

72. **LIGUSTICUM** Linnaeus, Sp. Pl. 1: 250. 1753.

藁本属 gao ben shu

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

Coristospermum Bertoloni; *Dystaenia* 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, base usually clothed in fibrous remnant sheaths. Basal and lower leaves petiolate, 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-pinnate. Calyx teeth conspicuous, shorter than to subequal the stylopodium or obsolete. Petals white, purple, violet or pale pinkish, apex notched with incurved apical lobule. 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 × ca. 1 mm; bracteoles longer than umbellules 33. *L. capillaceum*
 - 4b. Plants 40–60 cm; leaves ternate-2–3-pinnate, ultimate segments lanceolate, 5–15 × 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–)3–8 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. rechingianum*
 - 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. hispidum*
 - 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 multicapital; 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.
 21a. Leaves 1-pinnate.
 22a. Umbels terminal; rays elongate, 10–17 cm; petals purple 1. *L. yanyuanense*
 22b. Umbels terminal and lateral; rays short, 1.5–3 cm; petals white.
 23a. Vittae 1–2 in each furrow, 4 on commissure (Xinjiang) 2. *L. mucronatum*
 23b. Vittae 2–4 in each furrow, 6–8(–10) on commissure (NC, SC, and WC China) 3. *L. thomsonii*
 21b. Leaves 1–3-pinnate or ternate-2–4-pinnate.
 24a. Calyx teeth persistent.
 25a. Bracteoles margin narrow membranous 4. *L. gyirongense*
 25b. Bracteoles without narrow membranous margin.
 26a. Plant pubescent throughout; leaves 1–2-pinnate 5. *L. xizangense*
 26b. Plant subglabrous; leaves ternate-2–3-pinnate.
 27a. Petal apex mucronate without incurved lobule 17. *L. weberbauerianum*
 27b. Petal apex notched with incurved lobule.
 28a. Rays 15–20; seed face slightly concave (Xizang) 6. *L. littledalei*
 28b. Rays 7–11; seed face plane (E and NE China) 7. *L. ajanense*
 24b. Calyx teeth obsolete.
 29a. Rootstock apparently swollen at nodes; styles longer than or ca. 0.5 × fruit.
 30a. Internodes of rootstock short; rays 15–30, 3–5 cm; petal base cuneate; styles ca. equaling fruit (or plants not flowering) 8. *L. sinense*
 30b. Internodes of rootstock slender; rays 10–14, 1.5–2 cm; petal base short-clawed; styles ca. 0.5 × fruit 9. *L. reptans*
 29b. Rootstock not swollen at nodes; styles usually less than 0.5 × fruit.
 31a. Rays extremely unequal.
 32a. Plants 30–50 cm; rays 5–8, 1–3 cm 10. *L. litangense*
 32b. Plants 100–150 cm or more; rays (10–)20–50.
 33a. Rays (10–)20–25, 1–6 cm; petals purple (NC and SW China) 11. *L. angelicifolium*
 33b. Rays 30–50, 3–12 cm; petals white (Xinjiang) 12. *L. discolor*
 31b. Rays slightly unequal to subequal.
 34a. Bract margins narrow membranous (NE and NW China) 14. *L. jeholense*
 34b. Bracts without narrow membranous margin (NC, SC, and WC China).
 35a. Umbels 15–20 cm across; rays 4–8(–15) cm 13. *L. kingdon-wardii*
 35b. Umbels 5–10(–12) cm across; rays 2–4 cm.
 36a. Rays 8–10; pinnae abaxial glaucescent 15. *L. glaucifolium*
 36b. Rays (7–)12–25(–40); pinnae abaxial pale green.
 37a. Leaves 1–3-pinnate; bracts 1–4 (Xizang) 16. *L. elatum*
 37b. Leaves ternate-3-pinnate; bracts 5–10, sometimes caducous (NC and SC China).
 38a. Rootstock slender; secondary pinnae 3–5 pairs, remote; terminal pinnae acute 18. *L. pteridophyllum*
 38b. Rootstock thick; secondary pinnae 8–10 pairs, crowded; terminal pinnae caudate.
 39a. Fruit oblong-ovate, ca. 3 × 2 mm; vittae 2–3(–4) in each furrow, 6–8 on commissure 19. *L. acuminatum*
 39b. Fruit oblong-obovate, ca. 4 mm long; vittae absent 20. *L. nullivittatum*

1. *Ligusticum yanyuanense* F. T. Pu, Acta Phytotax. Sin. 29: 526. 1991.

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. Stylo-

podium conic; styles 2–2.5 × stylopodium. 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).

2. *Ligusticum mucronatum* (Schrenk) Leute, Ann. Naturhist. Mus. Wien 74: 473. 1970.

短尖藁本 *duan jian gao ben*

Neogaya mucronata Schrenk in Fischer & C. A. Meyer, Enum. Pl. Nov. 2: 40. 1842; *Libanotis dolichostyla* Schischkin; *L. subsimplex* Popov; *Pachypleurum dolichostylum* (Schisch-

kin) Korovin ex Kamelin; *P. mucronatum* (Schrenk) Schischkin; *Seseli dolichostylum* (Schischkin) M. Hiroe; *S. mucronatum* (Schrenk) Pimenov & Sdobnina.

Plants 15–80 cm. Rootstock cylindrical. Stems single or multicapital, base densely clothed with fibrous remnant sheaths. Basal leaves petiolate; petioles 4–15 cm; blade oblong, 5–12 × 1.5–5 cm, 1-pinnate; pinnae 5–7 pairs, oblong-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].

3. *Ligusticum thomsonii* C. B. Clarke in J. D. Hooker, Fl. Brit. India 2: 698. 1879.

长茎藁本 chang jing gao ben

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

Plants 20–90(–150) cm, subglabrous. Rootstock cylindrical, 5–15 × 1–2 cm. Stems multicapital, 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); pinnae 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 10–15, linear to linear-lanceolate, margins white membranous. Calyx teeth minute, triangular. Petals white ovate, 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 valley 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).

