
Aulacospermum Ledebour; Hymenidium de Candolle; Hymenolaena de Candolle; Pterocyclus Klotzsch.

Herbs perennial, rarely biennial. Root crown often surrounded with fibrous remnant sheaths. Stems erect, sometimes shortened. Leaves 1–4-pinnate or ternate-pinnate; ultimate segments serrate to incised or pinnate. Umbels terminal and lateral; bracts several, entire or pinnate, margin usually white scarious; rays often extending in fruit; bracteoles numerous, scarious, sometimes white margined. Calyx teeth conspicuous or obsolete. Petals oblong to broad-ovate, white or purple-red, base clawed, apex narrow, infllexed. Stylopodium conic or short-conic. Fruit oblong to ovate, often with numerous, shining tubercules; ribs prominent and acute, sometimes undulate, cristate or narrowly winged; vittae 1(–3) in each furrow, 2(or 4 or 6) on commissure. Seed face concave. Carpophore 2-parted.

About 50 species: N Asia, E Europe, and especially diverse in the Himalayan region and W China; 39 species (22 endemic) in China.

This is a widespread, heterogeneous genus of complex and controversial taxonomy. Russian authors delimit Pleurospelrum sensu stricto by only two species (the type, P. australiacum Linnaeus, and P. uralense), referring the other species to Aulacospermum, Hymenidium, Hymenolaena, Physospermopsis, and Pterocyclus. Other morphologically similar genera, where generic boundaries become indistinct, include Trachydium and Pseodotrichydium (Klijuykov et al.) Pimenov & Klijuykov. A full discussion of the Russian classification of Pleurospelrum is presented by Pimenov and Klijuykov (Feddes Repert. 111: 499–515, 517–534, 535–552. 2000). As yet, this rather radical classification has not gained widespread acceptance, and the proponents admit that this is a taxonomic hypothesis, and (particularly for some groups) a more natural classification will only be possible following critical revision in the field and herbarium. A traditional treatment is adopted for the following account, with due influence from the work of the Russian taxonomists.

1a. Plants of high altitudes, (3500–)4000–5000 m, short and squat 5–20(–40) cm; stems usually much reduced, often thickened, unbranched.

2a. Bracteole apex acute, acuminate or obtuse.

3a. Fruit wings narrow, crisped; calyx teeth lanceolate; rays thickened, particularly at the distal ends; pedicels flattened and winged ................................................................. 1. P. nubigenum

3b. Fruit wings narrow or broad, plane; calyx teeth triangular or obsolete; rays uniform thickness, pedicels terete.

4a. Petals white; fruit thinly winged; calyx teeth triangular; vittae 3 per furrow ........................................... 2. P. pulskyi

4b. Petals purple-red; fruit broadly winged; calyx teeth obsolete; vittae 2 per furrow ........................................... 3. P. lindleyanum

2b. Bracteole apex 1–2-pinnate/pinnatifid.

5a. Bracteole apex 2-pinnate/pinnatifid; ultimate leaf segments linear, 0.3–0.5 mm broad; pedicels flattened

5b. Bracteole apex 1-pinnate/pinnatifid; ultimate leaf segments lanceolate, 0.5–5 mm broad; pedicels terete.

6a. Compact rosette, stemless; inflorescence densely capitulate, subsessile; rays reduced, crowded; fruit wings broad and sinuate, not dentate ................................................................. 5. P. hedini

6b. Stems usually distinct; inflorescences not densely capitulate, usually distinctly pedunculate; rays not reduced, lax; fruit ribs prominent or irregularly dentate or sinuate winged.

7a. Umbels usually subsessile; rays very unequal; fruit tuberculate, wings irregularly dentate ................. 8. P. astrantioides

7b. Umbels distinctly pedunculate; rays subequal; if fruit winged then not tuberculate.

8a. Plants with strong unpleasant odor; rays 14–30; fruit wings irregularly dentate ........................................... 9. P. foetens

8b. Plant without unpleasant odor; rays 5–15(–20); fruit ribs prominent to narrowly winged, wing margin entire.

9a. Leaves 1–2-pinnate, ultimate segments ovate or orbicular; fruit ribs all broadly winged ....................... 6. P. stellatum

9b. Leaves 2–3-pinnate, ultimate segments linear-lanceolate; fruit ribs prominent or narrowly sinuate-winged ................................................................. 7. P. nanum

1b. Plants from varying altitudes and habitats, usually much larger (0.3–2 m), smaller specimens slender-stemmed.

10a. Large, often robust plants, (0.5–)0.8–2 m, rarely shorter.

11a. Leaflets of lower leaves broadly ovate, regularly serrate, base truncate or cordate.

12a. Umbels 8–10 cm across; rays 15–20, 4–7 cm; fruit 8–10 × 4–6 mm ......................................................... 10. P. rivulorum

12b. Umbels 2–4 cm across; rays 6–8(–15), 0.6–2 cm; fruit 7–8 × 3–4 mm ..................................................... 11. P. rotundatum

11b. Leaflets of lower leaves variously lobed and dissected, often pinnatifid, not broadly ovate, bases usually cuneate to decurrent.

13a. Plants usually very robust, thick-stemmed (except P. stylosum); umbels (7–)12–28 cm across; rays (15–)25–40.

14a. Rays 15–35; fruit 4–6 mm; ribs sinuate-winged (Xinjiang) ................................................................. 12. P. stylosum

14b. Rays 20–40(–60); fruit 6–10 mm; ribs cristate- or plane-winged.
10b. Small, slender plants, 20–40(–50) cm rarely taller.

15a. Ultimate leaf segments pinnatifid, lobes linear; calyx teeth conspicuous, triangular-ovate; fruit wings thick, cristate (NW China) .......................................................... 13. *P. uralense*

15b. Ultimate leaf segments coarsely dentate, lobes ovate; calyx teeth obsolete; fruit wings thin, broad and plane (SW China) .......................................................... 14. *P. aromaticum*

13b. Plants less robust, slender-stemmed; umbels 3–15 cm across; rays 7–28.

16a. Petioles of upper leaves expanded into auriculate sheaths; fruit oblong, 8–15 mm.

17a. Leaves irregularly serratate; bracteoles ca. 5 mm broad; seed face deeply concave ................. 15. *P. angelicoides*

17b. Leaves regularly crenate; bracteoles ca. 1 mm broad; seed face slightly concave ............. 16. *P. longicarpum*

16b. Petioles of upper leaves expanded or not, but not auriculate; fruit ovate to oblong-ovate, 3.5–8(–10) mm.

18a. Leaves 2–4-ternate/pinnate.

19a. Leaves with narrow ultimate segments 2–5 mm broad, hirtellous along the margins, lobes round, obtuse; primary umbel overtopped by laterals; bracteoles oblong to obovate, entire to 3-lobed at apex, lobes obtuse; petals white; fruit 4–5 mm ............................................................... 19. *P. franchetianum*

19b. Leaves with ultimate segments 0.3–1 mm broad, margin glabrous, lobes lacerate, acute; primary umbel not overtopped by laterals; bracteoles ob lanceolate, 3-lobed to pinnatifid at apex, apex acute; petals white to pink; fruit 6–10 mm .................................................. 20. *P. benthamii*

18b. Leaves 1–2-ternate/pinnate (3–5-partite to 2-ternate).

20a. Leaves 3–5-partite (sometimes to 2-ternate).

21a. Leaves 3–5-partite (sometimes to 2-ternate); leaf bases and veins with coarse white hairs reminiscent of those of *Heracleum*; rays 2–4 cm; petals white .......................................................... 17. *P. heracleifolium*

21b. Leaves always 3-partite, without white hairs; rays 5–6 cm; petals pink ..................................... 18. *P. macrochaemum*

20b. Leaves 2-ternate/pinnate.

22a. Rays 10–18, 2–7 cm; bracteoles lanceolate, acute or 3-lobed; fruit smooth, wings sinuate but not irregularly dentate ............................................................... 21. *P. decurrens*

22b. Rays 7–13, 1–2.5 cm; bracteoles linear-lanceolate, entire; fruits tuberculate with irregularly dentate wings ............................................................... 22. *P. cristatum*

10b. Small, slender plants, 20–40(–50) cm rarely taller.

