
小芹属 xiao qin shu
Pu Fading (溥发鼎 Pu Fa-ting); Mark F. Watson, Ingrid Holmes-Smith

Carum Linnaeus sect. Dactylae Franchet; Dactylae (Franchet) Farille.

H. de Boissieu (Bull. Soc. Bot. France 53: 422. 1906), described from Xizang (souliei J. A. Soulié 1049, umbellules usually many-flowered. Calyx teeth obsolete, or conspicuous, triangular or subulate-lanceolate. Petals white or purple, linear or similar to uppermost leaf; rays few, usually 5–15; bracteoles present (rarely absent), usually linear, entire, apex rarely lobed; umbellules usually many-flowered. Calyx teeth conspicuous, or conspicuous, triangular or subulate-lanceolate. Petals white or purple, ovate, oblong-ovate or obovate, base clawed, apex acute or slightly obtuse, rarely 2–3-lobed or palmately 3–5-lobed. Stylopodium flat, rarely low-conic; styles short. Fruit oblong-ovoid, slightly laterally compressed, smooth; ribs 5, filiform; vittae 1–3 in each furrow, 2–6 on commissure. Seed face plane. Carpophore 2-fid or 2-parted.

About 20 species: high-altitude Sino-Himalayan region from Nepal to SW China; eight species (four endemic) in China.

This taxonomically complex genus is closely related to, and sometimes difficult to distinguish from, Acronema. Sinocarum is usually circumscribed by a suite of characters: rhizome elongate, petiole sheaths expanded, petals obtuse at apex, clawed at base, flowers radiate, and fruit oblong-ovoid. By contrast, Acronema is characterized by having tuber globose or oblong, petiole sheaths narrow, petals acute to filiform at apex, cuneate at base, flowers symmetric, and fruit usually ovoid or broadly so, slightly cordate at base. However, within each genus there are species that deviate in one or more of these characters, and the generic boundaries are blurred. Revision of these two genera is hampered by a lack of complete material: specimens are usually collected in flower, and mature fruits are unknown for an alarmingly high proportion of the taxa. Initial results from molecular sequence data on Himalayan species suggest that these two genera should be combined, but further work and more collections are needed to clarify the situation across the whole geographic range.

Sinocarum pseudocruciatum H. Wolff (Repert. Spec. Nov. Regni Veg. 27: 182. 1929) was described from Sichuan (“Washan,” A. Henry 7067, holotype, K). However, it is not treated in this account as it is imperfectly known.

Pimenov and Kljuykov (pers. comm.) consider the following imperfectly known taxa to be conspecific and a species of Sinocarum: Trachydium souliei H. de Boissieu (Bull. Soc. Bot. France 53: 422. 1906), described from Xizang (J. A. Soulé 1049, holotype, P), and T. dielsianum H. Wolff (Acta Horti Gothob. 2: 300. 1926), described from Sichuan (SE of “Matang,” 4800 m, K. A. H. Smith 4375, holotype, unlocalized).

1a. Bracteole apex usually 2–3-lobed or pinnatifid, rarely entire; calyx teeth conspicuous, ca. 0.5 mm, triangular-lanceolate ...............................................................................................................................................................  8. S. dolichopodum
1b. Bracteole apex entire; calyx teeth minute or obsolete.

2a. Petal apex 2–3-lobed or palmately 4–5-lobed (or entire in S. coloratum).

3a. Stem purple, at least at base; calyx teeth subulate; petal apex usually entire, occasionally 2–3-lobed ........ 6. S. coloratum
3b. Stem green; calyx teeth obsolete; petal apex palmately 4–5-lobed ............................................................................  7. S. schizopetalum
2b. Petals always entire.

4a. Calyx teeth obsolete; bracteoles absent.

5a. Plants 3–5 cm; basal leaves trifoliolate; rays 2–3 ................................................................. 4. S. pauciradiatum
5b. Plants 40–70 cm; basal leaves 3-pinnate; rays 10–20 ............................................................  5. S. pityophilum
4b. Calyx teeth minute, subulate; bracteoles present or absent.

6a. Basal leaves 2-pinnate, petioles pubescent, ultimate segments oblong-ovate, abaxially pubescent; bracteoles 5–8 .............................................................................................................................................  3. S. filicinum
6b. Basal leaves ternate-1–3-pinnate, petioles glabrous, ultimate segments linear-lanceolate or elongate-linear, glabrous; bracteoles absent.