4. *Ligusticum gyirongense* R. H. Shan & H. T. Chang, Acta Phytotax. Sin. 24: 315. 1986.

吉隆藁本 ji long gao ben

Plants 30–50 cm, glabrous. Root cylindrical. Stem single, striate, base clothed in fibrous remnant sheaths. Basal leaves petiolate; petioles 5–12 cm; blade broadly ovate, 6–10 × 7–9 cm, 2-pinnate; primary pinnae 4–5 pairs, remote; ultimate segments ovate or broadly ovate, 10–15 × 5–10 mm, margins shallowly 3-lobed to pinnatifid. Cauline leaves few, gradually reduced upwards. Umbels ca. 5 cm across in fruit; bracts 5,

linear to lanceolate, margins narrowly membranous; rays ca. 12, 2–2.5 cm; bracteoles 5–8, similar to bracts; umbellules 10–15-flowered. Calyx teeth conspicuous, triangular, ca. 1 mm. Petals white obovate. Styles reflexed. Fruit oblong-ovoid, ca. 3 × 1.5 mm; ribs prominent, subequal; vittae 1–2 in each furrow, 2–4 on commissure. Seed face plane or slightly concave. Fl. Jul–Sep, fr. Oct–Nov.

• Grassland at forest margins; 2500–3000 m. S Xizang (Gyirong), NW Yunnan (Eryuan).

5. *Ligusticum xizangense* Z. H. Pan & M. L. Sheh, Acta Phytotax. Sin. 30: 265. 1992.

西藏藁本 xi zang gao ben

Plants 15–25 cm, pubescent throughout. Taproot thick, branched. Stems multicapital, purplish and striate, base clothed with fibrous remnant sheaths. Basal leaves numerous, short petiolate; sheaths purplish; blade narrow-oblong, 3.5–6 × 1.5–3 cm, 1–2-pinnate; pinnae 2–4 pairs, ovate to broad-ovate, 4–8 × 3–6 mm, margins pinnatifid. Cauline leaves 1–2, similar to basal, smaller. Umbels terminal, 2–3 cm across; peduncles stout, 6–10 cm; bracts 1–2, linear, 1.5–2.5 cm, rarely 2–3-lobed at the apex; rays 15–25, slightly unequal, 1.2–2 cm; bracteoles 10–12, linear, margin not membranous; umbellules 20–30-flowered. Calyx teeth conspicuous, subulate unequal. Petals white, obovate, base shortly clawed. Styles ca. 2–3 × stylopodium, reflexed. Fruit oblong-ovoid, 3–4 × 2.5–3 mm; dorsal and intermediate ribs filiform, lateral ribs narrowly winged; vittae 3 in each furrow, 5–6 on commissure. Fl. and fr. Aug–Oct.

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

6. *Ligusticum littledalei* Fedde ex H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 327. 1930.

利特藁本 li te gao ben

Plants 30–50 cm, subglabrous. 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 pinnae 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, margin not membranous. Calyx teeth conspicuous, triangular. Petals white, obovate or oblong-ovate, base cuneate. Styles ca. equal to stylopodium. Fruit ovoid; dorsal and intermediate ribs prominent, lateral ribs narrowly winged; vittae 3–4 in each furrow, 8 on commissure. Seed face slightly concave. Fl. Jul, fr. Aug.

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

7. *Ligusticum ajanense* (Regel & Tiling) Koso-Poljansky, Bull. Soc. Imp. Naturalistes Moscou, n.s., 29: 120. 1916.

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-

wicz) Takeda.

Plants 50–80 cm, essentially glabrous (rays puberulent). Root cylindrical, thick. Stem single or multicapital, 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. Stylopodium short conic; styles reflexed, ca. 2 × stylopodium. Fruit oblong-ovoid, 3–4 × 2–3 mm; ribs prominent, subequal; vittae 1–3 in each furrow, 2–4(–6) on commissure. Seed face plane. Fl. Jul–Aug, fr. Aug–Oct.

Pebbly slopes, grasslands. Hebei, Heilongjiang, Jilin, Shandong [Japan, Russia (Siberia)].

8. Ligusticum sinense Oliver, Hooker’s Icon. Pl. 20: t. 1958. 1891.

藁本 gao ben

Plants 0.5–1 m tall. Rootstock thick, apparently swollen at nodes, internodes short. 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, base cuneate. Styles ca. equaling fruit, reflexed. Fruit oblong-ovoid, 2–3 × 1.5–2 mm; dorsal and intermediate ribs prominent, filiform, lateral ribs narrowly winged; vittae 1–3(–4) in each furrow, 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. Gansu, Guizhou, Henan, Hubei, Jiangxi, Nei Mongol, Shaanxi, Sichuan, Yunnan.

Two varieties and three cultivars can be recognized in China.

- 1a. Ultimate leaf segments incised to lacinate or pinnatifid; rootstock a thick tuber; plants never or very rarely flowering or setting seed.
 - 2a. Ultimate leaf segments incised to lacinate 8d. ‘Fuxiong’
 - 2b. Ultimate leaf segments pinnatifid 8e. ‘Chuanxiong’
- 1b. Ultimate leaf segments irregularly serrate; rootstock swollen at nodes or tuberous; plants usually flowering and setting seed.
 - 3a. Fruit ribs all narrowly winged, subequal 8c. var. *hupehense*
 - 3b. Fruit ribs prominent, or only lateral ribs narrowly winged.
 - 4a. Dorsal and intermediate fruit ribs

- prominent, filiform, lateral ribs narrowly winged; rootstock slightly swollen at nodes 8a. var. *sinense*
- 4b. Fruit ribs all prominent, filiform, subequal, wingless; rootstock tuberous 8b. ‘Jinxiong’

8a. Ligusticum sinense var. *sinense*

藁本(原变种) gao ben (yuan bian zhong)

Ligusticum harrismithii M. Hiroe; *L. markgrafianum* Fedde ex H. Wolff; *L. pilgerianum* Fedde ex H. Wolff; *L. silvaticum* H. Wolff.