23a. Petiole wings greatly expanded, white with purple veining, upper leaves and bracts enveloping the inflorescence ........................................................................ 23. *P. amabile*

23b. Petiole wings not greatly expanded, not purple veined.

24a. Leaves 1-pinnate to 2-pinnatifid; rays 2–4; bracteoles broadly ovate, entire ........................................ 24. *P. bicolor*

24b. Leaves 2–4-ternate/pinnate; rays (4–)6–25; bracteoles entire or more usually pinnatifid at apex.

25a. Stems, petioles and leaf rachis conspicuously white pubescent ............................................. 26. *P. pilosum*

25b. Plants essentially glabrous, bases of umbels and/or petioles sometimes puberulent.

26a. Calyx teeth conspicuous, triangular to lanceolate.

27a. Ultimate leaf segments 5–20 mm broad, irregularly serratate or incised .................................. 25. *P. yunnanense*

27b. Ultimate leaf segments finely dissected, 1–8(–10) mm broad.

28a. Calyx teeth linear-lanceolate; sheaths of upper leaves and bracts broadly auriculate; bracteoles silvery white with a narrow green midrib, apex acuminate to 3-lobed ........................................ 27. *P. album*

28b. Calyx teeth triangular or rounded; leaf sheaths somewhat expanded but not auriculate; bracteoles usually white margined, but not conspicuously silvery white, apex usually pinnatifid.

29a. Rays 4–7, very unequal; bracteoles entire, apex acuminate .................................................... 29. *P. rupestre*

29b. Rays (6–)8–20(–30), subequal (but see *P. szechynii*); bracteole apex pinnatifid (rarely acuminate).


31a. Plant without unpleasant odor when crushed; rays very unequal; fruit wings broad, sinuate but not dentate ................................................................. 30. *P. szechynii*

31b. Plant with a strong unpleasant odor when crushed; rays subequal; fruit wings broad, irregularly dentate ........................................................................ 9. *P. foetens*

30b. Rays 6–12(–15).

32a. Leaf blades oblong-lanceolate in outline, approaching 2–3-ternate/pinnate; fruit wings broad, sinuate ....................................................................................... 31. *P. wilsonii*

32b. Leaf blades broadly ovate in outline, 3–4-ternate/pinnate; fruit ribs prominent to winged, but not sinuate.

33a. Ultimate leaf segments ca. 2 mm; calyx teeth ca. 1 mm, green ............................................ 32. *P. hookeri*

33b. Ultimate leaf segments 3–5 mm; calyx teeth ca. 0.3 mm, dark purple ................................... 33. *P. tsekuense*

26b. Calyx teeth obsolete or minute.

34a. Rays 5–9(–11); bracts and bracteoles entire, acuminate.

35a. Stems and leaf sheaths purple-red, rays subequal; bracteoles broad, longer than the flowers ...... 35. *P. apiolens*
35a. Larger plants, 30–60 cm; rays 10–25; fruit wings broad, sinuate or irregularly cristate/dentate.
35b. Stems and leaf sheaths green, rays very unequal; bracteoles linear-lanceolate, shorter than the pedicels

34b. Rays (9–)11–25; bracts and bracteoles pinnate/pinnatifid at apex, rarely acuminate.
36a. Larger plants, 30–60 cm; rays 10–25; fruit wings broad, sinuate or irregularly cristate/dentate.
36b. Small slender plants, 20–35–(45) cm; rays 9–15; fruit ribs prominent to narrowly winged, but not sinuate or dentate.


这较生棱子芹 zhou guo leng zi qin

Hymenidium nubigenum (H. Wolff) Pimenov & Kljuykov.

Plants dwarf, to 15 cm, near rosette. Root stout, 0.5–1 cm across. Stem greatly reduced, rarely branched. Petioles 2–4 cm, sheaths oblong, membranous; blades oblong, 4–6 cm, 2-ternate-pinnate; pinnae 4–5 pairs, only the basal petiolulate, ca. 1 cm; ultimate segments linear or linear-lanceolate, ca. 5 × 1–2 mm. Primary umbels 10–15 cm across; peduncle very short; bracts several, small, leaf-like; rays 6–15, 5–10 cm, stout, somewhat unequal, ribbed, thickening especially at distal parts; umbellules borne above leaves; bracteoles 10–15, obovate to oblanceolate, 5–10 × 3–4 mm, margin broad, white, membranous, apex obtuse; petals white, spatulate, ca. 1.5 mm, apex obtuse. Fruit ellipsoid, dark gray-green, 3–4 mm; ribs crisped-winged; vittae 3 in each furrow, 5–6 on commissure.

- Alpine meadows, stony slopes; 3600–4600 m. Gansu, Qinghai, Xizang, NW Yunnan.

This rather poorly known taxon is recorded only from a few collections.


皱果棱子芹 zhou guo leng zi qin

Hymenidium pulszkyi (Kanitz) Pimenov & Kljuykov; Pleurospermum kansuense H. Wolff.

Plants 8–40 cm, usually tinged purplish-red. Root stout, dark brown, branched. Stem stout, often reduced. Basal and lower stem leaves long-petiolate, sheaths ovate; blades oblong or ovate, 3–10 × 1–3 cm, 1–2-pinnate; ultimate segments oblong or linear, 3–10 × 1–3 mm. Umbels 15–20 cm across; bracts 5–8, ovate or lanceolate, 2–5 × 0.3–1 cm, margin white or purplish-red, apex acute or pinnate; rays 5–10, 5–12 cm, slightly unequal; bracteoles 10–15, ovate or lanceolate, 1–2 cm, acuminate, longer than flowers; pedicels numerous, 5–8 cm. Calyx teeth conspicuous, triangular-ovate, ca. 0.8 × 0.5 mm. Petals ovate, white. Anthers dark purple. Fruit oblong-ovoid, 5–6 × 2–3.5 mm; ribs narrowly sinuate winged; vittae 3 in each furrow, 6 on commissure.

- Alpine grasslands; ca. 4900 m. W Sichuan, E Xizang, NW Yunnan.


天山棱子芹 tian shan leng zi qin

Hymenolaena lindleyana Klotzsch in Klotzsch & Garcke, Bot. Ergebn. Reise Waldemar, 150. 1862; Hymenolaena nanum (Ruprecht) Pimenov & Kljuykov; Hymenolaena nana Ruprecht; Pleurospermum stellatum (D. Don) C. B. Clarke var. lindleyanum (Klotzsch) C. B. Clarke.

Plants dwarf, near rosette, 5–30 cm. Root long-conic, 3–5 mm across. Stem inconspicuous, elongating in fruit, tinged purple-red, papery remnant sheaths at base. Petioles 3–6 cm, sheaths oblong; blades oblong-elliptic, 3–8 × 0.8–3 cm, 2–3-terinate-pinnate; pinnae short-petiolulate; ultimate segments oblong to linear, 2–10 × 1–2.5 mm, entire, apex obtuse. Umbels 3–5 cm across; bracts 2–4, oblong-ovate, 2–3 cm, shorter than rays, margin purple-red, 1–2-pinnate at apex; rays 4–7, 1–4 cm, unequal; bracteoles 8–12, oblong-ovate or obovate, 5–11 × 4–7 mm, slightly longer than flowers, mid band purple-red, margined white, apex entire or 3-lobed, membranous; pedicels numerous, 4–5 mm, winged. Calyx teeth obsolete. Petals broad-ovate, purplish-red, ca. 1.2 mm. Anthers dark purple. Fruit broad-ovoid, purple-red, 4–5 mm; ribs all broadly sinuate-winged; vittae 2 in each furrow, 4 on commissure.

- Alpine grasslands; ca. 4000 m. W Xinjiang, Xizang [NW India, Kashmir, Pakistan].


异伞棱子芹 yi san leng zi qin

Hymenidium heterosciadium (H. Wolff) Pimenov & Kljuykov; Physospermopsis fuscopurpurea (Handel-Mazzetti) Pimenov & Kljuykov; Trachydium fuscopurpureum Handel-Mazzetti.

