
*Gāo běn shù*

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

_Coristospermum_ Bertoloni; _Dystenia_ Kitagawa; _Ligusticopsis_ Leute; _Paraligusticum_ V. N. Tikhomirov; _Rupiphila_ Pimenov & Lavrova; _Tilingia_ Regel & Tiling.

Herbs perennial. Root cylindrical or fusiform; rootstock thick or slightly inflated. Stem erect, striate, usually clothed in fibrous remnant sheaths. Basal and lower leaves petiolar, sheathing; blade 1–3-pinnate or ternate-2–4-pinnate. Cauline leaves gradually reduced upward or absent. Inflorescence branching, rarely unbranched; umbels compound, terminal and lateral, or only terminal; bracts few, usually caducous or absent; rays often slightly incurved, convergent in fruit; bracteoles lanceolate or linear, entire or apex 2–3-lobed or 1–3-lobate. Calyx teeth conspicuous, shorter than to subequal the stylopodium or obsolete. Petals white, purple, violet or pale pinkish, apex notched with incurved apical lobe. Stylopodium conic; styles spreading or erect in flower, reflexed after flowering. Fruit oblong or oblong-ovoid, dorsally compressed; ribs all prominent or lateral ribs narrowly winged; vittae (1–)2–5 in each furrow, 2–10 on commissure. Seed face plane, rarely slightly concave. Carpophore 2-cleft to base.

About 60 species: Asia, Europe, North America; 40 species (35 endemic) in China.

_Ligusticum_ is a widespread, complex genus the taxonomy of which is in a state of flux. Relationships with nearby genera such as _Cnidium, Hymenidium, Ligusticopsis, Pachypleurum, Paraligusticum, Rupiphila, Selinum, and Tilingia_ are still being clarified. As a general consensus has yet to be reached, and many species are very poorly known (often only from a type collection), a conservative, traditional classification has been adopted here, with the knowledge that _Ligusticum_ in the broad sense is an artificial assemblage.

1a. Bracteoles 1–3-pinnate or 2–3-lobed at apex, rarely entire.
2a. Bracteoles 2–3-lobed or 1-pinnate, rarely entire.
3a. Calyx teeth obsolete.
   4a. Plants 6–20 cm; leaves 2-pinnate, ultimate segments linear-lanceolate, 2–4 cm, 1 mm; bracteoles longer than umbellules .......................................................... 33. _L. capillaceum_
   4b. Plants 40–60 cm; leaves ternate-2–3-pinnate, ultimate segments lanceolate, 5–15 cm, 2–5 mm; bracteoles nearly as long as umbellules ......................................................... 34. _L. yunnanense_
3b. Calyx teeth persistent.
   5a. Leaves 1-pinnate.
   6a. Bracteoles 4–8(–10), entire or 2–3-lobed at apex, rarely 1-pinnate, margins ciliate; petals white .......... 29. _L. likiangense_
   6b. Bracteoles 10–12, 1-pinnate, pilose; petals white or pinkish tinged ............................................. 30. _L. involucratum_
   5b. Leaves 2–3-pinnate.
   7a. Rays 1.5–2 cm; petals purplish, base cuneate ............................................................................. 31. _L. franchetii_
   7b. Rays 1.5–3 cm; petals white, base shortly clawed ................................................................. 32. _L. sikiangense_
2b. Bracteoles 2–3-pinnate, rarely 1–2-pinnate.
   8a. Bracteoles 1–2-pinnate, margins white membranous; calyx teeth obsolete ........................................... 35. _L. oliverianum_
   8b. Bracteoles 2–3-pinnate, margins not white membranous; calyx teeth persistent.
   9a. Leaves 1–2-pinnate, pinnae ovate, 15–40 × 5–20 mm ............................................................. 36. _L. rechingerianum_
   9b. Leaves 2–4-pinnate, ultimate segments linear to lanceolate, 2–6 × 1(–5) mm.
   10a. Plants hispid-setulose throughout; stem simple, usually very short; rays up to 24 cm .................. 37. _L. hispidulum_
   10b. Plants glabrous; stem up to 50 cm; rays 1–6 cm.
   11a. Stem unbranched, subscapose; cauline leaves usually absent ...................................................... 38. _L. scapiforme_
   11b. Stem usually branched; cauline leaves present.
   12a. Stem single; petals purplish; vittae 1–3 in each furrow, 4–6 on commissure ................................. 39. _L. daucoides_
   12b. Stem multicpital; petals white or violet; vittae 2–5 in each furrow, 6–10 on commissure .......... 40. _L. multivittatum_
1b. Bracteoles linear or lanceolate, entire.
   13a. Ultimate leaf segments narrow, linear, 1–30 × 0.5–3 mm.
   14a. Calyx teeth obsolete; ultimate segments of leaf linear to broadly linear, elongate, 5–30 × 1–3 mm.
   15a. Leaves 2–3-pinnate; bracteoles longer than umbellules ............................................................. 26. _L. nematophyllum_
   15b. Leaves ternate-3–4-pinnate; bracteoles shorter than or nearly as long as umbellules.
   16a. Bracteole margin white membranous; vittae 1 in each furrow, 2 on commissure ..................... 27. _L. tenuissimum_
   16b. Bracteoles without white membranous margins; vittae 3–5 in each furrow, 6–10 on commissure .... 28. _L. tenuisectum_
14b. Calyx teeth persistent; ultimate segments of leaf linear to setuliform, 3–15 × 0.5–1 mm.
   17a. Bracteoles without narrow membranous margin.
   18a. Calyx teeth conspicuous, subulate; leaves 3–4-pinnate .............................................................. 24. _L. brachylobum_
   18b. Calyx teeth inconspicuous, minute; leaves ternate-2–3-pinnate .................................................. 25. _L. mairei_
17b. Bracteoles with narrow membranous margin.
| 19a. | Plants 10–30 cm; umbels 2–4 cm across; petal bases shortly clawed (N China) | 21. *L. tachiroei* |
| 19b. | Plants 30–120 cm; umbels (3–)5–10 cm across; petal bases cuneate (SC and WC China). |
| 20a. | Ultimate leaf segments linear, 3–10 × 1–2 mm; vittae 1 in each furrow | 22. *L. striatum* |
| 20b. | Ultimate leaf segments setuliform, 1–5 × ca. 0.5 mm; vittae 3 in each furrow | 23. *L. delavayi* |
| 13b. | Ultimate leaf segments broad, ovate or lanceolate, 5–50 × 5–30 mm. |