Plants freely flowering and setting seed. Rootstock slightly swollen at nodes. Leaves ternate to 3-pinnate; ultimate segments irregularly serrate. Dorsal and intermediate fruit ribs prominent, filiform, lateral ribs narrowly winged.

• Forests, grassy slopes, streamsides, also cultivated; 500–2700 m. S part of Huang He basin.

Neither *Ligusticum markgrafianum*, described from Hubei (A. Henry 4954, isotype, E) nor *L. pilgerianum* Fedde ex H. Wolff (Repert. Spec. Nov. Regni Veg. 27: 322. 1930, not H. Wolff, loc. cit. 307. 1930; *L. harrismithii*), described from Gansu (J. F. Rock 14590, syntype) and Shanxi (H. Smith 7112, syntype) can be separated from *L. sinense* var. *sinense*, so we here treat them in synonymy.

This is an important plant of traditional Chinese medicine, in which the roots and rootstock are used in “gao ben” (see also *Ligusticum jeholense*: “liao 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.

8b. Ligusticum sinense ‘Jinxiong’ H. D. Zhang et al., Acta Phytotax. Sin. 28: 477. 1990.

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.

8c. Ligusticum sinense var. *hupehense* H. D. Zhang, Acta Phytotax. Sin. 31: 281. 1993.

水藁本 shui gao ben

Plants usually flowering and setting seed. Rootstock swollen at nodes or tuberous. Stems single or multicapital. 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.”

8d. Ligusticum sinense ‘Fuxiong’ S. M. Fang & H. D. Zhang, Acta Phytotax. Sin. 22: 38. 1984.

抚芎 fu xiong

Plants very rarely flowering or setting seed. Rootstock a thick tuber. Ultimate leaf segments incised to lacinate. $2n = 33^*$.

- Cultivated. Hubei, Jiangxi, Sichuan.

8e. *Ligusticum sinense* ‘Chuanxiong’ S. H. Qiu et al., Acta Phytotax. Sin. 17(2): 102. 1979, pro sp.

川芎 chuan xiong

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

- Cultivated. Gansu, Henan, Hubei, Nei Mongol, Shaanxi, W Sichuan.

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

9. *Ligusticum reptans* (Diels) H. Wolff, Acta Horti Gothob. 2: 316. 1926.

匍匐藁本 pu fu gao ben

Peucedanum reptans Diels, Bot. Jahrb. Syst. 29: 502. 1900.

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, obovate, base shortly clawed. Styles ca. 0.5 × fruit. Fruit oblong-ovoid, ca. 3 × 2 mm; dorsal and intermediate ribs prominent, lateral ribs ca. 0.5 mm; vittae 1 in each furrow, 2–4 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).

10. *Ligusticum litangense* F. T. Pu, Acta Phytotax. Sin. 29: 534. 1991.

理塘藁本 li tang gao ben

Plants 30–50 cm. Root fusiform. Stem erect purplish. Leaves petiolate; blade triangular-ovate, ternate-2-pinnate, 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 3–3.5 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, obovate, 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 col-

lections.

11. *Ligusticum angelicifolium* Franchet, Bull. Soc. Philom. Paris, sér. 8, 6: 133. 1894.

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 erect, 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(–8) on commissure. Seed face plane. Fl. Jul–Aug, fr. Sep.

- 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.

12. *Ligusticum discolor* Ledebour, Fl. Altaic. 1: 321. 1829.

异色藁本 yi se gao ben

Pleurospermum discolor (Ledebour) M. Hiroe; *Paraligusticum 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. and fr. Jul–Sep.

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

13. *Ligusticum kingdon-wardii* H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 306. 1930.

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.

14. *Ligusticum jeholense* (Nakai & Kitagawa) Nakai & Kitagawa, Rep. Exped. Manchoukuo Sect. IV, 4 [Index Fl. Jehol.]: 90. 1936.

辽藁本 liao gao ben

Cnidium jeholense Nakai & Kitagawa, Rep. Exped. Manchoukuo Sect. IV, 1 [Pl. Nov. Jehol. 1]: 38. 1934; *Tilingia jeholensis* (Nakai & Kitagawa) Leute.

Plants 30–80 cm. Root fusiform; rootstock short. Stem erect, purplish striate, branching. Lower petioles 10–19 cm; blade broad-ovate, 10–20 × 8–16 cm, ternate-2–3-pinnate, primary pinnae 4–6 pairs; ultimate segments ovate, 2–3 × 1–2 cm, hispid on veins, margins 3–5-lobed. Upper leaves reduced. Umbels terminal and lateral, 3–7 cm across; bracts 2, linear, scabrid, margins narrow membranous, caducous; rays 8–16, subequal, 2–3 cm; bracteoles 8–10, linear, longer than umbellules in flower, and subequal to pedicels in fruit. Calyx teeth obsolete. Petals white, oblong-ovate. Styles ca. 0.5 × fruit, reflexed. Fruit oblong, 3–4 × 2–2.5 mm; dorsal and intermediate ribs filiform, lateral ribs narrowly winged; vittae 1(–2) in each furrow, 2–4 on commissure. Seed face plane. Fl. Aug–Sep, fr. Sep–Oct.

• Forests, meadows, streamsides, damp places; 1200–2500 m. Hebei, Jilin, Liaoning, Shandong, Shanxi.

The roots and rootstock are used as “liao gao ben” (see also *Ligusticum sinense*, “gao ben”), an important, analgesic and anti-inflammatory herb of traditional Chinese medicine.

15. *Ligusticum glaucifolium* H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 312. 1930.

白叶藁本 bai ye gao ben

Plants 40–60 cm, glabrous. Root cylindrical. Stem single, erect, striate, 1–2-branched. Basal leaves ovate or broad-ovate, 15–20 × 5–15 cm, 1–2-pinnate, pinnae 3–6 pairs; ultimate segments ovate or rhombic, 10–20 × 5–20 mm, abaxial glaucescent, margins serrate. Upper leaves similar to the basal, reduced, sessile on expanded sheaths. Umbels terminal and lateral, 3–5 cm across; bracts 2–4, linear, or absent; rays 8–10, subequal, 2–3 cm; bracteoles 6–8, linear, ca. equaling umbellules in flower; umbellules many-flowered; pedicels subequal. Calyx teeth obsolete. Petals purple, obovate, base cuneate. Styles divergent, equaling stylopodium. Fruit oblong-ovoid, 4–5 × 3–3.5 mm; ribs narrowly winged, subequal. Fl. and fr. Aug–Oct. $2n = 22^*$.