Plants dwarf, near rosette, 10–25 cm. Root stout, 5–8 mm across, branched. Stem greatly reduced, ribbed, sparingly branched, base clothed with dense, brown fibrous remnant sheaths. Basal petiole sheaths oblong, membranous; blades oblong to narrowly ovate, 1.8–6 cm, 3-pinnate; pinnae 5–7 pairs, nearly sessile; ultimate segments linear to oblanceolate, 2–4 ×
ca. 0.5 mm. Peduncle greatly reduced; bracts several, small, leaf-like; rays 8–15, 10–20 cm, unequal; bracteoles 10–15, broadly obovate in outline, 4–10 mm, pale green, margin white in lower half, apex 2-pinnate; pedicels numerous, flattened, 3–5 mm. Calyx teeth triangular, obtuse, minute, ca. 0.3 mm. Petals broad-ovate to broad-oblong, white, apex purple-red with incurved tip. Anthers dark purple-red. Ovary black-gray. Young fruit slightly crisped-winged (mature fruit not known). Fl. Aug.

- Alpine grasslands; 3500–4500 m. W Sichuan, SE Xizang.

This incompletely known taxon is recorded from very few collections.


矮棱子芹  ai leng zi qin

Physospermopsis nana (Franchet) Pimenov & Kljuykov; Pleurospermopsis purpurascens (Franchet) Pimenov & Kljuykov; Trachydium purpurascens Franchet.

Small plants, 5–15 cm, glabrous. Stem reduced, slender, ribbed. Basal leaves petiolate; petioles 2–5 cm; sheaths broadly oblong-lanceolate, membranous-margined; blades ovate-oblong, 3–5 cm, 2–3-pinnate; pinnae 4–5 pairs, only the basal pinnae petiolate; ultimate segments linear-lanceolate, 1–3 × 0.5–1 mm, entire or 3-toothed at apex. Stem leaves gradually reduced upwards, petioles short or wholly sheathing. Umbels 5–7 cm across; peduncles very short; bracts 5–7, leaf-like, 2–3 cm; rays 5–15, slightly unequal, 3–6 cm; bracteoles 6–10, oblong-ovate to broadly obovate, 1–2-pinnate, 6–10 × 4–8 mm, about equal to flowers, pale green, margin whitish in lower half; pedicels 15–20, 3–5 mm. Calyx teeth small, triangular-ovate, 0.15–0.3 mm. Petals white or purplish-red, obovate, apex pinnate, pedicels numerous, 0.5–1 cm, narrowly sinuolate-winged; vittae 1 in each furrow, 2 on commissure. Fl. Jul–Sep, fr. Oct–Nov.

- Dwarf Rhododendron scrub, marshy meadows; (2600–)3500–4600 m. SE Xizang, NW Yunnan.

This is an enigmatic species, rarely collected in fruit, and is here retained within Pleurospermum (on account of the white scarious margins of the bracts and bracteoles), but is possibly better placed in Physospermopsis. Some authors treat Physospermopsis purpurascens as a separate species, distinguished by the short or sometimes obsolete calyx teeth.


雅江棱子芹 ya jiang leng zi qin


Plants dwarf, 8–20 cm, often tinged purple-red. Root gray-brown, conic, 1–1.5 cm thick. Stem strongly reduced, 3–5 cm. Petioles short, flattened, winged, 3–5 cm, sheaths oblong; blades ovate-lanceolate, 4–6 × 1.5–2.5 cm, 3–4-pinnate; pinnae 5 pairs, petiolulate; ultimate segments linear-lanceolate, 1–2.5 × 0.5–1.5 mm, midrib channelled. Umbels usually almost sessile (sometimes pedunculate in mesic conditions), 15–18 cm across; bracts few, leaf-like; rays stout, 15–25, 3–15 cm, very unequal, ribbed; bracteoles 12–14, obovate, 5–12 mm, just longer than flowers, apex pinnate, pedicels numerous, 0.5–1 cm, narrowly winged.

- Alpine grasslands; 4000–4600 m. NW Sichuan.


丽江棱子芹 li liang leng zi qin

Hymenidium foetens (Franchet) Pimenov & Kljuykov; Pleurospermum dielsianum Fedde ex H. Wolff, p.p.

Plants dwarf, 8–40 cm high, with characteristic strong unpleasant odor. Rootstock stout, vertical. Stem reduced, ribbed, scabrous, to 1.5 cm thick at base. Basal and lower petals 3–6 cm, flattened, winged, sheaths narrow to broad, oblong; blades oblong, 3–6 × 1–3 cm, 3–4-ternate-pinnate; pinnate 4–6 pairs, sub sessile; ultimate segments linear or lanceolate, 1–3 × 0.5–1.5 cm, hirtellous along veins and margins, apex entire, rarely 2–3-lobed. Primary umbels 10–15 cm across; peduncle 3–5 cm, scabrous; bracts 6–8, obovate, 3–6 cm, apex pinnate; rays 14–30, 3–9 cm, unequal, hispidulous; bracteoles ca. 10, obovate, 1–2 × 0.5–1 cm, apex pinnate-pinnatifid, pale green, margin cuspitate deciduous. Stem leaves few, tripartite. Umbels terminal and lateral, 8–15 cm across; peduncles 4–18 cm, thinly ribbed; bracts abscissed or 1–2, long-lanceolate, scarious, 0.5–2 cm, apex long-cuspitate; rays 6–8(–15), 0.6–2 cm, about as long as bracts; bracteoles 5–8, lanceolate, about as long as flowers; umbellules 8–12-flowered; pedicels unequal, 5–10 mm. Calyx teeth ovate, minute, apex obtuse. Petals yellowish-green or purplish, obovate, clawed. Stylodium conic. Fruit oblong, 7–8 × 3–4 mm; ribs all broadly-sinuate-ribbed; vittae 1 in each furrow, 2 on commissure. Fl. & fr. Aug.–Sep.

- Open woodlands, open slopes; 3300–3800 m. S Xizang (Nyalam) [Nepal].


心叶棱子芹 xin ye leng zi qin


Plants 50–100(–150) cm. Root stout, dark brown, 1–2 cm across, aroma strong, like that of Angelica or Apiaceae. Stem to 1 cm thick at base, thinly ribbed, branching. Basal petals 7–16 cm; sheaths oblong; blades 1–2-ternate/pinnate; ultimate segments broadly ovate, 5–11 × 4–8 cm, setose along nerves, regular-serrate, apex acute to acuminate, base cordate. Stem leaves gradually reduced upwards; uppermost with inflated, often bladeless sheaths. Umbels 8–10 cm across; peduncle 15–25 cm; bracts 3–4, linear-lanceolate, 2–4 × 0.2–0.4 cm; rays 15–20, 4–7 cm, scabrous; bracteoles 6–8, linear-lanceolate, 1–2.5 cm, greenish-white with dark green median stripe.; pedicels 14–20, 8–10 mm. Calyx teeth inconspicuous. Petals greenish-white, obcordate, ca. 3 mm. Stylodium conic. Fruit dark brown, ovoid-oblong, 8–10 × 4–6 mm; ribs all narrowly winged; vittae 1 in each furrow, 2 on commissure. Fl. Aug. fl. Aug.–Sep. 2n = 22.

- Open grasslands, gravelly stream banks, frequently collected; 3100–4000 m. NW Yunnan.

This species is used in Yunnan as a regional substitute for the medicine “jiang huo” (Notopterygium franchetii and N. incisum).


圆叶棱子芹 yuan ye leng zi qin

Hymenolaena rotundata de Candolle, Prod. 4: 245. 1830; Pterocyclus rotundatus (de Candolle) Pimenov & Kljuykov.

Plants (30–)50–60(–80) cm. Root brown, long-cylindric, ca. 1.5 cm thick, unbranched. Stem purple-green, thinly ribbed, base covered by remnant fibrous sheaths. Basal petals 5–15 cm; sheaths broadly ovate; blades broadly ovate, 12–20 × 10–15 cm, 1–2-ternate; ultimate segments petiolulate, broadly ovate to orbicular, 3–8 × 2.5–8.5 cm, simple or 3-lobed, margin cuspitate deciduous. Stem leaves few, tripartite. Umbels 2–4 cm across; peduncles 15–29 cm, thinly ribbed; bracts absent or 1–2, long-lanceolate, scarious, 0.5–2 cm, apex long-cuspitate; rays 6–8(–15), 0.6–2 cm, about as long as bracts; bracteoles 5–8, lanceolate, about as long as flowers; umbellules 8–12-flowered; pedicels unequal, 5–10 mm. Calyx teeth ovate, minute, apex obtuse. Petals yellowish-green or purplish, obovate, clawed. Stylodium conic. Fruit oblong, 7–8 × 3–4 cm; ribs all broadly-sinuate-ribbed; vittae 1 in each furrow, 4 on commissure. Fl. & fr. Aug.–Sep.