**盐源藁本 yan yuan gao ben**

Plants ca. 30 cm, glabrous. Rootstock cylindrical, 3–5 × ca. 5 mm, little-branched. Basal and lower leaves petiolate; petioles 2–4 cm; sheaths ovate; blade lanceolate, 6–8 × 2–4 cm, 1-pinnate, pinnae 5–6 pairs, remote, ovate to lanceolate; proximal pinnae usually 2-lobed, 1–2 × 0.5–1.5 cm, margins serrate. Umbels terminal, 10–25 cm across; bracts absent; rays 6–8, stout, unequal, 10–17 cm; bracteoles 5–7, oblanceolate, unequal, ca. equal to pedicels, entire; umbellules 10–15-flowered. Calyx teeth obsolete. Petals purple, obovate, base cuneate. Style-podium conic; styles 2–2.5 × stylodium. Fruit oblong-ovoid, ca. 3 × 2 mm; dorsal and intermediate ribs filiform, lateral ribs narrowly winged; vittae 2 in each furrow, 4 on commissure. Seed face plane. Fl. Jun–Jul; fr. Jul–Aug.

- Alpine scrub, meadows; ca. 3800 m. SW Sichuan (Yanyuan).


**短尖藁本 duan jian gao ben**

*Nepeta mucronata* Schrenk in Fischer & C. A. Meyer, Enum. Pl. Nov. 2: 40. 1842; *Libanothis dolichostylus* Schischkin; *L. subsimplex* Popov; *Pachypleurum dolichostylus* (Schisch-
k) Korovin ex Kamelin; *P. mucronatum* (Schrenk) Schischkin; *Seseli dolichostylum* (Schischkin) M. Hiroe; *S. mucronatum* (Schrenk) Pimenov & Sdobnina.

Plants 15–50 cm. Rootstock cylindrical. Stems single or multicellular, base densely clothed with fibrous remnant sheaths. Basal leaves petiolate; petioles 4–15 cm; blade oblong, 5–12 × 1.5–5 cm, 1-pinnate; pinniae 5–7 pairs, oblont-ovate, 1–4 × 0.5–1.5 cm, shallowly to deeply 3–5-lobed, strigose on veins and margins. Cauline leaves few, much reduced. Umbels terminal and lateral, 2–7 cm across; bracts few, linear, margins narrowly white membranous, usually caducous; rays 15–32, 1.5–3 cm; bracteoles 5–10, linear-lanceolate, margins white membranous. Calyx teeth minute, triangular. Petals white obovate, base cuneate. Styles ca. 1/3 × fruit. Fruit oblong-ovoid, ca. 3 × 1.5–2 mm; dorsal and intermediate ribs prominent, lateral ribs narrowly winged; vittae 1–2 in each furrow, 4 on commissure. Seed face plane. Fl. Jul–Aug, fr. Sep–Oct.

Wooded valleys, grassy slopes; 1700–3300 m. N Xinjiang [Kazakhstan, Kyrgyzstan, Russia].


吉隆藁本 chang jing gao ben

*Ligusticum thomsonii* var. *evolutius* C. B. Clarke; *Pleurostegma longicaule* H. Wolff.

Plants 20–90(–150) cm, subglabrous. Rootstock cylindrical, 5–15 × 1–2 cm. Stems multicellular, striate, base densely clothed with fibrous remnant sheaths. Basal leaves petiolate; petioles 2–10 cm; blade narrowly oblong, 2–12 × 1–3 cm, 1-pinnate (rarely 2-pinnate); pinniae 5–9 pairs, ovate or oblong, 5–20 × 5–10 mm, veins sparsely pubescent, margins irregularly serrate to deeply lobed. Cauline leaves 1–3, reduced upward becoming sessile. Terminal umbels 4–6 cm across, lateral umbels smaller, sometimes staminate; bracts 5–6(–8), linear, margins white membranous; rays 10–20, 1–2.5 cm; bracteoles 10–25, linear to linear-lanceolate, margins white membranous. Calyx teeth minute, triangular. Petals white obovate, base cuneate. Styles reflexed. Fruit oblong-ovoid, 3.5–5 × 2–3 mm; dorsal and intermediate ribs prominent, lateral ribs narrowly winged; vittae 2–4 in each furrow, 6–8(–10) on commissure. Seed face plane. Fl. Jul–Aug, fr. Sep–Oct. 2n = 22*.