• Shady forests, pebbly slopes, stream banks; 3000–3300 m. W

Yunnan.

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

16. *Ligusticum elatum* (Edgeworth) C. B. Clarke, in J. D. Hooker, Fl. Brit. India 2: 698. 1879.

高升藁本 gao sheng gao ben

Cortia elata Edgeworth, Trans. Linn. Soc. London 20: 55. 1846; *Levisticum argutum* Lindley.

Plants 30–120 cm or more, stout, subglabrous. Root cylindrical. Stem erect, striate, branched, base clothed in fibrous remnant sheaths. Basal petioles 5–10 cm; blade ovate-lanceolate, 5–8(–15) × 3–5(–10) cm, 2–3-pinnate, primary pinnae 4–5 pairs, remote; ultimate segments oblong-ovate, 10–20 × 5–10 mm, abaxially pale green, margins incised. Upper leaves reduced, 1-pinnate or 3-lobed, sessile. Umbels terminal and lateral, 3–5 cm across; bracts 1–4, linear, caducous; rays 15–25(–40), subequal, 2–4 cm; bracteoles 6–12, linear; umbellules many-flowered. Calyx teeth small, triangular, caducous. Petals white, obovate, base cuneate. Styles ca. 2 × stylopodium. Fruit oblong, 3–5 × 1.5–3 mm; ribs all narrowly winged, lateral wings broader; vittae 2–3 in each furrow, 4–6(–8) on commissure. Seed face plane. Fl. Jul–Aug, fr. Aug–Sep.

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

17. *Ligusticum weberbauerianum* Fedde ex H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 312. 1930.

尖瓣藁本 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 pinnae 5–6 pairs; ultimate segments ovate-lanceolate, 2–2.5 × 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 × stylopodium. 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 *Ligusticum pilgerianum* H. Wolff (Repert. Spec. Nov. Regni Veg. 27: 307. 1930, not Fedde ex H. Wolff, loc. cit. 322. 1930) are conspecific with *Notopterygium incisum*. Certainly the petal shape is unusual in *Ligusticum*, 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*).

18. *Ligusticum pteridophyllum* Franchet, Bull. Soc. Philom. Paris, sér. 8, 6: 132. 1894.

蕨叶藁本 jue ye gao ben

Ligusticopsis pteridophylla (Franchet) Leute.

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 narrowly 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*).

19. *Ligusticum acuminatum* Franchet, Bull. Soc. Philom. Paris, sér. 8, 6: 131. 1894.

尖叶藁本 jian ye gao ben

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 acuminate 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 more broadly winged; vittae 2–3(–4) in each furrow, 6–8 on commissure. Seed face plane or slightly concave. Fl. Jul–Aug, fr. Sep–Oct. $2n = 22^*$.

• Forests, forest margins, alpine scrub and meadows; 1500–4000 m. 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*).

20. *Ligusticum nullivittatum* (K. T. Fu) F. T. Pu & M. F. Watson, Acta Phytotax. Sin. 42: 564. 2004.

无管藁本 wu guan gao ben

Cnidium nullivittatum K. T. Fu, Fl. Tsinling. 1(3): 460. 1981; *Selinum nullivittatum* (K. T. Fu) C. C. Yuan & L. B. Li.

Plants 50–120 cm. Stem erect, branching, glabrous. Lower leaves petiolate; blade triangular-ovate, ternate–2–3-pinnate, secondary pinnae usually 8–10 pairs, crowded, terminal pinna caudate; ultimate segments ovate or lanceolate, 5–22 mm, much

incised or shallowly pinnatifid. Umbels 6–9 cm across; peduncles 5–11 cm, strigose; bracts caducous; rays ca. 30, 2–3.5 cm, subequal, scabrous; bracteoles 8–10, linear, exceeding pedicels; umbellules 20–30-flowered. Calyx teeth obsolete. Petals white, obovate-cordate. Fruit oblong-obovate, ca. 4 mm, dorsal and intermediate ribs narrowly winged, lateral ribs broadly winged; vittae absent. Fl. Aug–Sep, fr. Sep–Oct.

• Sparse forests, scrub, moist land; 1400–2400 m. W Hubei, S Shaanxi, E Sichuan.

This is an incompletely known species.

21. *Ligusticum tachiroei* (Franchet & Savatier) M. Hiroe & Constance, Umbell. Jap. 1: 74. 1958.

岩茴香 yan hui xiang

Seseli tachiroei Franchet & Savatier, Enum. Pl. Jap. 2: 373. 1878; *Cnidium filisectum* Nakai & Kitagawa; *C. tachiroei* (Franchet & Savatier) Makino; *Ligusticum filisectum* (Nakai & Kitagawa) M. Hiroe; *L. koreanum* H. Wolff; *L. tachiroei* var. *filisectum* (Nakai & Kitagawa) S. Y. He & W. T. Fan; *Rupiphila tachiroei* (Franchet & Savatier) Pimenov & Lavrova; *Tilingia filisecta* (Nakai & Kitagawa) Nakai & Kitagawa; *T. tachiroei* (Franchet & Savatier) Kitagawa.

Plants 10–30 cm tall, slender, glabrous. Root cylindrical. Stem single or multicapital, 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 conspicuous, lanceolate, ca. 0.5 mm. Petals white or pinkish, base shortly clawed. Styles ca. 2 × stylopodium. 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) Benth & J. D. Hooker (1867); *S. striatum* Benth & J. D. 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, subequal; 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].

23. *Ligusticum delavayi* Franchet, Bull. Soc. Philom. Paris, sér. 8, 6: 131. 1894.

丽江藜本 li jiang gao ben

Hymenidium delavayi (Franchet) Pimenov & Kljuykov.

