

6. CIMICIFUGA Wernischeck, Gen. Pl. 298, 321. 1763.

升麻属 sheng ma shu

Li Liangqian (李良千); Anthony R. Brach

Herbs perennial. Rhizome robust, creeping, with fibrous roots. Stem terete, apically usually several branched. Leaves 1–3 × ternately sect or subpinnately compound, long petiolate. Inflorescence densely racemose, sometimes spicate, simple or branched; rachis densely glandular pubescent and hairy; bracts subulate to narrowly triangular, small. Flowers dense, small, actinomorphic, hermaphroditic or rarely unisexual and plants dioecious. Sepals 4 or 5, petaloid, white, obovate-orbicular, caducous. Petals elliptic to suborbicular, entire, slightly concave or forked-lobed with 2 empty anthers, rarely with a nectary. Stamens numerous; filaments narrowly linear to filamentous; anthers yellow, broadly ellipsoid to suborbicular. Follicles 1–8, stalked or sessile, oblong-ellipsoid to obovate-ellipsoid, adaxially convex veined, apex beaked. Seeds few, yellowish brown, ellipsoid to narrowly ellipsoid.

About 18 species: N temperate regions; eight species (three endemic) in China.

Elsewhere (Compton et al., Taxon 47: 593–634. 1998), *Cimicifuga* has been transferred to *Actaea*. However, for the present account, as in FRPS, one of us (Li) prefers to maintain *Cimicifuga* as distinct.

- 1a. Leaves 1 × ternate, subbasal; inflorescence spicate; carpels 1, sometimes 2 ..... 1. *C. japonica*
- 1b. Leaves 2 or 3 × ternately pinnate; inflorescence racemose; carpels 2–8.
  - 2a. Flower unisexual, plants dioecious ..... 8. *C. dahurica*
  - 2b. Flower hermaphroditic.
    - 3a. Inflorescence unbranched or with several short branches at base.
      - 4a. Plants 1–1.5 m; terminal leaflet ovate or rhombic, 4.5–8.5 × 2–5.5 cm, adaxially glabrous; pedicels 5–8 mm ..... 2. *C. simplex*
      - 4b. Plants 40–90(–140) cm; terminal leaflet ovate or broadly rhombic, 2–3.7 × 1.5–3 cm, adaxially sparsely pubescent; pedicels 1–4 mm ..... 3. *C. yunnanensis*
    - 3b. Inflorescence (2–)4–20-branched.
      - 5a. Carpels densely gray pubescent; follicles densely appressed pubescent ..... 7. *C. foetida*
      - 5b. Carpels or follicles glabrous or subglabrous.
        - 6a. Terminal leaflet rhombic, papery, abaxially pubescent at veins ..... 6. *C. brachycarpa*
        - 6b. Terminal leaflet ovate or obovate, slightly leathery, abaxially glabrous.
          - 7a. Petals entire at apex; terminal leaflet obovate to obovate-elliptic, 4–9 cm wide ..... 4. *C. heracleifolia*
          - 7b. Petals 2-lobed at apex; terminal leaflet ovate, 5.5–14.5 cm wide ..... 5. *C. nanchuanensis*

1. *Cimicifuga japonica* (Thunberg) Sprengel, Syst. Veg. 2: 628. 1825.

小升麻 xiao sheng ma

*Actaea japonica* Thunberg in Murray, Syst. Veg., ed.

14, 488. 1784; *A. acerina* Prantl, nom. illeg.; *A.*

*purpurea* (P. K. Hsiao) J. Compton; *Cimicifuga acerina*

Tanaka, nom. illeg.; *C. acerina* f. *hispidula* P. K. Hsiao;

*C. acerina* f. *purpurea* P. K. Hsiao; *C. acerina* f.

*strigulosa* P. K. Hsiao; *C. japonica* var. *acerina* Huth;

*C. macrophylla* Koidzumi; *C. purpurea* (P. K. Hsiao) C.

