; vittae 1–4 in each furrow, 4–8 on commissure. Seed face slightly to deeply concave. Carpophore various.

About six species (see following note): widespread across C Asia to the Himalayan region and SW China; six species (four endemic) in China.

This genus has received very mixed treatments since its establishment by Lindley in 1835. Norman (J. Bot. 76: 229–233. 1938) studied the genus critically, resolving some of the confusion, and commented that probably all plants assigned to *Trachydium* since Lindley's day really belong to other genera. However, the high-altitude, dwarf plants exhibit complex variation and the taxonomy continues to be controversial, particularly when delimiting boundaries with other genera containing similar species of reduced stature (e.g., *Aulacospermum*, *Chamaescidium*, *Chamaesium*, *Ligusticum*, *Physospermopsis*, *Pleurosporum*, *Schulzia*, and *Sinocarum*). Some authors follow Norman and limit *Trachydium* to a unispecific genus including *T. roylei*, while others extend the circumscription to include anything up to 14 additional species. It is acknowledged that the following species form a heterogeneous group, but a conservative treatment has been adopted here as new, comprehensive material is needed to determine proper specific and generic limits.

- 1a. Leaves simple, 3-lobed to middle; blade orbicular or broadly ovate 1. *T. simplicifolium*
- 1b. Leaves compound; blade triangular or oblong-lanceolate in outline.
 - 2a. Leaves trifoliolate; bracts and bracteoles absent (Yunnan) 2. *T. trifoliatum*
 - 2b. Leaves ternate-pinnate or 2–3-pinnate; bracts and bracteoles present or not.
 - 3a. Leaves ternate-1–3-pinnate; bracts linear, entire or apex 3-lobed; bracteoles similar to bracts; calyx teeth minute or obsolete.
 - 4a. Ultimate segments of leaves ovate, pinnate-lobed or incised; petal base cuneate; fruit densely tuberculate between ribs; seed face deeply concave 3. *T. subnudum*
 - 4b. Ultimate segments of leaves linear-oblong-lanceolate, entire or 3-lobed at apex; petal base shortly clawed; fruit with scattered tubercles between ribs; seed face slightly concave 4. *T. tibeticum*
 - 3b. Leaves 2–3-pinnate; bracts and bracteoles 2–3-lobed or 1–2-pinnate, rarely entire; calyx teeth obsolete.
 - 5a. Bracts and bracteoles 2–3-lobed or 1 pinnate, rarely entire; vittae numerous in each furrow 5. *T. involucellatum*
 - 5b. Bracts and bracteoles 1–2-pinnate; vittae solitary in each furrow 6. *T. roylei*

1. *Trachydium simplicifolium* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 8: 346. 1915.

单叶瘤果芹 dan ye liu guo qin

Ligusticum simplicifolium (W. W. Smith) M. Hiroe.

Plants 7–20(–30) cm. Stem erect, purplish, sparsely pubescent. Lower leaves 2–7; petioles 2–18 cm, sheaths 1–3 cm, inflated, flushed purple, densely pubescent; blade orbicular or broadly ovate, 3-lobed divided to middle, 2–12 × 1.8–10 cm, glabrous except veins scabrous, adaxially green, abaxially dark purple, base cordate, margin crenate. Leaves reduced upwards with large sheaths. Umbels 1.5–4 cm across; bracts absent or 1–2, lanceolate, entire or apex 2–3-lobed; rays 6–12, purplish, (1.5–)2–4(–5) cm, subequal, sparsely pubescent; bracteoles ca. 10, narrowly oblanceolate, purple, to 12 mm, just longer than flowers, entire. Calyx teeth minute. Petals white or purplish, shortly clawed at the base. Fruit oblong-ovoid, ca. 2 × 1 mm, smooth or scattered-tuberculate; ribs filiform to thickened; vittae 1–2 in each furrow, 4 on commissure. Seed face slightly concave. Carpophore parted to base. Fl. and fr. Aug–Nov.

- Alpine meadows, stony slopes; 2700–4000 m. NW Yunnan.

This distinctive species is often collected in flower, but the fruit is poorly known.

2. *Trachydium trifoliatum* H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 125. 1929.

三叶瘤果芹 san ye liu guo qin

Plants slender, 4–10 cm, purplish. Stem erect. Leaves 3-foliolate; leaflets broadly ovate or rotund, 8–12 × 8–10 mm, 3-lobed, margin sparsely crenate. Leaves reduced upwards to a broad sheath and 3-lobed blade. Umbels 1.5–4 cm across; bracts and bracteoles absent; rays 8–12, 1–2.5(–4) cm, unequal. Calyx teeth minute, narrowly triangular, ca. 0.3 mm. Petals white. Mature fruit unknown, young fruit broadly ovoid, tuberculate. Fl. and fr. Sep–Oct.

- Stony alpine meadows; ca. 4000 m. W Yunnan (Ruili).

This poorly known taxon is recorded only from the type gathering.

3. *Trachydium subnudum* C. B. Clarke ex H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 125. 1929.

密瘤果芹 mi liu liu guo qin

Chamaescidium subnudum (C. B. Clarke ex H. Wolff) C.

Norman; *Trachydium verrucosum* R. H. Shan & F. T. Pu.

1: 232. 1835.