Plants 30–80 cm, glabrous. Root cylindrical, up to 10 cm. Stem single or multicapital, little-branched above. Basal and lower petioles 6–25 cm; blade oblong-ovate or lanceolate, 5–15 × 2–10 cm, 2–3-pinnate, primary pinnae 6–8 pairs; ultimate segments setuliform, 1–5 × ca. 0.5 mm. Upper leaves reduced, sessile, 1–2-pinnate. Umbels terminal and lateral, 3–10 cm across; bracts 1–4, linear-lanceolate, 5–15 mm, with white membranous margins; rays (6–)10–14, subequal, 3–4 cm; bracteoles 8–10, lanceolate, 5–8 mm, narrowly membranous margined. Calyx teeth conspicuous, subulate, ca. 0.5 mm, unequal. Petals white, obovate, base cuneate. Fruit oblong-ovoid, ca. 4 × 3 mm; dorsal and intermediate ribs raised, lateral ribs narrowly winged; vittae 3 in each furrow, 6 on commissure. Seed face plane. Fl. Aug–Sep, fr. Sep–Oct. $2n = 22^*$.

• Montane thickets, alpine pastures; 2800–4500 m. S Xizang, NW Yunnan.

This species has reputed medicinal value.

24. *Ligusticum brachylobum* Franchet, Bull. Soc. Philom. Paris, sér. 8, 6: 134. 1894.

短片藜本 duan pian gao ben

Ligusticopsis brachyloba (Franchet) Leute; *Peucedanum cavaleriei* H. Wolff.

Plants to 1 m tall, stout, puberulent throughout. Root fusiform. Stem erect, striate, hollow, branching, base clothed in fibrous remnant sheaths. Basal petioles 9–25 cm; blade triangular-ovate, 10–20 × 8–18 cm, 3–4-pinnate; ultimate segments linear, ca. 3 × 1 mm. Upper leaves reduced, sessile. Umbels terminal and lateral, terminal umbels 4–6 cm across; bracts 2–4 or absent; rays 15–30, 2–6 cm, scabrid; bracteoles 10–12, linear, densely pubescent, without white membranous margin. Calyx teeth conspicuous, subulate, ca. 0.5 mm. Petals white, broad-obovate, base cuneate. Fruit oblong-ovoid, ca. 5 × 4 mm; dorsal and intermediate ribs raised, lateral ribs winged; vittae 2–3 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, grassy slopes, stream banks; 1600–4100 m. NE Guizhou, Qinghai, Shaanxi, SE and W Sichuan, E Xizang, 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*).

25. *Ligusticum mairei* M. Hiroe, Umbell. Asia 1: 108. 1958.

白龙藜本 bai long gao ben

Plants 14–25 cm. Root cylindrical. Stem multicapital, stri-

ate, branched, base clothed in fibrous remnant sheaths. Basal petioles 2–5 cm, sheaths oblong-ovate, puberulent; blade ovate, 3–5 × 2–4.5 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 incompletely known taxon is recorded only from the type locality.

26. *Ligusticum nematophyllum* (Pimenov & Kljuykov) F. T. Pu & M. F. Watson, Acta Phytotax. Sin. 42: 564. 2004.

线叶藜本 xian ye gao ben

Conioselinum nematophyllum Pimenov & Kljuykov, Willdenowia 33: 361. 2003, based on *Ligusticum filifolium* R. H. Shan & F. T. Pu, Acta Phytotax. Sin. 29: 538. 1991, not J. D. Hooker (1864).

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.

• Forest margins, alpine scrub and meadows, streamsides; 3000–4200 m. W Sichuan.

27. *Ligusticum tenuissimum* (Nakai) Kitagawa, J. Jap. Bot. 17: 563. 1941.

细叶藜本 xi ye gao ben

Angelica tenuissima Nakai, Bot. Mag. (Tokyo) 33: 10. 1919.

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 margined, usually caducous; rays 10–18, slightly unequal, 2–5 cm; bracteoles 5–8, lanceolate, 8–15 mm, shorter than umbellules, white membranous margined; pedicels unequal, 5–10 mm. Calyx teeth obsolete. Petals white, obovate, base cuneate. Stylopodium short conic; styles reflexed. Fruit

oblong, ca. 4×2 –2.5 mm; dorsal and intermediate ribs prominent, lateral ribs narrowly winged; vittae 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*).

28. *Ligusticum tenuisectum* H. de Boissieu, Bull. Herb. Boissier 3: 843. 1903.

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, ternate-3-4-pinnate; ultimate segments linear, 3 – $10 \times$ 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, subequal, 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. $2 \times$ stylopodium. Fruit oblong-ovoid, 4 – $5 \times$ ca. 3 mm; dorsal and intermediate ribs prominent, lateral ribs winged; vittae 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.

29. *Ligusticum likiangense* (H. Wolff) F. T. Pu & M. F. Watson, Acta Phytotax. Sin. 42: 563. 2004.

美脉藁本 mei mai gao ben

Pleurospermum likiangense H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 116. 1929; *Ligusticopsis integrifolia* (H. Wolff) Leute; *L. likiangensis* (H. Wolff) Lavrova & Kljuykov; *Ligusticum calophlebicum* H. Wolff; *L. integrifolium* H. Wolff; *Pleurospermum calophlebicum* (H. Wolff) M. Hiroe; *Trachydium chinense* M. Hiroe; *T. hispidum* H. Wolff (1930), not Franchet (1894); *T. lichiangense* C. Y. Wu, nom. illeg. superfl.

Plants 15-50 cm. Root subnapiform, ca. 1.5×1 cm, branched. Stem erect, profusely branched from base, base clothed in fibrous remnant sheaths. Basal petioles 2-4(-10) cm; blade oblong-ovate, 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, subequal, 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; vittae 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 “qian hu” (see *Peucedanum praeruptorum* and *Angelica decursiva*).

30. *Ligusticum involucreatum* Franchet, Bull. Soc. Philom. Paris, sér. 8, 6: 132. 1894.

多苞藁本 duo bao gao ben

Plants 12-40 cm, pilose throughout. Root fusiform, branched. 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, subequal, 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; vittae 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.