Margins of coniferous forests, grassy slopes, alpine scrub and meadows; 2200–4200 m. Gansu, SE Qinghai, W Sichuan, Xizang, NW Yunnan [Afghanistan, NW India, Kashmir, Pakistan].

This species has reputed medicinal value (in SW China).


吉隆藁本 ji long gao ben

Plants 30–50 cm, glabrous. Root cylindrical. Stem erect, striate, 2–3-branched, base clothed in fibrous remnant sheaths. Basal and lower leaves petiolate; petioles 10–15 cm; blade triangular, 8–12 × 6–10 cm, ternate-3-pinnate, primary pinniae 5–7 pairs; ultimate segments ovate or ovate-lanceolate, 10–25 × 5–15 mm, margins irregularly serrate. Upper leaves smaller, 2-pinnate. Umbels terminal and lateral, 4–5 cm across; peduncles 15–20 cm; bracts absent or occasionally 1, linear; rays 15–20, subequal, 1–3 cm; bracteoles numerous, linear and hispid, margins not membranous. Calyx teeth conspicuous, triangular. Petals white, obovate or oblont-ovate, base cuneate. Styles ca. equal to stylodium. Fruit obovate; dorsal and intermediate ribs prominent, lateral ribs narrowly winged; vittae 3–4 in each furrow, 5–6 on commissure. Fl. and fr. Aug–Oct.

• Alpine meadows; ca. 4500 m. SE Xizang (Nyingchi).

利特藁本 li te gao ben


• *Abies* and *Picea* forests; above 3000 m. C and SE Xizang.


黑水岩茴香 hei shui yan hui xiang

*Tilingia ajanensis* Regel & Tiling, Fl. Ajan. 97. 1858; *Cnidium ajanense* (Regel & Tiling) Drude; *Selinum tilingia* Maximowicz, nom. illeg. superfl.; *Cnidium tilingia* (Maximo-
Plants 50–80 cm, essentially glabrous (rays puberulent). Rootstock cylindrical, thick. Stem single or multicipital, purplish, striate and branched, base clothed in fibrous remnant sheaths. Basal leaves petiolate; petioles 5–10 cm; blade triangular-ovate, 8–10 × 5–8 cm, ternate-2–3-pinnate, primary pinnae 4–6 pairs; ultimate segments oblong-ovate. Upper leaves ternate-1-pinnate, or 3-lobed, segments linear. Umbels terminal and lateral, 2.5–4 cm across; peduncles 3–15 cm; bracts 1–5, linear or absent; rays 7–11, unequal, 1–3 cm; bracteoles 3–5(–8), linear; umbellules 10–15-flowered. Calyx teeth conspicuous, triangular-lanceolate. Petals white or pinkish, base shortly clawed.


1a. Ultimate leaf segments incised to laciniate or very rarely flowering or setting seed. Stem single, erect, striate and branching. Basal petioles 10–20 cm; blade triangular-ovate, 15–20 × 10–15 cm, ternate to 1- or 2-pinnate, primary pinnae 4–6 pairs, proximal pinnae remote; ultimate segments ovate or oblong-ovate, 2–3 × 1–2 cm, margins irregularly serrate. Cauline leaves similar to basal, reduced, sessile, 1-pinnate. Umbels terminal and lateral, 6–8 cm across in fruit; bracts 5–6(–10), linear; rays 15–30, subequal, 3–5 cm; bracteoles 5–8, linear, shorter than pedicels, reflexed. Calyx teeth obsolete. Petals white, obovate, prominent, filiform, lateral ribs narrowly winged; vittae 1–3 in each furrow, 2–4(–6) on commissure. Seed face plane. Fl. Jul.–Aug, fr. Sep.–Oct. 2n = 22*.

- Forests, montane scrub, grassy slopes, streamsides, moist roadsides, also cultivated; 500–2700 m. S part of Huang He basin.

This taxon is used medicinally in Hubei as “shui gao ben,” a common herb used as an analgesic and anti-inflammatory, in the treatment of heart diseases and asthma. The seedlings are also eaten as a vegetable.


金芎 jin xiong

Plants usually flowering and setting seed. Rootstock tuberous. Ultimate leaf segments incised. Fruit ribs all prominent, filiform, subequal, wingless. 2n = 33*.

- Montane scrub, grassy slopes, also cultivated; 800–3100 m. Guizhou, Shaanxi, Sichuan, Yunnan.

This taxon is closely allied to var. sinense but is triploid.


水руз本 shui gao ben

Plants usually flowering and setting seed. Rootstock swollen at nodes or tuberous. Stems single or multicipital. Ultimate leaf segments irregularly serrate. Fruit ribs all narrowly winged, subequal. 2n = 22*.

- Moist roadsides; 1500–1600 m. Hubei.

This taxon is used medicinally in Hubei as “shui gao ben,” a regional substitute for “gao ben.”