W. Park & H. W. Lee; *Pityrospasma acerinum* Siebold

& Zuccarini, nom. illeg. (included *A. japonica*).

Rhizome blackish, with numerous fibrous roots. Stems

erect, 25–110 cm tall, basally subglabrous or sparsely

spreading villous, apically densely gray pubescent.

Basal leaves 1 or 2, ternate, long petiolate; petiole to 32

cm, sparsely villous or subglabrous; leaf blade to 35 cm.

Leaflet petiolate; petiolules 4–12 cm; terminal leaflet

ovate-cordate, 5–20 × 4–18 cm, palmately 7–9-lobed,

lobes triangular or obliquely trapezoid, margin serrate;

lateral leaflets smaller than terminal one, abaxially

white pubescent at veins, adaxially subglabrous except

shortly strigose at margin. Inflorescence spicate,

terminal, simple or 1–3-branched, 10–25 cm; rachis densely gray pubescent; bracts 3-parted or triangular. Flowers subsessile, small, ca. 4 mm in diam. Sepals white or purple, elliptic to obovate-elliptic, 3–5 mm. Petals orbicular-ovate, 4–4.5 mm, with a nectary at base. Filaments narrowly linear, 4–7 mm; anthers ellipsoid, 1–1.5 mm. Carpels 1, sometimes 2, glabrous. Follicles ca. 1 cm × 3 mm. Seeds 8–12, pale brown, ellipsoid-ovoid to globose, ca. 2.5 mm, adaxially with numerous short scaly wings. Fl. Aug–Sep, fr. Oct. 2n = 16\*.

Forests, forest margins; 800–2600 m. Anhui, Gansu, N Guangdong, Guizhou, Hainan, SW Hebei, S Henan, Hubei, Hunan, Jiangxi, S Shaanxi, S Shanxi, Sichuan, Yunnan, Zhejiang [Japan, Korea].

2. *Cimicifuga simplex* (de Candolle) Wormskjöld ex Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 15(1): 87. 1842.

单穗升麻 dan sui sheng ma

*Actaea cimicifuga* Linnaeus var. *simplex* de Candolle,

Prodr. 1: 64. 1824; *A. simplex* (de Candolle)

Wormskjöld ex Fischer & C. A. Meyer; *Cimicifuga*

*foetida* Linnaeus var. *intermedia* Regel; *C. foetida* var.

*racemosa* Regel; *C. foetida* var. *simplex* (de Candolle)

Regel; *C. ussuriensis* Oettingen; *Thalictrodes simplex* (de Candolle) Kuntze.

Rhizome robust, blackish. Stem simple, 40–150 cm tall, glabrous, sometimes white pubescent apically. Proximal cauline leaves 2 or 3 × ternately pinnate, long petiolate; petiole to 30 cm; leaf blade ovate-triangular, to 30 cm; terminal leaflet broadly lanceolate to rhombic, 3–8.5 × 1.5–5.5 cm, usually 3-lobed, margin serrate; lateral leaflets usually sessile, narrowly obliquely ovate, smaller than terminal one, abaxially sparsely white villous at veins, adaxially glabrous. Distal cauline leaves smaller, 1 or 2 × ternately pinnate. Inflorescence racemose, to 35 cm, unbranched or sometimes several branched at base; rachis and pedicels densely white or gray pubescent; bracts subulate, shorter than pedicels. Pedicel (3–)5–10(–15) mm. Sepals broadly elliptic, ca. 4 mm. Petals elliptic to broadly elliptic, membranous at apex, 2-lobed. Filaments narrowly linear, 5–8 mm, glabrous; anthers ellipsoid, ca. 1 mm. Carpels 2–8, densely gray or white pubescent, stalked. Follicles 7–9(–13) × 4–5 mm, appressed pubescent or glabrous, stalk elongate after anthesis. Seeds 4–8, ellipsoid, ca. 3.5 mm, with scaly wings all around. Fl. Aug–Sep, fr. Sep–Oct.  $2n = 16^*$ .