31. *Ligusticum franchetii* H. de Boissieu, Bull. Soc. Bot. France 53: 432. 1906.

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 pinnae 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, subequal, 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. Stylopodium short conic; styles reflexed. Fruit oblong-ovate, ca. 4×2 mm; dorsal and intermediate ribs prominent, filiform, lateral ribs winged; vittae (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.

32. *Ligusticum sikiangense* M. Hiroe, Umbell. Asia 1: 107. 1958.

川滇蕺本 chuan dian gao ben

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 caudate, rarely 1–2-pinnate; rays (5–)8–10, unequal, (1.5–)3–8 cm; bracteoles 5–7, linear-lanceolate, entire, caudate 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. Fl. Jul–Aug, fr. Sep.

• 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 *Hymenidium chloroleucum* (see *Pleurospermum hookeri* var. *thomsonii*).

33. *Ligusticum capillaceum* H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 311. 1930.

细苞蕺本 xi bao gao ben

Ligusticopsis capillacea (H. Wolff) Leute; *Pleurospermum capillaceum* (H. Wolff) M. Hiroe.

Plants 6–20 cm, hispid throughout. Root stout, 8–25 × 0.5–1 cm; caudex 1–1.5 cm thick. Stems single or 2–4, unbranched or 1-branched, base densely covered in fibrous remnant sheaths. Basal petioles 2–5 cm; blade oblong-ovate, 4–8(–10) × 1.5–3 cm, 2-pinnate, pinnae 5–7 pairs; ultimate segments linear-lanceolate, 2–4 × ca. 1 mm. Cauline leaves 1–2, reduced. Umbels 2–5 cm across; peduncles up to 15 cm, base of umbels densely hispid; bracts 1–2, 1-pinnate, caducous; rays (4–)10–20, subequal, (1–)3 cm; bracteoles 6–8, similar to bracts, slightly exceeding umbellules. Calyx teeth obsolete. Petals white or purple, obcordate, pubescent, base cuneate. Styles ca. 0.5 × fruit, reflexed. Fruit oblong-ovoid, ca. 6 × 3 mm, glabrous; dorsal and intermediate ribs filiform, lateral ribs winged; vittae 1–3 in each furrow, 4–6 on commissure. Seed face plane. Fl. Jul–Aug, fr. Aug–Sep.

• Sparse forests, alpine meadows; 2500–4000 m. W Sichuan, NW Yunnan.

34. *Ligusticum yunnanense* F. T. Pu, Acta Phytotax. Sin. 29: 543. 1991.

云南蕺本 yun nan gao ben

Plants 40–60 cm, pilose throughout. Stem erect, 1–2-branched. Lower leaves petiolate, sheathing; blade subtriangular, 10–15 × 8–12 cm, ternate–2–3-pinnate, primary pinnae 5–6 pairs; ultimate segments lanceolate, 5–15 × 2–5 mm. Upper leaves reduced, 1-pinnate. Umbels terminal and lateral, terminal umbels 3–5–5 cm across; peduncles 8–10 cm; bracts 2–5, 1–2-pinnate; rays 15–20, subequal, ca. 4 cm; bracteoles 5–6, 1-pinnate, nearly as long as umbellules. Calyx teeth obsolete. Petals white, obovate, base cuneate. Styles ca. equaling stylopodium.

Fruit oblong-ovoid, ca. 4 × 2.5–3 mm; dorsal and intermediate ribs prominent, filiform, lateral ribs narrowly winged; vittae 2–3 in each furrow, 4 on commissure. Seed face plane. Fl. and fr. Jul–Sep.

• Grassy slopes. Yunnan.

35. *Ligusticum oliverianum* (H. de Boissieu) R. H. Shan, Sinenesia 12: 175. 1941.

膜苞蕺本 mo bao gao ben

Selinum oliverianum H. de Boissieu, Bull. Herb. Boissier 2: 846. 1903; *Ligusticopsis oliveriana* (H. de Boissieu) Lavrova; *Ligusticum daucoides* (Franchet) Franchet var. *souliei* H. de Boissieu.

Plants 20–40 cm, glabrous throughout. Root fusiform. Stems multicapital, 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. Stylopodium 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. Fl. Aug, fr. Sep–Oct.

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

36. *Ligusticum rechingerianum* (Leute) R. H. Shan & F. T. Pu, Acta Phytotax. Sin. 29: 544. 1991 [*“rechingerana”*].

玉龙蕺本 yu long gao ben

Ligusticopsis rechingeriana Leute, Ann. Naturhist. Mus. Wien 73: 75. 1969 [*“rechingerana”*].

Plants (15–)20–80 cm. Root cylindrical, branched. Stems single or 2, sparsely pilose or glabrous, branched from base, base clothed in fibrous remnant sheaths. Basal and lower petioles 5–10 cm; blade oblong-ovate, 8–15 × 3–4 cm, 1–2-pinnate, pinnae 3–5 pairs; ultimate segments ovate to oblong-ovate, 15–40 × 5–20 mm, margins incised or pinnatifid. Upper leaves reduced, sessile, 1-pinnate. Terminal umbels 4–7 cm across, lateral umbels 1–2, smaller; bracts 2–8, 1-pinnate, pinnae linear; rays 15–30, subequal, 3–4 cm; bracteoles 6–8, 2–3-pinnate, pinnae linear, longer than umbellules; umbellules many-flowered. Calyx teeth linear-lanceolate. Petals white or purplish, obcordate, base cuneate. Styles ca. equaling stylopodium in fruit, reflexed. Fruit oblong-ovoid, ca. 4 × 2.5 mm; dorsal and intermediate ribs filiform, lateral ribs winged; vittae 2–3 in each furrow, 6–10 on commissure. Seed face plane. Fl. Jul–Aug, fr. Sep–Oct.

• Montane thickets, alpine meadows; 1500–4600 m. W Sichuan,

NW Yunnan.

37. *Ligusticum hispidum* (Franchet) H. Wolff in Handel-Mazzetti, Symb. Sin. 7: 723. 1933.