抚芎 fu xiong
Plants very rarely flowering or setting seed. Rootstock a thick tuber. Ultimate leaf segments incised to laciniate. 2n = 33*.

- Cultivated. Hubei, Jiangxi, Sichuan.


川芎 chuan xiong

Plants never flowering or setting seed. Rootstock a thick tuber. Ultimate leaf segments pinnatifid. 2n = 22*.


This cultivar was historically used medicinally in Sichuan as “mi wu,” but nowadays it has fallen from use.


匍匐藁本 pu fu gao ben


Plants ca. 30 cm. Rootstock slender creeping, apparently swollen at nodes, internodes elongated. Stem single, striate. Basal petioles 5–9 cm; blade triangular-ovate, 3–6 × 2–5 cm, ternate-2-pinnate; ultimate segments ovate or ovate-lanceolate, 10–20 × 8–15 mm, margins 3–5-lobed. Upper leaves sessile, 1-pinnate. Umbels terminal, 3–4 cm across; lateral umbels smaller, usually staminate; bracts 5–6, linear, reflexed; rays 10–14, 1.5–2 cm; bracteoles 5–6, linear, reflexed. Calyx teeth obsolete. Petals white, ovate. Fruit oblong-ovoid, ca. 4 × 2.5 mm; dorsal and intermediate ribs prominent, lateral ribs winged; vittae 2–3 in each furrow, 4–6 on commissure. Seed face plane. Fl. Jul–Aug, fr. Sep–Oct.

- Grassy slopes, moist rock surfaces; 2000–2200 m. NE Guizhou (Fanjing Shan), Chongqing (Nanchuan).


理塘藁本 li tang gao ben

Plants 30–50 cm. Root fusiform. Stem erect purplish. Leaves petiolate; blade triangular-ovate, primary pinnae 3–4 pairs; ultimate segments ovate, 10–20 × 5–10 mm, margins serrate. Upper leaves reduced, sessile, 1-pinnate or 3-lobed; ultimate segments lanceolate. Umbels 3–5 cm, terminal and lateral; bracts absent; rays 5–8, extremely unequal, 1–3 cm; bracteoles 2–5, linear, shorter than umbellules, ca. 5 mm. Calyx teeth obsolete. Petals white, ovate, base cuneate. Styles ca. equaling stylopodium. Fruit oblong-ovoid, ca. 4 × 3 mm; ribs narrowly winged, lateral ribs slightly broader than dorsal and intermediate ribs; vittae 2–3 in each furrow, 4–6 on commissure. Seed face slightly concave. Fl. Jul–Aug, fr. Sep–Oct.

- Alpine scrub and meadows; ca. 4300 m. W Sichuan (Litang).

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


归叶藁本 gui ye gao ben

Ligusticopsis angelicifolia (Franchet) Leute; Angelica angelicifolia (Franchet) Kljuykov.

Plants 1–1.5 m or more. Root cylindrical. Stem single, striate and branched. Lower leaves petiolate; petioles 8–12 cm; blade triangular-ovate, 15–30 × 20–40 cm, ternate-3-pinnate; ultimate segments oblong-ovate, 2.5–5 × 1–3 cm, margins serrate. Upper leaves very reduced. Umbels 5–7 cm across, terminal and lateral, base of umbels densely yellow hispid; bracts absent; rays (10-)20–25, extremely unequal, 1–6 cm; bracteoles few, linear, ca. 10 mm. Calyx teeth obsolete. Petals purple. Styles ca. 2 × stylopodium, reflexed. Fruit oblong-ovoid, 4.5 × 2.5–3 mm; dorsal and intermediate ribs prominent, filiform, lateral ribs winged; vittae 3–4 in each furrow, 4–6 on commissure. Seed face plane. Fl. Jul–Aug, fr. Sep–Oct.

- Grassland at forest margins, scrub at streamsides, alpine meadows; 1800–4200 m. Shaanxi, W Sichuan, SE Xizang, W Yunnan.

This species has reputed medicinal value.


异色藁本 yi se gao ben

Pleurispernum discolor (Ledebour) M. Hiroe; Parali-gusticum discolor (Ledebour) V. N. Tikhomirov

Plants 0.6–2 m, stout. Rootstock cylindrical. Stem single, erect, striate, hollowed and branching, base densely covered in fibrous remnant sheaths. Lower leaf petioles 20–40 cm; blade triangular-ovate, 30–35 × 20–25 cm, ternate-3-pinnate; ultimate segments ovate or oblong-ovate, 2.4 × 1–1.5 cm, puberulent on the veins, abaxially olivaceous, purplish. Upper leaves much reduced. Umbels 5–10 cm across, terminal and lateral; peduncle 20–40 cm, base of umbels densely pubescent; bracts 5–8, linear, 5–20 mm; rays 30–50, extremely unequal, 3–12 cm; bracteoles numerous, linear, 4–6 mm, shorter than umbellules. Calyx teeth obsolete. Petals white, ovate. Fruit oblong-ovoid, ca. 4 × 2.5 mm; dorsal and intermediate ribs filiform, lateral ribs narrowly winged; vittae 3–4 in each furrow, 8–10 on commissure. Seed face plane. Fl. Jul–Aug, fr. Sep–Oct.

- Montane scrub; ca. 1200 m. N Xinjiang [Kazakhstan, Kyrgyzstan, Russia (Siberia), Tajikistan].