- Open woodlands, open slopes; 3300–3800 m. S Xizang (Nyalam) [Nepal].


新疆棱子芹 xin jiang leng zi qin


Plants (20–)60–150 cm, robust. Taproot thick. Stem branched, scaberulous or puberulent base with fibrous remnant sheaths. Basal petals slender, 3–8 cm, sheaths very narrow; blades oblong-ovate or triangular-ovate, 3–8 × 2–6 cm, 2-pinnate or ternate-pinnate; ultimate segments lanceolate, ovate or obovate, 5–20 × 2–5 mm, base winged, margin serrate to pinnatifid, usually scaberulous. Leaves gradually reduced upwards. Umbels terminal and lateral, 8–15 cm across; peduncles 4–18 cm; bracts 5–8, lanceolate or oblong, 1–3 cm, like upper leaves, becoming reflexed; rays 15–35, 3–10 cm, about equal, thick, scaberulous; bracteoles 6–10, lanceolate or ovate-lanceolate, 5–12 mm, longer than flowers, reflexed, margin broad, white, scarious; umbellules 20–30-flowered; pedicels 7–12 mm, angled, scaberulous. Calyx teeth ovate, minute. Petals obovate, white or flushed pink, apex inflexed. Fruit oblong ovoid or ellipsoid, 4–6 × 2–4 mm; ribs all narrowly sinuate-ribbed; vittae 1 in each furrow, 2 on commissure. Fl. Jun.–Aug. fr. Aug.–Oct.

- Open stony ground, streamsides; ca. 3800 m. NW Xinjiang [Afghanistan, NW India, Kashmir, Pakistan].

Pleurospermum camtschaticum Hoffmann.

Plants 1–2 m, robust. Root dark brown, 2–3 cm across, branched, strongly aromatic. Stem hollow, ribbed, scabrous to glabrous. Basal and lower petioles 15–30 cm, sheaths ovate, broad; blades broadly triangular-ovate, 15–30 cm, 2–3-ternate-pinnate; ultimate segments narrowly ovate or lanceolate, 2–6 × 0.5–2.5 cm, irregular-pinnatifid, veins and margin hirtellous. Leaves reduced upwards. Umbels large, 10–20 cm across; bracts numerous, linear or lanceolate, 2–8 cm, apex entire or pinnate, reflexed; rays 20–40(–60), unequal, hirtellous; bracteoles 6–9, linear-lanceolate, 5–10 × 1–3 mm, apex entire or pinnate; pedicels 10–12 mm, scabrous. Calyx teeth triangular-ovate. Petals broad-obovate, white, 2–2.5 mm. Stylopodium short-conic. Fruit broad-ovoid, 6–10 × 3–6 mm; ribs all thickly cristate-winged; vittae 1 in each furrow, 2 on commissure. Fl. Jun–Jul, fr. Jul–Aug. n = 11.

Stream banks in forests or mountain ravines. Hebei, Jilin, Liaoning, Nei Mongol, Shaanxi, Shanxi [Japan, Mongolia, SE Russia].

This species has reputed medicinal value. Chinese material previously recorded as Pleurospermum austriacum Linnæus is referable to P. uralense.


Oreocomopsis aromatica (W. W. Smith) Pimenov & Kljuykov.

Plants 40–100 cm high, robust, strongly aromatic. Root brownish, cylindric, branched, crown stout, 1–2 cm across, annular ringed. Stem purple-tinged at base. Basal and lower petioles 10–30 cm, sheath oblong; blades broad-ovate, 15–30 cm, 3–4-ternate-pinnate; pinnae 3–5 pairs, long-petiolulate; ultimate segments ovate or obovate, 1–3 × 0.7–2.3 cm, irregularly crenate-dentate, scabrous on rachis, nerves and margins. Leaves reduced upwards. Umbels large, 10–28 cm across; peduncle up to 20 cm; bracts 6–8, very variable, similar to uppermost leaves, 4–10 cm, margin densely scabrid with flattened hairs, apex entire, 3-lobed or pinnate; rays 20–40, 4–12 cm; bracteoles ca. 10, linear-lanceolate, 1.5–3 cm, densely scabrid with flattened hairs, margin narrow, white; pedicels numerous, ca. 1 cm. Calyx teeth obsolete. Petals obovate, white. Stylodium short-conic. Fruit oblong, 0.7–1 × 0.5–0.6 mm; ribs all broadly thick-winged; vittae 2–3 in each furrow, 6–7 on commissure. Fl. Jul–Aug, fr. Aug–Sep.

- Near ditches in forests, open dwarf scrub, alpine meadows; 3800–4100 m. SW Sichuan, Xizang, NW Yunnan.

This species has reputed medicinal value.


Angelica forrestii Diels; Hymenolaena angelicoides Wall-ich ex de Candolle, Prodr. 4: 245. 1830; Pterocyclus angelicoides (Wallich ex de Candolle) Klotzsch; Pterocyclus forrestii (Diels) Pimenov & Kljuykov.

Plants 80–120 cm or more, robust. Root dark brown, long-conic, 3–4 cm across. Stem thinly ribbed, glabrous. Basal leaves with long petioles, 20–40 cm, sheath narrow-oblanceolate, 4–5 cm; blades oblong, 3–4-ternate-pinnate; ultimate segments oblong or ova-tate-oblong, 4–10 × 2.5–4 cm, scabrous along nerves abaxially, cuneate, irregularly serrate or 3-lobed, apex acute. Stem leaves reduced upwards, sheaths strongly inflated and auriculate, membranous. Umbels 8–10 cm across, peduncle ca. 30 cm; bracts 5–8, linear-lanceolate, 2–3 × ca. 0.8 cm, apex caudate, deciduous; rays 15–25, 5–8 cm in flower, to 15 cm in fruit; bracteoles 5–8, narrow-lanceolate, 1–2 × 0.3–0.5 cm, membranous, green, margin sometimes pale; pedicels ca. 25, 1–1.5 cm. Calyx teeth obsolete. Petals ovate, white or tinged purplish-red, 2.75–5 × ca. 1.75 mm. Anthers dark purple. Fruit oblong, dark brown, 8–14 × 3–4 mm; dorsal ribs prominent, lateral ribs narrowly winged; vittae 1–2 in each furrow, 2–3 on commissure. Seed face concave. Fl. Jun–Aug, fr. Aug–Sep. 2n = 22*

- Near ditches in forests, alpine meadows; 3000–4000 m. SW Sichuan, SE Xizang, NW Yunnan [Bhutan, Kashmir, Myanmar, Nepal, Sikkim].


长果棱子芹 chang guo leng zi qin


Plants 80–100 cm. Stem ribbed, branched. Basal and lower petioles 10–30 cm; sheaths very broad, auriculate; blades broad-ovate in outline, 30–40 × 15–25 cm, 3–4-ternate-pinnate, pinnae long-petiolulate, ultimate segments oblong-ovate to broad-ovate, 5–15 × 2.5–7 cm, oblique-cuneate, regular-crenate, apiculate, sparse-setose along nerves abaxially. Leaves reduced upwards; sheaths inflated, conspicuous. Umbel 8–10 cm across; peduncle 10–15 cm; bracts 3–8, linear, 2–3.5 × 1–3 mm; rays 20–25, subequal, 5–8 cm in fruit, scabrous; bracteoles ca. 8, linear, 10–15 × 1 cm, uniform green; pedicels numerous, 7–10 cm, flattened, slightly scabrous. Calyx teeth obsolete. Petals broad-obovate, white. Stylodium short-conic. Fruit narrow-oblanceolate, dark brown, 10–15 × 4 cm; ribs all narrowly winged; vittae 1 in each furrow, 2 on commissure. Seed face slightly concave. Fl. and fr. Jul–Sep.