毛蕲本 mao qiao ben

Trachydium hispidum Franchet, Bull. Soc. Philom. Paris, sér. 8, 6: 113. 1894; *Ligusticopsis hispida* (Franchet) Lavrova & Kljuykov; *Ligusticum changii* M. Hiroe; *Trachydium chinense* M. Hiroe; *T. rockii* H. Wolff.

Plants 8–60 cm, hispid-setulose throughout. Root cylindrical, elongate. Stem very short, base clothed in fibrous remnant sheaths. Leaves lanceolate in outline, 5–10 × 1–3 cm, 2–3-pinnate, primary pinnae 3–4 pairs; ultimate segments lanceolate, 3–5 × 2–5 mm, usually 3–5-lobed, lobes linear. Umbels terminal and lateral, terminal umbels 10–18 cm across; bracts 1–3, 1–2-pinnate; rays (8–)12–22, unequal, elongate up to 24 cm; bracteoles numerous, 2-pinnate, pinnae linear. Calyx teeth ovate or subulate, unequal. Petals white, base cuneate. Styles ca. 1/3 × fruit, reflexed. Fruit oblong-ovoid, ca. 3 × 2 mm; dorsal and intermediate ribs filiform, lateral ribs winged; vittae 1–2 in each furrow, 4 on commissure. Seed face plane. Fl. Aug, fr. Oct. $2n = 22^*$.

• Alpine meadows, grassy slopes, rock crevices; 2600–4500 m. W Sichuan, Xizang, Yunnan.

38. *Ligusticum scapiforme* H. Wolff, Repert. Spec. Nov. Regni Veg. 27: 308. 1930.

抽葶蕲本 chou ting qiao ben

Ligusticopsis scapiformis (H. Wolff) Leute; *Ligusticum maxonianum* H. Wolff.

Plants 5–30 cm. Root cylindrical, elongate, branched. Stems 2–3, unbranched, subscapose, base clothed in fibrous remnant sheaths. Basal petioles 2–3 cm; blade oblong-lanceolate, 3–5 × 2–3 cm, 2–3-pinnate, primary pinnae 4–5(–10) pairs; ultimate segments linear to lanceolate, 2–3 × 0.5–1 mm. Cauline leaves absent or occasionally 1, reduced. Umbels terminal, 3–6 cm wide, pilose at base; bracts 1–3, linear, pinnate or apex 3-lobed, rarely entire; rays (7–)9–15, unequal, 1–3 cm; bracteoles 8–10, 1–2-pinnate or apex 3-lobed, ca. equaling umbellules. Calyx teeth conspicuous. Petals white or purplish, obovate, base shortly clawed. Styles ca. equaling stylopodium. Fruit oblong-ovoid, 4–5 × 3–4 mm; dorsal and intermediate ribs filiform, lateral ribs winged; vittae 1–4 in each furrow, 4–6(–8) on commissure. Seed face plane. Fl. Jun–Aug, fr. Sep–Oct.

• Coniferous forests, montane thickets, grassland at forest margins, alpine scrub and meadows, river banks; 2700–4800 m. W Sichuan, S Xizang, NW Yunnan.

This species has reputed medicinal value. The original description and a cited isotype of *Ligusticum maxonianum* (Yunnan: Lijiang, *J. F. Rock 10380*, E) possess a combination of characters in common with *L. scapiforme*.

39. *Ligusticum daucooides* (Franchet) Franchet, Bull. Soc. Philom. Paris, sér. 8, 6: 135. 1894.

羽苞蕲本 yu bao qiao ben

Trachydium daucooides Franchet, Nouv. Arch. Mus. Hist. Nat., sér. 2, 8: 245. 1886; *Angelica daucooides* (Franchet) M. Hiroe; *Ligusticopsis daucooides* (Franchet) Lavrova & Kljuykov; *Ligusticum dielsianum* H. Wolff; *Ligusticopsis dielsiana* (H. Wolff) Pimenov & Kljuykov.

Plants 20–50 cm, glabrous. Root stout, cylindrical, 4–10 × ca. 1.5 cm. Stem single, 2–3-branched or unbranched, base clothed with fibrous remnant sheaths. Basal petioles 8–18 cm; blade oblong-ovate, 8–20 × 4–5 cm, 3–4-pinnate, primary pinnae 5–6 pairs; ultimate segments linear, 3–4 × ca. 1 mm. Cauline leaves sessile, sheathing, blade similar to basal, reduced. Umbels terminal and lateral, 7–10 cm across; bracts 1–2, pinnate or absent; rays (10–)14–23, unequal, 1.5–6 cm, scabrid; bracteoles 8–10, 1–2-pinnate, longer than umbellules. Calyx teeth 2–3, subulate, unequal, 1–2 mm. Petals white or purplish abaxially, obovate, base cuneate. Styles ca. equaling stylopodium. Fruit oblong, 6–8 × 3–4 mm; dorsal and intermediate ribs raised, lateral ribs winged; vittae 1–3 in each furrow, 4–6 on commissure. Seed face plane. Fl. Jun–Aug, fr. Sep–Oct. $2n = 22^*$.

• Coniferous forest margins, alpine scrub and meadows, grassy slopes, moist rock crevices; 2600–4800 m. W Hubei, Sichuan, S Xizang, N Yunnan.

This species has reputed medicinal value (in Sichuan and Yunnan). An isotype of *Ligusticum dielsianum* (Yunnan: Huize, Ta-hai, *E. E. Maire 1027*, E) is so similar to *L. daucooides* that the two entities cannot be separated.

40. *Ligusticum multivittatum* Franchet, Bull. Soc. Philom. Paris, sér. 8, 6: 133. 1894.

多管蕲本 duo guan qiao ben

Ligusticopsis multivittata (Franchet) Leute; *Ligusticum modestum* Diels; *L. pseudomodestum* H. Wolff.