草甸藁本 cao dian gao ben

Plants 0.8–2 m, stout. Root fusiform elongate, 20–30 × ca. 1.5 cm, woody. Stem single, erect, purplish fistular, striate, branching, base covered in fibrous remnant sheaths. Basal and lower petioles 15–30 cm; blade deltoid-ovate, ca. 30 × 20 cm, ternate-3-pinnate, primary pinnae 5–6 pairs; ultimate segments lanceolate, 20–30 × 5–10 mm, margins pinnatifid. Upper leaves reduced to bladeless sheaths. Umbels terminal, 15–20 cm
across, lateral umbels smaller; bracts 6–12, linear; rays 25–35(–45), slightly unequal, 4–8(–15) cm; bracteoles 8–10, linear, entire, rarely 2–3-lobed at apex, slightly exceeding umbellules, margins pubescent. Calyx teeth obsolete. Petals white obovate, base cuneate. Styles ca. equaling stylopodium. Fruit oblong-ovoid, 4.5 × ca. 3 mm; dorsal and intermediate ribs filiform, lateral ribs narrowly winged; vittae 3–4 in each furrow, 6 on commissure. Fl. and fr. Aug–Oct.

- Wooded valleys, alpine meadows; 3000–3900 m. SW Sichuan, N Yunnan.


In the same genus, with similar habitats and uses, is


- Forest margins; ca. 3600 m. Xizang [Afghanistan, Bhutan, NW India, ?Nepal, Pakistan].


尖帰藁本 jian ban gao ben

Notopterygium weberbauerianum (Fedde ex H. Wolff) Pimenov & Kljuykov.

Plants ca. 70 cm tall, glabrous. Root cylindrical. Stem single, striate, 2–3-branched. Basal petioles 5–10 cm; blade triangular-ovate, 20–25 × 15–25 cm, ternate-3-pinnate, primary pinna 5–6 pairs; ultimate segments ovate-lanceolate, 2.2–5.5 × 0.5–1 cm, margins pinnatifid. Cauline leaves few, reduced. Terminal umbels 4–6 cm across, lateral umbels smaller; bracts 1–2, linear, or absent; rays 12–20, slender, subequal, 4–5 cm; bracteoles 5, linear, shorter than pedicels; umbellules many-flowered. Calyx teeth conspicuous, triangular. Petals white, oblong-ovate, base cuneate, apex mucronate. Styles ca. 2 × stylodium. Immature fruit oblong-ovoid (mature fruit not known). Fl. and fr. Jul–Sep.

- Forests; ca. 3300 m. C Gansu.

Recent research has suggested that this poorly known species and Notopterygium incisum have not seen the type (H. Smith 3544). Certainly the petal shape is unusual in Liguisticum, but further work is needed to confirm these findings; if upheld the name N. weberbauerianum should be applied to the taxon. Ligusticum pilgerianum H. Wolff was described from Sichuan, and is allied to L. acuminatum according to the original description, but we have not seen the type (H. Smith 3544).

Ligusticum pteridophyllum (Franchet) Leut.

Plants 30–80 cm, glabrous. Rootstock swollen at nodes, small globose, internodes slender. Stem erect, striate and hollowed. Basal and lower petioles 15–20 cm; blade ovate, 15–20 × 10–15 cm, ternate-2–3-pinnate, primary pinnae 5–7 pairs, remote; ultimate segments obovate or flabelliform, ca. 10 × 5 mm, acute at apex, margins crenate. Upper leaves reduced. Umbels terminal and lateral, 5–7 cm across; bracts 8–10, linear; rays 13–20, subequal, 2–3 cm; bracteoles 6–10(–12), linear. Calyx teeth obsolete. Petals white or purplish tinged, base cuneate. Fruit oblong, ca. 5 × 3 mm, dorsal and intermediate ribs prominent, lateral ribs broadly winged; vittae 3 in each furrow, 4–6 on commissure. Seed face plane. Fl. Aug–Sep, fr. Sep–Oct. 2n = 44*.

- Forests, grassy slopes, streamsides, rock crevices; 1800–3600 m. S Gansu, W Sichuan, E Xizang, Yunnan.

This species is used in NW Yunnan (Dali area) as a regional substitute, known as “hei gao ben,” for the traditional Chinese medicine “gao ben” (see Ligusticum sinense and L. jeholense).


Ligusticopsis acuminata (Franchet) Leute.

Plants 1–2 m, stout, glabrous. Rootstock thick. Stems 1–2, purplish tinged, hollow, branching. Lower petioles 5–10 cm; blade triangular-ovate, ternate-3-pinnate, pinnae 4–6 pairs, crowded, terminal pinna caudate; ultimate segments subovate, 5–15 × 5–10 mm, apex acuminatum or caudate. Upper leaves reduced, sessile, 1-pinnate. Terminal umbels ca. 4 cm across, lateral umbels smaller; peduncles 5–15 cm; bracts 5–6, linear, caducous; rays (7–)12–23, subequal, 2–3 cm; bracteoles 5–10, linear. Calyx teeth obsolete. Petals white, obovate, base cuneate. Styles reflexed. Fruit oblong-ovoid, ca. 3 × 2 mm; dorsal and intermediate ribs narrowly winged, lateral ribs broadly winged; vittae 2–3(–4) in each furrow, 4–6 on commissure. Seed face plane. Fl. Jul–Aug, fr. Sep–Oct. 2n = 22*.