7a. Basal leaves ternate-1–2-pinnate, ultimate segments linear-lanceolate or elongate-linear, 3–15 × 1–2 mm; rays 4–7(–10); petals violet or greenish-white ..........................................................  1. S. cruciatum
7b. Basal leaves ternate-2–3-pinnate, ultimate segments elongate-linear, 10–30 × 0.5–2 mm; rays 8–15; petals white ...............................................................................................................  2. S. vaginatum


钝瓣小芹 dun ban xiao qin

Plants 10–30 cm, slender, glaucous throughout. Rootstock short, thick, ca. 2 × 0.5 mm. Stems 1–3 or numerous, 1–2-branched or unbranched. Basal leaves petiolate, petioles 5–7 cm; blade triangular in outline, 4–10 × 4–8 cm, ternate-1–2-pinnate; pinnae 3–5 pairs; ultimate segments linear-lanceolate, 3–15 × 1–2 mm. Cauline leaves elongate-linear, 5–35 × 0.5–1 mm, reduced upwards becoming 1-pinnate or 3-lobed. Umbels
1.5–2 cm across; bracts and bracteoles absent, occasionally 1; rays 4–7(–10), 1–3 cm, subequal; umbellules ca. 5 mm across, 10–15-flowered; pedicels ca. 2 mm. Calyx teeth minute, triangular, ca. 0.1 mm. Petals violet or greenish-white, entire, apex obtuse to subacute. Young fruit oblong-ovoid (mature fruit unknown); vittae 1 in each furrow, 2 on commissure. Fl. and fr. Jul.–Oct.

Forests, open alpine scrub, riparian grasslands; 2800–4200 m. W Sichuan, SE Xizang, NW Yunnan [N Myanmar].

This species and *Sinocarum vaginatum* form a group of narrow-leaved taxa with unclear taxonomic limits: flower color and leaflet dimensions are particularly variable. Further work with new collections will be needed to clarify the situation.

1a. Ultimate segments of basal leaves
   linear-lanceolate, 3–5 × ca. 1 mm; petal apex obtuse-rounded, not inflexed ........ 1a. var. *cruciatum*

1b. Ultimate segments of basal leaves linear,
   5–15 × 1–2 mm; petal apex slightly incurved ............................................. 1b. var. *linearilobum*

1a. *Sinocarum cruciatum* var. *cruciatum*
钝瓣小芹 (原变种) dun ban xiao qin (yuan bian zhong)


Basal leaves 2–3-pinnate; ultimate segments linear lanceolate, 3–5 × ca. 1 mm. Petals violet, apex obtuse-rounded, not inflexed.

- Forests, open alpine scrub, riparian grasslands; 2800–4200 m. W Sichuan, SE Xizang, NW Yunnan.

尖瓣小芹 jian ban xiao qin


- Open alpine scrub; 3500–4200 m. W Sichuan, SE Xizang, NW Yunnan [N Myanmar].

阔鞘小芹 kuo qiao xiao qin

*Carum vaginatum* (H. Wolff) M. Hiroe.

Plants 10–25 cm. Rootstock short, thick, ca. 4.5 × 0.8 cm. Stems 1–2, 1–2-branched or unbranched. Basal petioles 5–18 cm, sheath ovate; blade triangular, 5–13 × 5–8 cm, ternate-2–3-pinnate; pinnae 4–6 pairs; ultimate segments elongate-linear, 10–30 × 0.5–2 mm. Cauline leaves 1–2-pinnate, reduced upwards. Umbels 3–4 cm across, often subtended by uppermost leaf with broad sheath; bracts absent or occasionally 1; rays 8–15, 1–2 cm, unequal; bracteoles absent; umbellules 8–12 mm, 10–20-flowered; pedicels 1–5 mm. Calyx teeth minute triangular, ca. 0.2 mm. Petals white, entire, apex acute, radiant. Young fruit oblong-ovoid (mature fruit unknown); vittae 1 in each

- Forest margins, brushy alpine meadows; 3200–4300 m. W Sichuan, SE Xizang, NW Yunnan.

See the taxonomic comment under Sinocarum cruciatum.