Plants (6–)20–40 cm, glabrous. Root cylindrical or fusiform, elongate, 10 cm or more. Stem multicapital, purplish, erect, 1–2-branched or unbranched, base clothed with fibrous remnant sheaths. Basal petioles 4–12 cm; blade oblong-ovate, 5–7 × 3–5 cm, 2–3-pinnate, primary pinnae 5–8 pairs; ultimate segments linear or lanceolate, 3–6 × 1–2 mm. Cauline leaves 1–2, smaller or absent. Umbels terminal, 3–4 cm across, peduncles 4–22 cm; lateral umbels 1–2, smaller; bracts 1–2, pinnate, rarely entire, pinnae entire, hispid; rays 5–10(–20), subequal, 1–2(–3) cm; bracteoles 1–2-pinnate, rarely only apex 2–3-lobed, hispid, longer than umbellules. Calyx teeth conspicuous, triangular or subulate. Petals white or violet, obovate, base cuneate. Fruit oblong, 4–6 × ca. 3 mm; dorsal and intermediate ribs raised, lateral ribs winged; vittae 2–5 in each furrow, 6–10 on commissure. Seed face plane. Fl. Jul–Aug, fr. Sep–Oct.

• Forests, bamboo scrub, grasslands, talus slopes; 3000–4100 m. W Sichuan, NW Yunnan.

The holotypes of *Ligusticum modestum* (Yunnan: Lijiang, *G. Forrest 2856*, E), and *L. pseudomodestum* (Yunnan: *J. Kingdon Ward 4664*, E) are so similar to *L. multivittatum* that the three entities cannot be separated.

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 elegans* H. Wolff (Acta Horti Gothob. 2: 312. 1926), described from Hebei ("Hsiao-wu-tai-shan [Xiaowutai Shan], Yangkia-p'ing, Hsi-lin," ca. 2200 m, K. A. H. Smith 1167, holotype, GB).
- Ligusticum falcarioides* H. Wolff (Repert. Spec. Nov. Regni Veg. 27: 311. 1930), described from Yunnan ("Hiss-chong-chang," 2600 m, E. E. Maire 3942, holotype, P).
- Ligusticum ferulaceum* Franchet (Bull. Soc. Philom. Paris, sér. 8, 6: 135. 1894, not Lamarck, 1779, nor Allioni, 1785, nor Lapeyrouse, 1813), published in observations without type information.
- Ligusticum glaucescens* Franchet (Bull. Soc. Philom. Paris, sér. 8, 6: 134. 1894), described from Yunnan ("Pee-ngay-tze" & "Mo-chetchin, supra Tapin-tze," P. J. M. Delavay 446 & s.n., syntypes, P).
- Ligusticum jeholense* (Nakai & Kitagawa) Nakai & Kitagawa var. *tenuisectum* Y. C. Chu (Fl. Pl. Herb. Chin. Bor.-Orient. 6: 293. 1977), described from Liaoning (Benxi, Huanren, Deng Yu-chen 1263, holotype, FPI).
- Ligusticum kiangsiense* H. Wolff (Repert. Spec. Nov. Regni Veg. 27: 326. 1930), described from Jiangxi (*Du Bois-Reymond* 733, holotype, unlocalized).
- Ligusticum kulingense* H. Wolff (Repert. Spec. Nov. Regni Veg. 27: 314. 1930), described from Jiangxi ("Kuling Suschangebige," ca. 1100 m, *Du Bois-Reymond* s.n. holotype, unlocalized).
- Ligusticum levisticifolium* H. Wolff (Repert. Spec. Nov. Regni Veg. 27: 323. 1930 [*"levisticifolium"*]), described from Xizang ("Tsé-Kou," J. T. Monbeig 85, holotype, E; isotype ?P).
- Ligusticum limprichtii* H. Wolff (Repert. Spec. Nov. Regni Veg. Beih. 12: 452. 1922), described from Sichuan ("Paoshing" [Baoxing], 2850 m, W. Limpricht 1053, holotype, unlocalized).
- Ligusticum longilobum* H. Wolff (Acta Horti Gothob. 2: 313. 1926), described from Jilin ("Hsiaoowhutai Shan" [Xiaowutai Shan], 2300 m, K. A. H. Smith 101, holotype, W).
- Ligusticum pseudoangelica* H. de Boissieu (Bull. Herb. Boissier, sér. 2, 3: 845. 1903; *Pleurospermum pseudoangelica* (H. de Boissieu) H. de Boissieu), described from W Sichuan ("Tongolo," J. A. Soulié 119 & 122, syntypes, P).
- Ligusticum pseudodaucooides* H. Peng & Yin Z. Wang (Novon 8: 50. 1998; *Ligusticopsis pseudodaucooides* (H. Peng & Yin Z. Wang) Pimenov & Kljuykov), described from Yunnan (Jingdong, Wuliang Shan, Mt. Maotou, ca. 3300 m, H. Peng 2579, holotype, KUN).
- Ligusticum rockii* M. Hiroe (Umbel. Asia 1: 110. 1958), described from Yunnan ("Mount Mitzuga, W of Muil Gomba," 3050–4875 ft, J. F. C. Rock 16541, holotype, UC).
- Ligusticum sinense* Oliver var. *alpinum* R. H. Shan ex K. T. Fu (Fl. Tsinling. 1(3): 461. 1981), described from Shaanxi ("Hwain Hsien, Tapaiyangcha," 1400–1900 m, K. T. Fu 17254, holotype, WNU).
- Ligusticum smithii* H. Wolff (Acta Horti Gothob. 2: 314. 1926), described from Hebei ("Hsiao-wu-tai-shan [Xiaowutai Shan], Yangkia-p'ing, Hsi-lin," 1600–2600 m, K. A. H. Smith 1097, holotype, GB).
- Ligusticum tibeticum* H. Wolff (Repert. Spec. Nov. Regni Veg. 27: 317. 1930), described from Gansu (*E. Licent* 4810, syntype, unlocalized) and Xizang ("Kokonor," *Anderson* 1215 and *Futerer & Holderer* 96, syntypes, unlocalized).
- Ligusticum wawrae* H. Wolff (Repert. Spec. Nov. Regni Veg. 27: 318. 1930), described from Beijing ("Tse-tai-ssú," H. Wawra von Fernsee 1065, holotype, W).