- Near ditches in coniferous forests, shrubby thickets; ca. 3100 m. SE Xizang, NW Yunnan.

This incompletely known taxon is recorded only from a few collections. It is superficially similar to Angelica, and is closely related to P. angelicoides, from which it differs by its regularly crenate leaves, narrower bracts and bracteoles (less than 4 mm), and slightly concave seed face.


芷叶棱子芹 zhi ye leng zi qin
Plants 40–80 cm. Root dark brown, long-paniculate. Stem ribbed. Basal and lower petioles to 20 cm, flattened, membranous-winged, sheaths narrow-oblong; blades broadly triangular-ovate, 8–12 × 8–12 cm, 3–5-lobed or 2-ternatifid; ultimate segments ovate or narrow-ovate, 2–5 × 1–2.5 cm, irregular-serrulate, acute, white-hispid abaxially and on adaxial veins, abaxial surface gray-green. Leaves reduced upwards. Umbels 10–15 cm across; peduncle 5–10 cm; bracts 7–9, oblanceolate to obovate, 3–6 × 0.5–2 cm, white-hispidulous along nerves on both sides, apex entire or 3–5-lobed, margin coarse-dentate; rays 10–15, 2–4 cm, densely hispidulous; bracteoles 5–9, lanceolate, 1–2 cm, similar to bracts; pedicels 10–15, 8–15 mm, hispidulous, elongating in fruit to 20 mm. Calyx teeth obsolete. Petals elliptic, white, ca. 1.5 mm. Stylodium short-conic. Fruit oblong-ovoid, 7–10 × 1.8–2.5 mm; ribs all broadly sinuolate-winged; vittae 1 in each furrow, 2 on commissure. Fl. Jul–Aug, fr. Sep.–Oct.

- Open dwarf scrub, grasslands; 3000–3900 m. Xizang, NW Yunnan.

This species is closely related to, and not always easy to distinguish from, *P. benthamii*. The presence of coarse, white hairs (reminiscent of those seen in *Heracleum*) on the leaf sheath and main veins is usually diagnostic, as is the gray-green underside of the leaves and the densely hispidulous rays and pedicels.


大苞棱子芹 da bao leng zi qin


Plants 40–60 cm. Root stout conic. Stem ribbed and branchy. Basal and lower petioles 4–6 cm, flattened, membranous-winged, sheaths broad, oblong, membranous; blades broadly triangular-ovate, tripartite; median lobes ovate, 1.5–3 × ca. 1.5 cm, larger than narrowly ovate lateral lobes, serrate. Leaves reduced upwards, with petioles becoming wholly sheathing. Umbels ca. 10 cm across; bracts 7–10, oblanceolate, 3–5 × ca. 1 cm, pilose along veins, apex 3–5-lobed; rays 10–25, 5–6 cm; bracteoles 6–8, elliptic-obovate, 1–1.5 × 0.3–0.5 cm, apex 3–5-lobed, median stripe green, margins white; pedicels numerous, ca. 8 mm. Calyx teeth obsolete. Petals broad-ovate or rounded, pinkish. Stylodium short-conic. Immature fruit ellipsoid; ribs all broadly sinuolate-winged; vittae 1 in each furrow, 2 on commissure (mature fruit not known). Fl. Jun–Jul.

- Grassy slopes in mountains; ca. 3500 m. SW Xizang.

This incompletely known taxon is recorded only from the type gatherings. It is closely allied to *P. benthamii*.


松潘棱子芹 song pan leng zi qin

_Pleurospermum longipetiolatum_ H. Wolff; _P. pilgerianum_ Fedde ex H. Wolff; _P. rockii_ Fedde ex H. Wolff.

Plants 40–70 cm. Root conic, branched. Stem hollow, ribbed, base 5–12 mm thick. Basal and lower leaves long-petiolate, sheaths narrow-oblong; blades ovate, 7–18 × 5–15 cm, 3-ternate-pinnate; pinnae 5–7 pairs, proximal pinnae petiolulate; ultimate segments oblong-lanceolate, 10–25 × 2–5 mm, hirtellous along nerves and margins otherwise glabrous, irregularly incised. Leaves gradually reduced upwards. Terminal umbels fertile, 8–17 cm across, peduncle 2–4 cm, overtopped by the sterile lateral umbels (when present), pedicules to 14 cm; bracts 8–12, oblong-obovate to spathulate, 1.5–3 cm, broadly white-margined to the first lobes, apex 3–5-lobed; rays 12–28, 3.5–7 cm, unequal, smooth; bracteoles 8–10, oblong-elliptic to spathulate, 10–15 mm, apex entire or shortly 3-lobed; pedicels numerous, 6–10 mm. Calyx teeth obsolete. Petals ovoblate, white, ca. 1 mm. Anthers dark purple. Stylodium short-conic. Fruit oblong-ovoid, 4–6 × ca. 3 mm; dorsal ribs sinuolate-winged, lateral ribs plane-winged; vittae 1 in each furrow, 2 on commissure. Fl. Jul–Aug, fr. Sep.

- Alpine grasslands, river banks; 2500–4300 m. Gansu, Hubei, Ningxia, Qinghai, Shaanxi, Sichuan.

This species is similar to, and sometimes treated as conspecific with, _Pleurospermum davidi_ (here a synonym of *P. benthamii*). It is here distinguished by the more finely divided leaves (ultimate segments to 5 mm wide), hirtellous along the margin, the smaller fruits (less than 6 mm), and the terminal umbel overtopped by the staminate lateral umbels. It has reputed medicinal value (in Sichuan).


宝兴棱子芹 bao xing leng zi qin

_Hymenolaena benthamii_ Wallich ex de Candolle, Prodr. 4: 246. 1830; _Hymenidium benthamii_ (Wallich ex de Candolle) Pimenov & Kljuykov; _H. davidi_ (Franchet) Pimenov & Kljuykov; _Pleurospermum davidi_ Franchet.

Plants (25–)45–150 cm. Root cylindric, ca. 2.2 cm thick, annular ringed at apex. Stem hollow, thinly ribbed, base ca. 2 cm thick, often tinged purple. Basal and lower petioles 10–18 cm, sheaths narrow-oblong; blades broadly triangular-ovate, 8–15 cm, 2–3-ternate-pinnate, glabrous; pinnae 3–4 pairs, short-petiolulate; ultimate segments narrow-ovate or lanceolate, 1.25 × 0.3–1 cm, base decurrent, serrate-pinnatifid. Umbels (5–)10–15 cm across; peduncle 4–12 cm; bracts 5–9, oblanceolate, 3–9 × 1–2 cm, margin white-scarious, apex pinnate; rays 10–25, 5–10 cm (in fruit), scabrous-ribbed; bracteoles 6–9, oblanceolate, 8–20 × 3–5 mm, margin white-scarious, apex 3-lobed, pedicels 15–20, 5–15 mm (to 35 mm in fruit), flattened, scabrous. Calyx teeth obsolete. Petals ovoblate, white, rarely pink, 2–3 mm, acute. Stylodium conic. Fruit ovoid-ellipsoid, 6–10 × 2.5–4.5 mm; ribs all sinuolate-winged; vittae 1 in each furrow, 2 on commissure. Fl. Jun–Jul, fr. Aug–Sep.

Open scrub, alpine pastures, riversides; 2200–4300 m. W Sichuan, SE Xizang, NW Yunnan [Blutan, N Myanmar, E Nepal, Sikkim].

This species has reputed medicinal value (in Yunnan).


异叶棱子芹 yi ye leng zi qin
Hymenidium decurrens (Franchet) Pimenov & Kljuykov.

Plants 40–100 cm high. Root dark brown, 7–10 cm across. Stem slender, 4–7 mm thick at base, ribbed. Basal and lower petioles 10–30 cm; sheaths oblong, membranous; blades broad-ovate, 5–12 cm, 2-ternate/pinnate, hirtellous along the main veins on both surfaces, otherwise glabrous; ultimate segments oblong-ovate, 1–3 × 0.8–2 cm, base cuneate-decurrent, pinnately incised distally. Stem leaves gradually reduced upwards. Umbels 6–10(–18) cm across; peduncles 5–13 cm; bracts 6–10, pale green, oblong-lanceolate, 1.2–2.2 × 0.4–1.2 cm, less than half length of rays, margin white membranous, apex acute or 3-lobed; rays 10–15(–20), 2–4.5 cm, scabrous; bracteoles 6–8, 7–15 mm, equal to flowers, linear-lanceolate, entire or occasionally 3-lobed; pedicels numerous. Calyx teeth obsolete. Petals ovate-lanceolate, white, ca. 2 mm. Anthers violet, filaments ally 3-lobed; pedicels numerous. Fruit narrowly obovoid, 2.5–3 × 1.8–2 mm; ribs sinuolate-winged; vittae 1 in each furrow, 2 on commissure. Fl. Jul–Aug., fr. Aug–Sep.