- Forests, forest margins, alpine scrub and meadows; 1500–4000 m. S Gansu, Henan, Hubei, Hunan, Shaanxi, Sichuan, Yunnan.

This species is used in W Sichuan as a regional substitute, known as “xin jiang gao ben,” for the traditional Chinese medicine “gao ben” (see Ligusticum sinense and L. jeholense).


Plants 10–30 cm tall, slender, glabrous. Root cylindrical. Stem single or multiclitate, little-branched or unbranched. Basal petioles 5–7(–12) cm; blade ovate, 5–10 × 5–7 cm, 3-pinnate, primary pinnae 5–7 pairs; ultimate segments linear, 3–15 × 0.5–1 mm. Cauline leaves similar to basal, reduced. Umbels terminal and lateral, 2–4 cm across; bracts 2–7, lanceolate, margins white membranous, usually caducous; rays 5–10, unequal, 5–15(–40) mm; bracteoles 5–8, similar to bracts, ca. equaling pedicels. Calyx teeth conspicuously, lanceolate, ca. 0.5 mm. Petals white or pinkish, base shortly clawed. Styles ca. 2 × stylobodium. Fruit oblong, 3–4 × 1–2 mm; ribs prominent, subequal; vittae 1 in each furrow, 2 on commissure. Seed face plane to slightly concave. Fl. Jul–Aug, fr. Aug–Sep.

Pebbly slopes, damp river banks, rock crevices; 1200–2500 m. Hebei, Henan, Jilin, Liaoning, Shanxi [Japan, Korea, Mongolia].

22. Ligusticum striatum de Candolle, Prodr. 4: 158. 1830.

条纹藁本 tiao wen gao ben

Cortia striata (de Candolle) Leute; Ligusticum wallichii Franchet, nom. illeg. superfl.; Oreocome striata (de Candolle) Pimenov & Kljuykov; Selinum striatum (de Candolle) Bentham & J. D. Hooker (1867); S. striatum Bentham ex C. B. Clarke (1879).

Plants 30–120 cm, glabrous. Root cylindrical. Stem single, little-branched, base clothed in fibrous remnant sheaths. Basal leaf blades ovate in outline, 4–8 × 3–6 cm, 3–4-pinnate, primary pinnae 4–5 pairs; ultimate segments linear, 3–10 × 1–2 mm. Cauline leaves few, gradually reduced upward. Terminal umbels 5–7 cm across, lateral umbels smaller; bracts 4–6, linear; rays 8–14, unequal, 2–4 cm; bracteoles 4–8, linear, ca. equaling pedicels, margins narrowly white membranous. Calyx teeth lanceolate, ca. 0.6 mm. Petals white, obovate, base cune-
ate. Fruit oblong-ovoid, 3.5–4 × 3–3.5 mm; ribs prominent, sub-equal; vittae 1 in each furrow, 2 on commissure. Seed face plane. Fl. and fr. Jul–Sep.

Shady slopes in forests; 1500–3700 m. NW Yunnan (Heqing) [NW India, Kashmir, Nepal].


This incompletely known taxon is recorded only from the type locality.


This species has reputed medicinal value.


Plants 14–25 cm. Root cylindrical. Stem multicellular, striate, branched, base clothed in fibrous remnant sheaths. Basal petioles 2–5 cm, sheaths oblong-ovate, puberulent; blade ovate, 3.5–4 × 2.5–4.5 cm, ternate-2–3-pinnate; ultimate segments linear, 3–10 × 0.5–1 mm. Cauline leaves similar to the basal, reduced, sessile. Terminal umbels 4–7 cm across, lateral umbels smaller, 1–3 cm across, base of umbels puberulent; bracts absent; rays 20–35, unequal, 1–4.5 cm, slender, puberulent; bracteoles 7–12, linear or linear-lanceolate, slightly connate at base, ca. equaling pedicels, without white membranous margin; umbellules 15–25-flowered. Calyx teeth inconspicuous, triangular, minute. Petals white, obovate, base cuneate. Immature fruit oblong-ovoid (mature fruit unknown). Fl. Aug.

- Grassy slopes; ca. 3300 m. NE Yunnan.

This species is used in Guizhou and Sichuan as a regional substitute, known as “duan pian fang feng,” for the traditional Chinese medicine “fang feng” (see *Saposhnikovia divaricata*).


Plants 30–80 cm, glabrous. Root fusiform or tuberous, ca. 3 × 1.5 cm, clustered. Stem single, purplish, slightly inflated at basal nodes, 1–2-branched or unbranched above. Basal petioles 8–10 cm; blade triangular-ovate, 8–10 × 6–10 cm, 2(–3)-pinnate, primary pinnae 6–10 pairs; ultimate segments linear, elongate, 5–15 × 1–2 mm. Cauline leaves gradually reduced upward, uppermost 2-pinnate. Umbels terminal and lateral, terminal umbels 3–5 cm across; bracts 1–2, linear; rays 8–13, subequal, 1.5–3 cm, hispid; bracteoles 5–8, linear, ca. 2 × umbellules. Calyx teeth obsolete. Petals white, obovate, base cuneate. Stylopodium short conic; styles divergent. Fruit oblong-ovoid, ca. 4 × 2–2.5 mm; dorsal and intermediate ribs prominent, lateral ribs narrowly winged; vittae 1–3 in each furrow, 2–6 on commissure. Seed face plane. Fl. Jul–Aug, fr. Sep–Oct. 2n = 22*.