Forest margins, scrub, grassy slopes, open lands; 300–3200 m. Gansu, Guangdong, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Shaanxi, Sichuan, Taiwan, Zhejiang [Japan, Korea, E Mongolia, Russia (Far East, E Siberia)].

**3. *Cimicifuga yunnanensis*** P. K. Hsiao in W. T. Wang & P. K. Hsiao, *Acta Phytotax. Sin.*, Addit. 1: 55. 1965.

云南升麻 yun nan sheng ma

*Actaea yunnanensis* (P. K. Hsiao) J. Compton.

Rhizome robust, gray-brown, with many fibrous roots. Stems 40–90(–140) cm tall, basally sparsely pubescent, apically densely pubescent. Proximal and middle cauline leaves 3 × ternately pinnate, long petiolate; petiole 5.5–17 cm, pubescent; leaf blade triangular, 12–40 × 12–40 cm, papery; terminal leaflet ovate or broadly rhombic, 2–3.7 × 1.5–3.2 cm, undivided to 3-parted, margin irregularly serrate; lateral leaflets obliquely ovate, adaxially pubescent. Distal cauline leaves 1 or 2 × ternate. Inflorescence racemose, 5–13 cm, usually unbranched, or sometimes 1–3-branched below; rachis and pedicels gray glandular pubescent; bracts linear-lanceolate or linear, 5–14 × 1–2.5 mm. Pedicel 1–4 mm, sometimes nearly absent. Sepals 4 or 5, broadly elliptic or obovate, 3–4.5 × 2.5–3.2 mm. Petals elliptic or suborbicular, 3.7–5 × 3–4 mm, apex white, submembranous, 2-lobed, truncate. Filaments to 8 mm; anthers ovate-orbicular, 0.6–1 mm. Carpels 3–5, densely gray pubescent, shortly stalked. Follicles narrowly obovate, 1.1–1.5 cm × 3–5 mm, stalk 1–3 mm, appressed pubescent. Seeds 4 or 5, ca. 3 mm, with membranous scaly wings all around. Fl. Jul, fr. Sep.  $2n = 16^*$ .

• Forest margins, grassy slopes; 2900–4100 m. NW Yunnan.

**4. *Cimicifuga heracleifolia*** Komarov, *Trudy Imp. S.-Peterburgsk. Bot. Sada* 18: 438. 1901.

大三叶升麻 da san ye sheng ma

*Actaea heracleifolia* (Komarov) J. Compton.

Rhizome robust, blackish. Stems ca. 1 m tall or more, glabrous. Proximal cauline leaves 2 × ternate, glabrous, long petiolate; petiole to 20 cm, glabrous; leaf blade slightly triangular, to 20 cm wide; terminal leaflet obovate to obovate-elliptic, 6–12 × 4–9 cm, base rounded to subcordate, margin dentate, apex 3-lobed; lateral leaflets usually obliquely ovate, smaller than terminal ones, leathery, glabrous, or abaxially sparsely white pubescent at veins. Distal cauline leaves usually ternate. Inflorescence racemose, 2–9-branched; rachis and pedicels gray glandular pubescent and hairy; bracts subulate, ca. 1 mm. Pedicel 2–4 mm. Flowers small, ca. 5 mm in diam. Sepals yellowish white, obovate-orbicular to broadly elliptic, 3–4 × 2.5–3 mm. Petals elliptic, 2.5–4 × 1.6–2 mm, apex white, submembranous, usually entire. Filaments filarous, 3–6 mm; anthers ellipsoid, ca. 0.8 mm. Carpels 3–5, shortly stalked, glabrous. Follicles 5–6 × 3–4 mm, with slender stalk ca. 1 mm. Seeds usually 2, ca. 3 mm, with membranous scaly wings all around. Fl. Aug–Sep, fr. Sep–Oct.