- Shady areas in Pinus and mixed forests, alpine grasslands; 3000–4000 m. NW Yunnan.


鸡冠棱子芹 ji guan leng zi qin

Hymenidium cristatum (H. de Boissieu) Pimenov & Kljuykov.

Plants 60–120 cm, glabrous. Root gray-brown, conic. Stem slender, hollow, simple or branched. Basal and lower leaves long-petiolate, sheaths ovate; blades broadly triangular-ovate, 15–28 × 10–14 cm, 2-ternate-pinnate; ultimate segments rhomboid-ovate, 1.5–6 × 0.8–2.8 cm, cuneate, irregular-incised or pinnate, acuminate. Leaves reduced upwards. Umbels 3–5 cm across; bracts 3–7, obovate-oblong, 1–2.5 cm, apex entire; rays 7–13, 1–2.5 cm, subequal; bracteoles 4–6, linear-lanceolate, 1–2.3 cm, almost as long as rays; pedicels 15–25, 3–5 mm. Calyx teeth obsolete. Petals ovate-lanceolate, white, ca. 1 mm. Stylodium conic. Fruit ovoid, brownish, 3.5–5 × 3–4.5 mm, tuberculate; ribs all broadly cristate-keeled/narrowly winged; vittae 1 in each furrow, 2 on commissure. Fl. and fr. Jul–Sep.

- Forest margins, grasslands near ditches; 1000–2600 m. Anhui, Gansu, Henan, Hubei, Ningxia, Qinghai, Shaanxi, Sichuan.


美丽棱子芹 mei li leng zi qin

Hymenidium amabile (Craib & W. W. Smith) Pimenov & Kljuykov.

Plants 15–50 cm high. Root stout, dark brown, 1–1.5 cm across. Stem solitary, stout 1–2 cm broad, violet-green, unbranched. Basal petioles 3–6 cm, sheaths broad-ovate, 2–3 cm across; blades triangular-ovate, 6–15 cm, 3-4-ternate-pinnate; ultimate segments linear, 1–2 mm. Stem leaves gradually reduced upwards, sheaths greatly expanded, 3–5 cm broad, very pale almost white, nerves tinged purple, membranous, margins erose. Umbel 5–12 cm across, usually solitary; peduncles 2.5–4 cm; bracts 3–8, 3–5 cm, similar to upper leaves; rays 20–30, 2–4 cm, subequal; bracteoles ca. 12, oblong or oblongo-lanceolate, 6–10 × 4–8 mm, membranous, silvery white, main veins dark purple; pedicels 20–25, ca. 5 mm. Calyx teeth obsolete. Petals obcordate, white to dark purple, 1–1.5 mm. Anthers dark purple. Stylodium depressed, purple-black; style yellow-green. Fruit ovoid-oblong, 3–5 × ca. 1.5 mm; ribs very narrowly sinuolate-winged; vittae 3 in each furrow, 4–6 on commissure. Fl. Jul–Sep, fr. Sep–Oct.

- Open scrub, high-altitude alpine turf, semi-stable scree; (3000–) 4000–5100 m. SE Xizang, NW Yunnan [Bhutan, Sikkim].

The plants are used in traditional medicine in Xizang.


二色棱子芹 er se leng zi qin


Plants 10–40 cm. Root long-conic, simple. Stem purple-green, often simple, ribbed. Basal and lower petioles 2–8 cm, sheaths narrowly oblanceolate, membranous; blades oblanceolate, 4–10 × 2–6 cm, 1-pinnate to 2-pinnatifid; pinnae 4–5 pairs, only basal pinnae shortly pinnatifid; ultimate segments oblanceolate, 1.2–2.5 cm, serratate to pinnatifid. Stem leaves gradually reduced upwards. Umbels terminal, 5–9 cm across; bracts 3–8, narrowly oblanceolate, 1.5–2.5 cm; rays 2–4, 1.5–3.5 cm, unequal; bracteoles 6–8, broadly ovate, 7–12 × 6–8 mm, median stripe broad, purple-green, margin broad white-membranous, apex 1–3-lobed, slightly exceeding flowers; pedicels ca. 2 mm. Calyx teeth narrowly triangular, ca. 1 mm. Petals white, purple-red distally, apex rounded. Anthers dark purple. Stylodium dark purple. Fruit narrowly obovoid, 2.5–3 × 1.8–2 mm; ribs sinuate winged; vittae 2 in each furrow, 4 on commissure. Fl. Aug–Sep, fr. Sep–Oct.

- Open mixed woodlands, dwarf Rhododendron scrub, alpine pastures; 3500–4300 m, SW Sichuan, SE Xizang, NW Yunnan.

This species is similar to, and sometimes confused with, the Himalayan unispecific genus Pleurospermopsis.


云南棱子芹 yun nan leng zi qin

Hymenidium yunnanense (Franchet) Pimenov & Kljuykov; Pleurospermopsis yunnanensis H. Wolff.

Plants 30–60(–100) cm. Taproot stout, dark brown. Stem hollow, distally ribbed and branched. Basal and lower petioles up to 20 cm; sheaths broad oblong, extended to first pinnae in mid and upper leaves, puberulous along veins; blades broadly triangular-ovate, 10–20 cm, 2–3-ternate/pinnate, glabrous; ultimate segments ovate or oblong, 1–2.8 × 0.5–2 cm, acutely serrate to lacerate. Umbels 7–10(–15) cm across; peduncles 7–12 cm; bracts 6–8, oblong to broadly lanceolate, 2–4 × 1–2 cm, divided at apex; rays 12–25, 3–5 cm, brown-hirtellous along
ribs; bracteoles 6–10, oblong-ovate, 10–15 mm, membranous except midribs, cuneate, 3–5–lobed to pinnatifid at apex; pedicels numerous, 6–8 mm long. Calyx teeth conspicuous, lanceolate-triangular, ca. 0.5 mm. Petals obovate, greenish-white, occasionally flushed pink. Anthers dark purple-black. Fruit broad-ovoid, 3–4 × 2.5–3.2 mm; ribs narrowly winged; vittae 2 in each furrow, 4 on commissure. Fl. Jun–Sep, fr. Aug–Oct.

Woodland margins, dwarf Rhododendron scrub, valley sides, rocky slopes; 3600–4000 m. W Sichuan, NW Yunnan [NE Myanmar].


疏毛棱子芹

Hymenidium pilosum (C. B. Clarke ex H. Wolff) Pimenov & Kljuykov.


Open wet grasslands, stream-sides; 3900–4900 m. S Xizang (Yadong) [Bhutan, Nepal, Sikkim].


单茎棱子芹 dan jing leng zi qin

Aulacospermum simplex Ruprecht in Osten-Saken & Ruprecht, Sert. Tianschan. 49. 1869; Albertia commutata Regel & Schmalhausen; Trachydium commutatum (Regel & Schmalhausen) M. Hiroe.

Plants 20–40 cm, glabrous. Stem solitary, ribbed, branched. Basal and lower petals 8–15 cm, flattened, sheaths narrow-oblong, 3–5 cm broad; blades ovate or oblanceolate, 4–7 × 1.5–3.5 cm, 2–3-ternate-pinnate; pinnae 4–6 pairs, sessile; ultimate segments linear-lanceolate, 4–18 × 1–4 mm, acute. Leaves gradually reduced upwards. Umbels 5–7 cm across; bracts 4–7, lanceolate, 1–1.5 cm; rays 5–11, 1–5 cm, very unequal; bracteoles 5, 5–8 mm, lanceolate, pale green, apex acute, pedicels 7–16, 2–5 cm. Calyx teeth conspicuous, broad-triangular. Petals broad-ovate, purplish, margin white. Anthers yellow-green. Stylopodium green, short-conic. Fruit broad-ovoid or subglobose, 3–4 × 2.5–3.5 mm; ribs all broadly sinuolate-winged; vittae 1 in each furrow, 2 on commissure. Fl. Jul, fr. Aug.