- Forest margins, alpine scrub and meadows, stream sides; 3000–4200 m. W Sichuan.


Plants 60–100 cm. Root branched, caudex short. Stem erect, purplish, hollow, branching. Basal leaves withered at flowering, lower petioles up to 20 cm; blade ternate-3–4-pinnate; ultimate segments linear, 5.30 × 1–3 mm. Umbels terminal and lateral, terminal umbels 3–5 cm across; bracts 1–2, linear, 1–2 cm, white membranous margin, usually caducous; rays 10–18, slightly unequal, 2–5 cm; bracteoles 5–8, lanceolate, 8–15 mm, shorter than umbellules, white membranous margin; pedicels unequal, 5–10 mm. Calyx teeth obsolete. Petals white, obovate, base cuneate. Stylopodium short conic; styles reflexed. Fruit

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oblong, ca. 4 × 2–2.5 mm; dorsal and intermediate ribs prominent, lateral ribs narrowly winged; vitae 1 in each furrow, 2 on commissure. Seed face plane. Fl. Aug–Sep, fr. Sep–Oct.

Forests, rocky slopes; 1000–2000 m. Hebei, Liaoning [Korea].

This species is used in NE China (especially Liaoning) as a regional substitute, known as “han gao ben” (or “huo gao ben” or “shan gao ben”), for the traditional Chinese medicine “gao ben” (see Ligusticum sinense and L. jeholense).


细裂藁本  xi lie gao ben

*Ligusticopsis tenuisecta* (H. de Boissieu) Leute.

Plants ca. 40 cm, glabrous. Root fusiform. Stem erect, branched. Lower leaves petiolate; blade triangular-ovate, 3–5–pinnate; ultimate segments linear, 3–10 × ca. 0.5 mm. Upper leaves reduced, 1–2-pinnate. Umbels terminal and lateral, terminal umbels 3–5 cm; bracts absent or occasionally 1, linear; rays 15–20, subequall, 2–3 cm, bracteoles 5, linear, ca. equaling umbellules in flower, pubescent; umbellules many-flowered. Calyx teeth obsolete. Petals white, obovate, base cuneate. Styles ca. 2 × styloplodium. Fruit oblong-ovoid, 4–5 × ca. 3 mm; dorsal and intermediate ribs prominent, lateral ribs winged; vitae 3–5 in each furrow, 6–10 on commissure. Seed face slightly concave. Fl. and fr. Aug–Sep.

- Scrub, grassy slopes, alpine meadows; 2000–4500 m. W Hubei, NE Sichuan, NW Yunnan.

This species has reputed medicinal value.


美脉藁本  mei mai gao ben


Plants 15–50 cm. Root subnapiform, ca. 15 × 1 cm, branched. Stem erect, profusely branched from base, base clothed in fibrous remnant sheaths. Basal petioles 2–4(–10) cm; blade oblong-ovoid, 4–8 × 2.5–6 cm, 3-lobed or 1-pinnate, pinnae 2–3 pairs; ultimate segments oblong-ovate or lanceolate, 20–30 × 5–10 mm, terminal segments rhombic-ovate, 3.5–1.5–2 cm, margins serrate or 3–5-lobed. Upper leaves few, reduced, sessile, 3-lobed. Umbels terminal and lateral, 3–4 cm across; bracts 2–7, linear, entire, 2–3-lobed at the apex, rarely pinnate, caducous; rays 8–25, subequall, 1–5 cm; bracteoles 4–8(–10), similar to bracts, exceeding the umbellules, margins ciliate; umbellules 20–30(40)-flowered. Calyx teeth 1–2, subulate or triangular, prominent, unequal. Petals white, obcordate, base short clawed. Fruit oblong-ovoid, 2.5–3 × 1.5–2 mm; dorsal and intermediate ribs prominent, lateral ribs narrowly winged; vitae 1–2 in each furrow, 6 on commissure. Seed face plane. Fl. Jul–Aug, fr. Sep–Oct.

- Sparse forests, alpine meadows; 2800–4000 m. W Sichuan, NW Yunnan.

This species is used in NW Yunnan (Lijiang) as a regional substitute, known as “mei mai gao ben,” for the traditional Chinese medicine “jian hu” (see *Peucedanum praeruptorum* and *Angelica decursiva*).


多苞藁本  duo bao gao ben

Plants 12–40 cm, pilose throughout. Root fusiform, branch ed. Stem erect, profusely branched, base densely clothed with fibrous remnant sheaths. Basal petioles 3–9 cm; blade oblong-ovate or broad-lanceolate, 8–10 × 4–10 cm, pinnate, pinnae 4–5 pairs; ultimate segments oblong-ovate or oblong, 2.5–1.5–3 cm, densely pilose on veins, margins incised to pinnatifid. Cauline leaves similar to basal, reduced upwards. Umbels terminal and lateral, 3–9 cm across; bracts 7–10, 2–4 cm, pinnate, densely pilose; rays 20–35, subequall, 2.5–5 cm; bracteoles 10–12, longer than umbellules, 5–10 mm, pinnate, pilose. Calyx teeth conspicuous, triangular, ca. 0.5 mm. Petals white or faintly pinkish, obovate or obcordate, base shortly clawed. Fruit oblong-ovoid, ca. 4 × 2 mm; dorsal and intermediate ribs prominent, filiform, lateral ribs winged; vitae 1–3 in each furrow, 4–6 on commissure. Seed face plane. Fl. Jul–Aug, fr. Sep–Oct. 2n = 22*.