Scrub, grassy slopes; sea level to 1000 m. Heilongjiang, Jilin, Liaoning, Nei Mongol [Korea, Russia (Far East)].

**5. *Cimicifuga nanchuanensis*** P. K. Hsiao in W. T. Wang & P. K. Hsiao, *Acta Phytotax. Sin.*, Addit. 1: 56. 1965.

南川升麻 nan chuan sheng ma

Rhizome unknown. Stems glabrous, smooth. Proximal and middle cauline leaves 2 or 3 × ternate, long petiolate; petiole to 22 cm, subglabrous; leaf blade triangular, to 40 cm wide, both surfaces glabrous; terminal leaflet ovate, 9–15 × 5.5–14.5 cm, slightly leathery, base cordate or subrounded, apex acuminate or acute; lateral leaflets obliquely broadly ovate, smaller than terminal one, 5–9.5 × 4–8.5 cm. Distal cauline leaves ternate. Inflorescence racemose, 4–8-branched, branches 3–14.5 cm; rachis and pedicels densely gray pubescent; bracts subulate, ca. 1 mm. Pedicel 3–4 mm. Flowers small, ca. 4 mm in diam. Sepals 4 or 5, broadly elliptic or obovate-orbicular, 3–4 × 2.5–3.2 mm. Stamnodes elliptic, ca. 3.8 × 2.2 mm, 2-lobed at apex. Stamens 4–7 mm; filaments narrowly linear; anthers yellowish, broadly ellipsoid, ca. 0.6 mm. Carpels 3–5(or 6), ca. 1.5 mm, shortly stalked, smooth, glabrous or subglabrous.

• Mountains. SE Sichuan (Nanchuan Xian).

Compton et al. (*Taxon* 47: 593–634. 1998) suggested that this taxon might belong to either *Actaea* sect. *Cimicifuga* (Wernischek) de Candolle or sect. *Dichanthera* (P. K. Hsiao) J. Compton.

**6. *Cimicifuga brachycarpa*** P. K. Hsiao in W. T. Wang & P. K. Hsiao, *Acta Phytotax. Sin.*, Addit. 1: 57. 1965.

短果升麻 duan guo sheng ma

*Actaea brachycarpa* (P. K. Hsiao) J. Compton;  
*Cimicifuga lancifoliolata* X. F. Pu & M. R. Jia.

Rhizome robust, with numerous fibrous roots. Stems ca. 1.5 m tall, basally subglabrous, apically pubescent. Proximal cauline leaves 2 × ternate, long petiolate; petiole 3–15 cm, base sheathed, subglabrous; leaf blade triangular, to 26 cm; terminal leaflet rhombic, ca. 8.5 × 6.3 cm, margin serrate, apex acute; lateral leaflets ovate-elliptic, 5.4–7.6 × 1.5–3 cm, papery, abaxially pubescent at veins, adaxially subglabrous. Distal cauline leaves shortly petiolate; petiole ca. 3 mm, usually ternate. Inflorescence racemose, 4–6-branched; rachis and pedicels densely gray-appressed glandular pubescent; bracts subulate, ca. 1 mm. Pedicel 2–3 mm. Flowers small, ca. 4 mm. Sepals white. Carpels (1 or) 2 or 3(or 4), glabrous or sparsely pubescent, stalked. Follicles suborbicular, ca. 3 × 3 mm, glabrous; persistent style ca. 1.5 mm, base with slender stalk ca. 1.5 mm, sometimes sparsely pubescent. Seeds 2 or 3, ovate-ellipsoid, 2.5–2.8 × ca. 1.5 mm, without scaly wings. Fr. Sep.

• Forests, moist open slopes; ca. 2000 m. Henan, Hubei, Shanxi, Sichuan, NE Yunnan (Zhenxiang Xian).