Grasslands in mountains; ca. 2500 m. NW Xinjiang [Turkmenistan].


岩生棱子芹 yan sheng leng zi qin


Plants 20–50 cm, glabrous. Root conic. Stem simple or little-branched. Basal and lower petals 8–18 cm, flattened, sheaths narrow-oblong; blades ovate, 3–5 × 1.5–3 cm, 2–3-pinnate; pinnae 3–5 pairs, sessile; ultimate segments linear-lanceolate, 2–5 × 1–2.5 mm, acute. Leaves reduced upwards. Umbels 5–10 cm across; bracts 4–7, linear-lanceolate, 1–2 cm; rays 4–7, 2–5 cm, unequal; bracteoles 4–6, lanceolate, 5–10 mm, pale green, apex entire, acute; pedicels 10–20, 3–5 mm. Calyx teeth small, triangular. Petals ovate-obovate, white, ca. 1 mm. Stylopodium yellow-brown, short-conic. Fruit broad-ovoid or subglobose, 3–5 × 3 mm; ribs all broadly sinuolate-winged; vittae 3 in each furrow, 6 on commissure. Fl. Jul, fr. Aug.

Rocky mountain slopes; 2500–3500 m. NW Xinjiang [Turkmenistan].

This rather poorly known taxon is possibly conspecific with Pleurosperrnum simplex.


青海棱子芹 qing hai leng zi qin
Hymenidium szechenii (Kanitz) Pimenov & Kljuykov; Pleurospermum dielsianum Fedde ex H. Wolff, p.p.

Plants 15–40 cm. Root dark brown, conic. Stem stout, simple or branched, base with papery remnant sheaths. Basal and lower leaves long-petiolate, petioles flattened, sheaths narrow-oblong; blades oblong or ovate-lanceolate, 5–8 × 2–4 cm, 2–3-ternate-pinnate; pinnae 6–9 pairs, sessile; ultimate segments lanceolate, 2–3 × ca. 1 mm, acute. Leaves gradually reduced upwards. Umbels 10–15 cm across; bracts 7–11, ob lanceolate, 3–4 cm, apex 1–2-pinnate, base narrowly scarious margined; rays 15–25, 5–8 cm, unequal; bracteoles 9–13, obovate or ob lanceolate, 6–8 mm, apex pinnate; pedicels 6–8 mm, flattened, membranous-winged. Calyx teeth small, triangular. Petals obovate, reddish, ca. 2.5 mm. Anthers dark purple. Fruit ovoid-ovoid, 5–6 × 3–4 mm; ribs all simu late-winged; vittae 3 in each furrow, 2 on commissure. Fl. Jul, fr. Aug.

- High-altitude grasslands; 3700–4200 m. N Gansu, E Qinghai, E Xizang.


粗茎棱子芹 显微镜下见 chong jing leng zi qin

Hymenidium wilsonii (H. de Boissieu) Pimenov & Kljuykov; Physospermopsis lalabhuriana Farille & S. B. Malla; Pleurospermum crassicaule H. Wolff; P. crassicaule H. Wolff; P. lecomteanum H. Wolff; P. tanacetifolium H. Wolff; P. thalictrifolium H. Wolff

Plants 10–40 cm. Root brown, long-conic. Stem purplish-tinged, ribbed, fibrous remnant sheaths at base. Basal and lower petioles 3–5 cm, flattened, winged, sheaths narrow-oblong; blades oblong-lanceolate, 3–15 cm, 2–3-ternate-pinnate; pinnae 5–9 pairs, basal pinnae petiolulate; ultimate segments narrow-ovate or lanceolate, 3–5 × 1.5–2 mm, entire or 2–3-lobed. Leaves reduced upwards, petioles becoming wholly sheathing. Umbels 4–6 cm across; peduncle 3–4 cm; bracts 5–7, obovate-lanceolate or linear-lanceolate, 1.5–2.5 cm, margin membranous, white or tinged brown, apex long-caudate or occasionally pinnatifid; rays 6–12, 2–4 cm, subequal, ribbed; bracteoles 6–10, ca. 5 mm, similar to bracts, pedicels numerous, ca. 5 mm, flattened. Calyx teeth narrowly triangular, ca. 1 mm. Petals rounded, 1–1.2 mm, white. Anthers dark purple. Fruit ovoid, 3–4 mm; ribs narrowly winged; vittae 3 in each furrow, 6 on commissure. Fl. and fr. Aug–Oct.

Open pastures by streams, grassy slopes; 2700–5400 m. Gansu, Qinghai, Sichuan, SE Xizang, NW Yunnan [Bhutan, Nepal, Sikkim].

This highly variable and complex taxon is wide-ranging in distribution and leaf form across the Himalayan region and SW China. Two varieties are currently recorded from China, but further revision of the taxon, together with P. giraldis and P. tskeuense, is needed.

1a. Bracteoles obovate-lanceolate, margin broad, white, apex long-caudate ............ 32a. var. hookeri
1b. Bracteoles linear-lanceolate, margin narrow, tinged brown, apex pinnatifid ............. 32b. var. thomsonii

32a. Pleurospermum hookeri var. hookeri

喜马拉雅棱子芹 (原变种) 喜马拉雅棱子芹 xi ma la ya leng zi qin (yuan bian zhong)


Bracteoles obovate-lanceolate, margin broad, white, apex long-caudate.

Open pastures by streams; 4100–5400 m. SE Xizang, NW Yunnan [Bhutan, Nepal, Sikkim].

32b. Pleurospermum hookeri var. thomsonii

西藏棱子芹 西藏棱子芹 xi zang leng zi qin

Hymenidium chloroleucum (Diels) Pimenov & Kljuykov; Pleurospermum affine H. Wolff; P. likiangense H. Wolff (1930), not H. Wolff (1929); P. markgrafianum H. Wolff; P. pseudoinvolutatum H. Wolff; P. tibetanicum H. Wolff; Trachydium chloroleucum Diels.

Bracteoles linear-lanceolate, margin narrow, tinged brown, apex usually pinnatifid.

- Grassy slopes; 2700–4500 m. Gansu, Qinghai, Sichuan, SE Xizang, NW Yunnan.


泽库棱子芹 ze ku leng zi qin

Hymenidium tskeuense (R. H. Shan) Pimenov & Kljuykov.

Plants 30–50 cm, glabrous. Root stout, ribbed and branch-
ing. Basal and lower petioles 5–8 cm, sheaths ovate; blades broadly triangular, 6–10 × ca. 8 cm, 3–4-ternate-pinnate; petioles of proximal pinnae 1.5–2 cm; ultimate segments linear-lanceolate, 3–5 × ca. 1 mm. Leaves gradually reduced upwards with short or wholly sheathing petioles. Umbels 4–6 cm across; bracts 3–5, lanceolate, 1.5–2.5 cm, apex pinnate; rays 7–10, 2.5–4 cm, subequal; bracteoles 8–10, narrow-lanceolate, 0.6–1 cm, apex pinnate/pinnatifid; pedicels ca. 5 mm, flattened. Calyx teeth conspicuous, ovate, dark purple, ca. 0.3 mm. Petals broad-ovate or rounded, purplish to white, ca. 1 mm. Anthers black-purple. Stylopodium black-purple, low-conic. Immature fruit ovoid, narrow-winged (mature fruit unknown). Fl. Aug.

- Grassy slopes; 3400–3500 m. Qinghai.

This incompletely known taxon is recorded only from a few collections and is part of the Pleurospermum hookeri complex.


Hymenidium giralidii (Diels) Pimenov & Kljuykov; Pleurospermum limprichtii H. Wolff; P. meoides Diels.