蕨叶小芹 jue ye xiao qin

Carum chinense M. Hiroe.

Plants 15–30 cm. Rootstock 2.5–5 × 0.5–1.8 mm, stout, often branched. Stems 1–3, 1–3-branched or unbranched. Basal petioles 8–15 cm, sparsely pubescent, sheaths broadly ovate; blade triangular in outline, 2–9 × 10–15 cm, 2-pinnate; pinnae 3–7 pairs, basal pinnae petiolulate; ultimate segments oblong-ovate, 5–10 × 3–5 mm, margins serrate, abaxially sparsely pubescent along veins. Upper leaves 1-pinnate. Umbels 2–12 mm across, 10–15(–20)-flowered; pedicels 2–4 mm, unequal. Calyx teeth obsolete. Petals white, apex subacute. Young fruit oblong, ca. 0.2 mm. Petals white, apex succitate. Young fruit oblong, ca. 1 × 0.6 mm (mature fruit unknown). Fl. Jul–Aug.

- Alpine meadows, among rocks; 2500–4500 m. SW Sichuan (Manning), SE Xizang (Mainling, Zayü), NW Yunnan (Binchuan, Dali).


少辐小芹 shao fu xiao qin

Plants 3–5 cm. Rootstock slender, 2–10 × 0.2–0.3 mm, often swollen at nodes. Stems 1–2, sometimes tinged purple, unbranched or occasionally 1-branched. Basal petioles 1–1.5 cm, sheaths narrowly lanceolate, tinged purple; blade triangular in outline, ca. 8 × 7 mm, trifoliolate; leaflets 3-lobed; ultimate segments 1–1.5 × 0.5–1 mm. Cauline leaves 1–2, palmate. Umbels 9–18 mm across; bracts absent or occasionally 1, linear, apex 3-lobed, leaf-like; rays 2–3, 5–8 mm; bracteoles absent; umbellules 4–6 mm across, 3–10–flowered; pedicels 1–2 mm. Calyx teeth obsolete. Petals purplish-red or white, entire. Fruit ovoid-ellipsoid, ca. 2 × 1.4 cm (mature fruit unknown). Fl. and fr. Jul–Sep.

Brushy alpine meadows, limestone rock crevices; 3200–4500 m. SW Sichuan (Daocheng, Muli, Xiangcheng), SE Xizang (Cona, Mêdog), NW Yunnan [NE India].


松林小芹 song lin xiao qin


Plants 40–70 cm. Rootstock fusiform, 3–3 × ca. 0.5 mm. Stem solitary, 1–2-branched. Basal petioles 1.5–3 cm, sheath broadly ovate; blade triangular in outline, ca. 5 × 5 cm, 3-pinnate; pinnae 6–9 pairs; ultimate segments linear, 2–5 × 0.3–1 mm. Umbels 3.5–6 cm across; bracts absent, occasionally 1, linear, 1–1.5 cm; rays 10–20, 2–4 cm, unequal; bracteoles ab- sent; umbellules 1–1.5 cm across, 12–15-flowered; pedicels 3–5 mm, unequal. Calyx teeth obsolete. Petals white, entire, apex obtuse, outer petals in umbellule slightly radiate. Fruit unknown. Fl. Oct.

- Sunny slopes in Pinus forests; 3000–3300 m. NW Yunnan (Lijiang).

This poorly known taxon is recorded only from the type gathering (G. Forrest 3078).


紫茎小芹 zi jing xiao qin


Plants 8–25 cm. Taproot elongate, 3–15 × 0.5–1 cm, thickened at apex, branched. Stems 1–4, characteristically purplish, unbranched or 1–2-branched. Basal petioles 2–7 cm, sheaths oblong-ovate, purplish; blade ovate-lanceolate in outline, 2–8 × 1–3 cm, 1–2-pinnate; pinnae 4–5 pairs; ultimate segments linear-lanceolate, 3–10 × 0.5–2 mm. Umbels 2.5–6 cm across; bracts absent, occasionally 1, linear, occasionally leaf-like; rays 5–8(–12), 1–3 cm; bracteoles absent, rarely 1, linear, ca. 2 mm; umbellules 8–16 mm, 8–15-flowered; pedicels 3–5 mm, unequal. Calyx teeth subulate, 0.2–0.4 mm, unequal. Petals white, apex usually entire, occasionally 2–3-lobed. Young fruit oblong-ovoid, ca. 1.5 × 1 (mature fruit unknown). Fl. and fr. Jul–Oct.