**7. *Cimicifuga foetida*** Linnaeus, *Syst. Nat.*, ed. 12, 2: 659. 1767.

升麻 sheng ma

Rhizome robust, blackish. Stem 1–2 m tall, base to 1.4 cm in diam., branched, pubescent. Leaves 2 or 3 × ternately pinnate. Proximal cauline leaves long petiolate; petiole to 15 cm; leaf blade triangular, to 30 cm wide; terminal leaflet rhombic, 2.5–10 × 1–7 cm, usually lobed, margin serrate; lateral leaflets obliquely ovate; becoming black or not when dried, abaxially sparsely white pubescent at veins, villous, or densely pubescent, adaxially glabrous. Distal cauline leaves shortly petiolate or sessile, small. Inflorescence racemose, to 45 cm, 3–20-branched, proximal branch to 15 cm; rachis densely gray glandular pubescent, intermixed gray pubescent; bracts subulate or linear, 1–15 × 0.5–2 mm, persistent or caducous. Pedicel ca. 2 mm. Flowers small, ca. 4 mm in diam. Sepals white or greenish white, obovate-orbicular, 3–4 mm. Petals broadly elliptic, ca. 3 mm, entire or 2-lobed or 2-parted to middle, nearly membranous. Stamens 4–7 mm; anthers yellow or yellowish white. Carpels 2–5, densely gray pubescent, sessile or very shortly stalked. Follicles oblong, 8–14 × 2.5–5 mm, appressed pubescent, stalk 2–3 mm. Seeds brown, ellipsoid, 2.5–3 mm, with scaly wings all around. Fl. Jul–Sep, fr. Aug–Oct.  $2n = 16^*, 32^*$ .

Forests, forest margins, grassy slopes, mountains; 1700–3600 m. Gansu, W Henan, Hubei, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang,

Yunnan [Bhutan, India, Kazakhstan, Mongolia, Myanmar, Russia, (Siberia), Sikkim].

This species has long been used medicinally.

- 1a. Leaf blade becoming black when dried; bracts linear, 5–15 × 0.5–2 mm, persistent ..... 7c. var. *longibracteata*
- 1b. Leaf blade not becoming black when dried; bracts subulate, ca. 1 mm, caducous.
  - 2a. Leaflets abaxially densely pubescent ..... 7d. var. *velutina*
  - 2b. Leaflets abaxially sparsely white pubescent or villous at veins.
    - 3a. Leaflets usually 2.5–4 × 1–2.5 cm, abaxially villous at veins 7b. var. *foliolosa*
    - 3b. Leaflets usually 7–10 × 4–7 cm, abaxially white pubescent at veins.
      - 4a. Petals undivided or indistinctly 2-lobed ..... 7a. var. *foetida*
      - 4b. Petals 2-parted nearly to middle ..... 7e. var. *bifida*

**7a. *Cimicifuga foetida* var. *foetida***

升麻(原变种) sheng ma (yuan bian zhong)

*Actaea cimicifuga* Linnaeus, *Sp. Pl.* 1: 504. 1753; *A. frigida* (Royle) Prantl; *A. mairei* (H. Léveillé) J. Compton; *Actinospora frigida* (Royle) Fischer & C. A. Meyer; *Cimicifuga foetida* var. *mairei* (H. Léveillé) W. T. Wang & Z. Wang; *C. frigida* Royle; *C. mairei* H. Léveillé.

Leaflets not becoming black when dried, usually 7–10 × 4–7 cm, abaxially white pubescent at veins. Bracts subulate, ca. 1 mm, caducous. Petals undivided or indistinctly 2-lobed.

Forests, forest margins, grassy slopes; 1700–2300 m. Gansu, W Henan, Hubei, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang, Yunnan [Bhutan, India, Kazakhstan, Mongolia, Myanmar, Russia (Siberia), Sikkim].

**7b. *Cimicifuga foetida* var. *foliolosa*** P. K. Hsiao in W. T. Wang & P. K. Hsiao, *Acta Phytotax. Sin.*, Addit. 1: 58. 1965.