Plants 20–35 cm, glabrous. Root dark brown, 0.5–1 cm across, branched. Stem tinged purple, ribbed, simple or little branched. Basal and lower leaves long-petiolate, sheaths membranous; blades triangular-ovate, 5–8 cm, 3–4-ternate-pinnate; ultimate segments linear, 1.5–3 × 0.3–0.5 mm. Leaves gradually reduced upwards, petioles becoming almost wholly sheathing. Umbel often 1, rarely 2–3, 3.5–4.5 cm across; bracts 5–7, ovate-elliptic or obovate, 15–20 × 5–8 mm, white or tinged purple, membranous; rays 9–15, 1.5–2.5 cm; bracteoles 5–7, obovate, longer than flowers, margin white membranous to first lobes, apex pinnatisect; pedicels 18–30, 2.5–3.5 mm. Calyx teeth minute, triangular. Petals obcordate, white, ca. 1 mm. Stamens longer than petals, anthers purple-black. Fruit oblong, 3.5–4 mm; ribs winged; vittae 3 in each furrow, 6 on commissure. Fl. Jul–Aug, fr. Sep–Oct.

- Grassy mountain slopes; 3000–3600 m. Gansu, Hubei, Shaanxi, Sichuan.

This taxonomic boundaries between this species and Pleurospermum hookeri var. thomsonii are unclear as the character of obsolete calyx teeth is not reliable and the degree of dissection of the bracteoles is somewhat variable. All parts of the plant are used medicinally to cure stomach ache (in Shaanxi).


Hymenidium apiolens (C. B. Clarke) Pimenov & Kljuykov; Pleurospermum apiolens var. nipaulense Farille & S. B. Malla; Physospermopsis handelii (W. W. Smith) Pimenov & Kljuykov.

Plants 20–35 cm, glabrous. Root dark brown, 0.5–1 cm across, branched. Stem tinged purple, ribbed, simple or little branched. Basal and lower leaves long-petiolate, sheaths membranous; blades triangular-ovate, 5–8 cm, 3–4-ternate-pinnate; ultimate segments linear, 1.5–3 × 0.5–1 mm. Leaves gradually reduced upwards. Umbels 4–6 cm across; bracts 5–7, ca. 3 cm, subequal, scabrous-ribbed; bracteoles 6–10, ovate to broad-ovate, ca. 10 × 4–6 mm, longer than flowers, similar to bracts; pedicels numerous, ca. 4 mm. Calyx teeth obsolete. Petals broad-ovate, white. Stylopodium short-conic. Fruit oblong, 3.5–5 × 2–3 mm; ribs all broadly sinuate-winged; vittae 1 in each furrow, 2 on commissure. Fl. Jul–Sep.

High-altitude grassy slopes; 3800–4700 m. SW Xizang [Bhutan, Nepal, Sikkim].


Physospermopsis handelii (H. Wolff) Pimenov & Kljuykov.

Plants 30–45 cm, slender, glabrous. Taproot stout. Stem branched, branches often opposite or cyclic. Basal petioles ca. 15 cm; sheaths narrow, 1–2 cm; blades triangular-lanceolate, 6–8 × ca. 2.5 cm, 3-pinnate; pinnae 5–6 pairs, broadly triangular, petioles ca. 3 mm; ultimate segments shortly petiolulate or sessile, pinnatifid, colored-mucronate. Stem leaves gradually reduced upwards. Terminal umbel, peduncle 10–15 cm, often exceeding by the lateral umbels; bracts 5–10, obovate-lanceolate, 2–4.5 cm, leaf-like; rays slender, 6–12 cm, unequal; bracteoles rhomboid, about equaling the flowers, apex pinnate; pedicels 15–30, up to 10 mm, unequal. Calyx teeth minute. Petals white, rounded, ca. 1 mm. Anthers dark purple. Young fruit broad-ovoid, sparsely tuberculate; ribs narrowly sinuate-winged (mature fruit not known). Fl. Aug, fr. Sep.

Alpine meadows; 2900–4100 m. NW Yunnan [NE Myanmar].

This incompletely known and problematic species is recorded only from a few collections (none bearing mature fruit). It is possibly better placed in Physospermopsis on account of the fibrous stem base, long slender rays, and green young fruit, but is here retained in Pleurospermum pending further research.


线裂棱子芹 xian lie leng zi qin

Hymenidium linearilobum (W. W. Smith) Pimenov & Kljuykov.

Plants 30–60 cm. Root dark brown, conic, ca. 2.5 cm thick. Stem thinly ribbed, glabrous. Basal and lower petioles 8–12 cm, sheaths small, narrow; blades oblong-ovate, 6–13 × 4–8 cm, 3–4-pinnate; ultimate segments linear, 3–6 × 0.5–1 mm, acute. Leaves reduced upwards, petiole becoming entirely sheathing. Umbels 10–18 cm across; peduncle 8–15 cm; bracts 7–10, 3–4 cm, like upper leaves; rays 20–25, 5–9 cm, unequal, hispidulous; bracteoles 6–8, lanceolate to oblanceolate, 5–10 mm, green with narrow white margin, apex entire or pinnate; pedicels 10–20, 8–10 mm, hispidulous. Calyx teeth obsolete. Petals obovate, white. Anthers dark purple. Stylopodium short-conic. Fruit ovoid, 4–5 × 3.5–4.5 mm; ribs all broadly sinuate-winged; vittae 1 in each furrow, 2 on commissure. Fl. Jun–Jul, fr. Jul–Aug.

疣叶棱子芹 you ye leng zi qin

Plants 20–30 cm. Taproot brown, conic. Stem stout, purplish-tinged, glabrous or tuberculate at nodes. Lower petioles 4–9 cm, flattened, tuberculate; sheaths oblong; blades triangular-ovate, 6–9 cm, 3–4-ternate/pinnate, rachis tuberculate; pinnae 5–6-paired, shortly petiolulate; ultimate segments ovate, 3–5 × 2.5–4 mm, 3–5-lobed, tuberculate along nerves abaxially. Stem leaves reduced upwards; peduncles ca. 4 cm; bracts 5–6, leaf-like, 4–6 cm, 1–2 pinnate at apex; rays 10–15, 4–7 cm, unequal, slightly scabrous; bracteoles ca. 10, broadly lanceolate, ca. 1 cm, entire or apex pinnate, green with narrow white margin; pedicels numerous, 5–6 mm. Calyx teeth obsolete. Petals pinkish-white, oblong-obovate. Ovary tuberculate along ribs; stylopodium conic. Fruit unknown. Fl. Jun–Jul.


瘤果棱子芹 liu guo leng zi qin

Hymenidium wrightianum (H. de Boissieu) Pimenov & Kljuykov; Pleurospermum prattii H. Wolff.

Plants (15–)30–60 cm, tuberculate. Root brown, 1–2 cm thick. Stem tinged purple-red, ribbed and branched. Basal and proximal petioles 5–8 cm, flattened, winged, sheaths narrow, oblong; blades narrowly oblong-ovate, 4–9 × 2.5–5 cm, 2–3-ternate-pinnate; pinnae 5–7 pairs, proximal pinnae petiolulate; ultimate segments linear-lanceolate, 3–5 × 0.5–1 mm, acute. Umbels 15–20 cm across; peduncle 2–3 cm; bracts 7–9, linear-lanceolate, 2–3 cm, apex pinnatifid, deciduous; rays 10–20, 3–10 cm (10–13 cm in fruit), very unequal; bracteoles ca. 10, oblanceolate, 7–15 × 3–7 mm, apex pinnate; pedicels 10–15, 5–12 mm. Calyx teeth minute, triangular. Petals obovate, white or purplish-reddish. Stylopodium short-conic. Fruit narrowly elliptic-ovoid, 5–6 × 2.5–3.2 mm, usually tuberculate; ribs all broadly cristate-winged; vittae 1 in each furrow, 2 on commissure. Fl. Jul–Aug; fr. Sep–Oct.

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

*Hymenidium pachycaule* Pimenov & Kljuykov (Edinburgh J. Bot. 53: 275. 1996), described from NW Gansu (“Lienhuo Shan,” J. F. C. Rock 12703, holotype, E; isotype, NAS). It is possibly referable to *Pleurospermum*, but further research is required.


*Pleurospermum grandifolium* H. Wolff (Repert. Spec. Nov. Regni Veg. 21: 244. 1925), described from W Sichuan (“Tatsienlu” [Kangding], J. A. Soulié 2182, holotype, P). It has possible affinities with *P. benthamii*.