Brushy alpine meadows, limestone rock crevices; 2900–4600 m. W Sichuan, S Xizang, NW Yunnan [NE India].


裂瓣小芹 lie ban xiao qin


裂瓣小芹 lie ban xiao qin

Plants 10–30 cm. Rootstock a short, thick rhizome, 3–5 × 0.5–0.8 cm. Stems 1 or 2–4, branching. Basal petioles 5–8 cm, sheaths broadly lanceolate; blade triangular in outline, 1.5–3 × 1.5–3 cm, ternate to 1- or 2-pinnate, basal pinnae petiolulate; ultimate segments oblong-lanceolate, 3–5 × 1–1.5 mm. Umbels 2.5–4 cm across; bracts absent or occasionally 1, linear-lanceolate; rays (3–)5–6(–8), 1–2 cm; bracteoles 3–5, similar to the bract; umbellules 6–10(–15)-flowered; pedicels 2–4 mm, unequal. Calyx teeth obsolete. Petals white or violet, apex palmately 3–4-lobed, lobes lanceolate or oblanceolate. Stylopodium deep purple. Young fruit oblong-ovoid, ca. 1.5 × 1 mm (mature fruit unknown); vittae 2–3 in each furrow, 4 on commissure. Fl. and fr. Jul–Sep.

Shady forests, alpine meadows; 2400–4000 m. E and S Xizang, NW Yunnan [NE Myanmar].

1a. Rootstock fusiform; leaf blade ternate to 1- or 2-pinnate; petals 3–4-lobed, lobes lanceolate or ovate-lanceolate

............................... 7a. var. schizopetalum

1b. Rootstock tuberous; leaf blade trifoliolate; petals 3-lobed, lobes lanceolate ........... 7b. var. bijiangense
7a. *Sinocarum schizopetalum* var. *schizopetalum*

裂瓣小芹（原变种） lie ban xiao qin (yuan bian zhong)


- Leaf blade ternate to 1- or 2-pinnate. Petals palmately 3–4-lobed, lobes ovate or lanceolate.
- ● Shady forests; 2400–4000 m. E and S Xizang, NW Yunnan.


碧江小芹 bi jiang xiao qin


- Leaf blade trifoliate. Petals palmately 3-lobed, lobes linear-lanceolate.
- Alpine meadows; ca. 2400 m. NW Yunnan (Bijiang) [NE Myanmar].

This incompletely known taxon is recorded only from a few collections. In the protologue of *Dactylaea wolffiana* the type specimen was wrongly cited from Xizang (Tibet); in fact it was collected in NE Myanmar (Imaw Bum).


长柄小芹 chang bing xiao qin


- Plants 8–15 cm. Rootstock slender, horizontal, 5–20 × 0.2–0.5 cm. Stem solitary, purplish, usually unbranched. Basal petioles 3–6 cm, sheaths ovate, purplish; blade triangular in outline, 3–6 × 2–3 cm, 2–3-pinnate; pinnae 3–5 pairs, basal pinnae petiolate; ultimate segments ovate, 10–15 × 5–8 mm, margins 3-lobed or pinnatifid. Umbels 4–7 cm across, sometimes subtended by a reduced, 3-lobed leaf; bracts absent; rays 4–6, 4–5 cm, stout; bracteoles 2–6, linear-oblanceolate or obovate in outline, 4–7 mm, apex usually 2–3-lobed, or pinnatifid, rarely entire; umbellules 10–18 mm across, 10–15-flowered; pedicels 4–8 mm. Calyx teeth conspicuous, triangular-lanceolate, ca. 0.5 mm. Petals white or purplish, apex obtuse. Young fruit oblong-ovoid, ca. 2 × 1.5 mm (mature fruit unknown); vittae 3 in each furrow, 6 on commissure. Fl. and fr. Jul–Sep.
- ● Alpine meadows, rocks; 3000–4000 m. W Sichuan, NW Yunnan.

This species has reputed medicinal value. The long rhizome, leaf morphology, and divided bracteoles are rather uncharacteristic of *Sinocarum*, and this species may be better placed elsewhere.