多小叶升麻 duo xiao ye sheng ma

*Actaea mairei* (H. Léveillé) J. Compton var. *foliolosa* (P. K. Hsiao) J. Compton; *Cimicifuga mairei* H. Léveillé var. *foliolosa* (P. K. Hsiao) J. Compton & Hedderson.

Leaflets not becoming black when dried, usually 2.5–4 × 1–2.5 cm, abaxially villous at veins. Bracts subulate, ca. 1 mm, caducous.

• Forests; 3000–3600 m. W Sichuan, E Xizang.

**7c. *Cimicifuga foetida* var. *longibracteata*** P. K. Hsiao in W. T. Wang & P. K. Hsiao, *Acta Phytotax. Sin.*, Addit. 1: 58. 1965.

长苞升麻 chang bao sheng ma

Leaf blade becoming black when dried. Bracts linear, 5–15 × 0.5–2 mm, persistent.

- Grassy slopes; ca. 3400 m. NW Yunnan (Dêqên Xian).

**7d. *Cimicifuga foetida* var. *velutina*** Franchet ex Finet & Gagnepain, Bull. Soc. Bot. France 51: 521. 1904.

毛叶升麻 mao ye sheng ma

Leaflets not becoming black when dried, abaxially densely pubescent. Bracts subulate, ca. 1 mm, caducous.

- Mountains; 3000–3200 m. Sichuan, NW Yunnan.

**7e. *Cimicifuga foetida* var. *bifida*** W. T. Wang & P. K. Hsiao, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 8: 16. 1980.

两裂升麻 liang lie sheng ma

Leaflets not becoming black when dried, usually 7–10 × 4–7 cm, abaxially white pubescent. Bracts subulate, ca. 1 mm, caducous. Petals 2-parted nearly to middle.

- About 3300 m. Xizang (Mainling Xian).

**8. *Cimicifuga dahurica*** (Turczaninow ex Fischer & C. A. Meyer) Maximowicz, Prim. Fl. Amur. 28. 1859.

兴安升麻 xing an sheng ma

*Actinospora dahurica* Turczaninow ex Fischer & C. A. Meyer, Index Sem. Hort. Petrop. 1: 21. 1835; *Actaea dahurica* (Turczaninow ex Fischer & C. A. Meyer) Turczaninow ex Fischer & C. A. Meyer; *A. pterosperma* Turczaninow ex Fischer & C. A. Meyer.

Rhizome robust, blackish. Stems to 1 m tall, glabrous or slightly pubescent. Proximal cauline leaves 2 or 3 × ternate, long petiolate; petiole to 17 cm; leaf blade triangular, to 22 cm wide; terminal leaflet broadly rhombic, 5–10 × 3.5–9 cm, 3-parted, margin serrate; lateral leaflets long elliptic-ovate, slightly oblique, abaxially sparsely pubescent at veins, adaxially glabrous. Distal cauline leaves similar to proximal cauline ones, but smaller, shortly petiolate. Inflorescence compound racemose, 7–20-branched; rachis and pedicels gray glandular pubescent; bracts subulate, apex acuminate. Pedicel 2–8 mm. Flowers unisexual. Sepals broadly elliptic to broadly obovate, 3–3.5 mm. Petals forked, 2-parted, with 2 sterile anthers. Filaments filarious, 4–5 mm; anthers ca. 1 mm. Carpels 4–7, sparsely gray pubescent or subglabrous, sessile or shortly stalked. Follicles 7–8 × ca. 4 mm, appressed white pubescent, apex truncate, stalks 7–8 mm. Seeds 3 or 4, brown, ellipsoid, ca. 3 mm, with membranous scaly wings all around. Fl. Jul–Aug, fr. Aug–Sep.  $2n = 16$ .

In scrub, forests, grasslands; 300–1200 m. Hebei, Heilongjiang, Henan, Jilin, Liaoning, Nei Mongol, Shaanxi, Shanxi [Korea, Mongolia, Russia (Far East and E Siberia)].

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