- Coniferous forests, alpine scrub and meadows, riparian grasslands, rock crevices; 2800–4900 m. W Sichuan, SE Xizang, NW Yunnan.


紫色藁本  zi se gao ben

*Ligusticopsis franchetii* (H. de Boissieu) Leute.

Plants 20–35 cm, slender, glabrous. Root fusiform. Stem single, purplish, 1–2-branched above. Basal petioles 7–9 cm, sheaths purplish, oblong-ovate; blade triangular-ovate, 2–3-pinnate, primary pinnate 5–6 pairs; ultimate segments lanceolate, 3.5–1 × 2 mm. Cauline leaves similar to basal, reduced, short petiolate to sessile, 1–2-pinnate. Umbels terminal and lateral, 2–4 cm across; bracts absent; rays 6–12, subequall, 1.5–2 cm; bracteoles 4–6, linear, entire, apex 2–3-lobed or 1-pinnate, narrowly membranous-margined; umbellules many-flowered. Calyx teeth subulate, ca. 0.5 mm. Petals purplish obovate or ovate, base cuneate. Stylodium short conic; styles reflexed. Fruit oblong-ovoid, ca. 4 × 2 mm; dorsal and intermediate ribs prominent, filiform, lateral ribs winged; vitae 1(–2)–3 in each furrow, 4–6 on commissure. Seed face plane. Fl. Aug–Sep, fr. Oct–Nov.

- Alpine scrub and meadows, rock crevices; 3800–3900 m. SW Sichuan, NW Yunnan.

Plants (7–)30–60 cm, glabrous. Root fusiform. Stems single or 2–3, 1–2-branched. Basal petioles 3–7 cm; blade oblong or lanceolate, (3–)5–10 × (2–)3–5 cm, 2–3-pinnate; ultimate segments oblanceolate, 2–3 × 0.5–1 mm, 3-lobed at the apex. cauline leaves 1–2, similar to basal, reduced. Umbels terminal and lateral, 4–7 cm across; bracts 2–3, linear, entire, apex ciliate, rarely 1–2-pinnate; rays (5–)8–10, unequal, (1.5–)3–8 cm; bracteoles 5–7, linear-lanceolate, entire, apex ciliate or apex 2–3-lobed, rarely pinnate, connate at base; umbellules many-flowered. Calyx teeth triangular, ca. 0.4 mm. Petals white, obovate, base shortly clawed. Styles erect to divergent. Fruit oblong-ovoid, ca. 3 × 2 mm; ribs all narrowly winged; vittae 4–5 in each furrow, 8–10 on commissure. Seed face slightly concave.


- Coniferous forests, alpine scrub and meadows, alpine talus slopes; 3400–4500 m. W Sichuan, NW Yunnan.
- Russian authors consider this species to be synonymous with *Hyemenium chloroleucum* (see *Pleurosernum hookeri var. thomsonii*).


*Plants* (7–)30–60 cm. *Root* cylindrical, branched. *Stems* multicipital, sparingly branched, base clothed in fibrous remnant sheaths. *Basal and lower petioles* (4–)10–20 cm; blade oblong-lanceolate, 2–6 × 1–2 cm, 2–3-pinnate, primary pinnae 5–7 pairs; ultimate segments linear, 2–5 × 0.5–1 mm. *Upper leaves* few, similar to basal, reduced. *Umbels* terminal and lateral, 2–3 cm across; bracts 5–10, lanceolate, apex pinnate, margin white membranous; rays 6–13, subequal, 1–2 cm; bracteoles 5–10, lanceolate, 1–2-pinnate or apex 3-lobed, rarely entire, margin white membranous, longer than umbellules. *Calyx* teeth obsolete. *Petals* white, oblong-obovate, base cuneate. *Stylepodium* short conic; styles reflexed. *Fruit* oblong-ovoid, 5–6 × 3–4 mm; dorsal and intermediate ribs filiform, lateral ribs narrowly winged; vittae 1–2 in each furrow, commissure. *Seed* face plane.


- Coniferous forests, alpine scrub and meadows, grassy valley slopes, marshland, rock crevices; 2000–4300 m. Hubei, NE and W Sichuan, S Xizang, NW Yunnan.


- Montane thickets, alpine meadows; 1500–4600 m. W Sichuan,
37. **Ligusticum hispidum** (Franchet) H. Wolff in Handel-Mazzetti, Symb. Sin. 7: 723. 1933.


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


*Ligusticum longilobum* H. Wolff (Acta Horti Gothob. 2: 313. 1926), described from Jilin (“Hsiaowhutai Shan” [Xiaowutai Shan], 2300 m, K. A. H. Smith 101, holotype, W).