Plants 10–20(–30) cm. Stem often reduced, branched or not, plants almost rosette. Basal leaves petiolate; blade oblong-lanceolate, ternate-2-pinnate, to 7×2 cm; primary pinnae 4–5 pairs, remote; ultimate segments ovate or lanceolate, $3\text{--}5 \times 1\text{--}4$ mm, margins incised, both surfaces moderately hispid. Stem leaves reduced upwards, pinnate. Umbels 9–25 cm across, lax; bracts absent, or occasionally 1, linear; rays 5–7, purplish, long and spreading, 4–16 cm, unequal; umbellules 12–17 mm across; bracteoles 2–7(–15), linear, just shorter than flowers. Calyx teeth obsolete. Petals white, base cuneate. Fruit broadly ovoid, ca. 3×2 mm, ribs filiform, densely tuberculate especially on ribs; vittae 3 in each furrow, 6 on commissure. Seed face deeply concave. Fl. and fr. Jul–Sep.

Alpine meadows; 3000–4500(–5000) m. SW Sichuan, S Xizang [NE India].

4. *Trachydium tibeticum* H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 122. 1929.

西藏瘤果芹 xi zang liu guo qin

Plants 8–13 cm. Stems very short, plants almost rosette. Petioles slender, sheaths broad, clasping; blade triangular in outline, ternate-2–3-pinnate; primary pinnae 3–4 pairs; ultimate segments linear-oblong-lanceolate, $4\text{--}5 \times 1\text{--}2$ mm, entire or apex 3-lobed. Umbels 8–18 cm across, lax; bracts absent; rays 10–20, 4–8(–14) cm, unequal; bracteoles absent, or occasionally 1, linear, shorter than flowers. Calyx teeth obsolete. Petals white or purplish, base shortly clawed. Fruit broadly ovoid, $1\text{--}1.5 \times$ ca. 1 mm, scattered-tuberculate; vittae 3 in each furrow, 6 on commissure. Seed face slightly concave. Fl. and fr. Aug–Nov.

• Alpine meadows, moist rock crevices; 3000–4000 m. NW Sichuan (Dêgê), SE Xizang (Zayü), NW Yunnan.

Possible affinities between this species and *Sinocarum* need further study.

5. *Trachydium involucellatum* R. H. Shan & F. T. Pu, Acta Phytotax. Sin. 24: 313. 1986.

裂苞瘤果芹 lie bao liu guo qin

Plants 8–16 cm. Stem erect, dull purplish, branching, sparsely pubescent to almost glabrous. Basal leaves petiolate; blade triangular or triangular-ovate, 2–3-pinnate; primary pinnae 2–3 pairs; ultimate segments linear-lanceolate, $4\text{--}7 \times 0.5\text{--}1$ mm. Stem leaves reduced upwards. Umbels 3.5–4 cm across; peduncles stout, apex pubescent; bracts usually absent, or 1–3, 2–3-lobed or pinnate, rarely entire; rays 5–7, 1–2.5 cm, unequal; bracteoles 3–6, similar to bracts, unequal, margin pubescent. Calyx teeth obsolete. Petals purplish-red, base shortly clawed. Styles short. Fruit oblong-ovoid, tuberculate; vittae 3 or 4 in each furrow, 6–8 on commissure. Seed face slightly concave or plane. Fl. and fr. Aug–Oct.

• Scrub, alpine meadows, streamsides; 4000–4500 m. SE Xizang (Zayü).

This rather poorly known taxon is recorded only from a few specimens. It resembles *Trachydium roylei* and *T. tibeticum*, but differs in having 2–3-lobed or pinnate bracteoles (rarely entire) and vittae 3 or 4 in each furrow and 6–8 on the commissure.

6. *Trachydium roylei* Lindley in Royle, Ill. Bot. Himal. Mts.

瘤果芹 *liu guo qin*

Plants, 4–10 cm, usually acaulescent. Taproots stout, to 10 cm. Leaves petiolate; blade oblong-lanceolate in outline, 2–3-pinnate; primary pinnae 4–6 pairs, pinnatifid; ultimate segments linear-lanceolate, 1–3 × 0.5–1 mm. Umbels 4–8 cm across; bracts 3–5, oblanceolate to obovate, 1–2-pinnate, to 2 cm; rays 5–10, 2–7 cm, unequal; bracteoles 6–10, similar to bracts, longer than flowers. Calyx teeth obsolete. Petals white, base shortly clawed. Styles about equaling stylopodium, spreading-

ascending. Fruit broadly ovoid, ca. 2.5 × 2 mm, scattered-tuberculate; vittae solitary in each furrow, 2 on commissure. Seed face slightly concave. Carpophore undivided. Fl. and fr. Jul–Oct.

Alpine grasslands, stony slopes; 3000–5600 m. W Sichuan, E and SW Xizang [NW India, Kashmir, Pakistan].

This species has reputed medicinal value (in Xizang).

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

Trachydium szechuanense H. Wolff (Acta Horti Gothob. 2: 299. 1926), described from N Sichuan (ca. 4000 m, *K. A. H. Smith 3428*, holotype, GB).

Trachydium variabile H. Wolff (Acta Horti Gothob. 2: 298. 1926), described from N Sichuan (4000–4500 m, *K. A. H. Smith 2988, 3205, 3232, 3723, 3888 & 4181*, syntypes, GB).

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