

3. ANISODUS Link in Sprengel, Syst. Veg. 1: 699. 1825.

山萇蓉属 shan lang dang shu

Whitleya Sweet.

Subshrubs or perennial herbs, glabrous or pubescent with simple and dendritic hairs. Roots stout, fleshy. Stems erect, obtusely angular, di- or trichotomously branched. Leaves solitary or paired, petiolate, simple, entire or coarsely dentate. Inflorescences solitary flowers in leaf axils. Flowers mostly nodding, somewhat actinomorphic or calyx 2-lipped. Calyx mostly funnellform, evidently 10-veined, 4- or 5-lobed; lobes unequal, variable in shape and length. Corolla campanulate, lobes quincuncial, included or exserted from calyx. Stamens shorter than corolla, inserted near base of corolla tube; filaments usually glabrous at base; anthers dehiscing longitudinally. Ovary conical, 2-locular, with a dislike nectary. Fruiting pedicel thickened or elongated. Fruiting calyx becoming enlarged, turbinate or campanulate, sometimes elongated beyond fruit, with main veins prominent and pleated. Fruit a globose or ovoid capsule, circumscissile above middle or dehiscent at apex. Seeds numerous, compressed.

Four species: China, Bhutan, India (Sikkim), Nepal; all four in China.

- 1a. Calyx pubescent, with wavy veins; plant pubescent overall, especially on abaxial surface of leaf blade 1. *A. luridus*
- 1b. Calyx glabrescent, with straight veins; plant usually glabrescent.
 - 2a. Calyx strongly 2-lipped, upper lip with short, truncate teeth, veins obscure; corolla indistinctly lobed 3. *A. carniolicoides*
 - 2b. Calyx not 2-lipped, with somewhat unequal lobes, veins prominent; corolla distinctly lobed.
 - 3a. Leaves ovate or elliptic, mostly entire; calyx lobes narrowly deltate, 2 or 3 of them much longer; fruiting calyx less than 4.5 cm; fruit nodding 2. *A. acutangulus*
 - 3b. Leaves broadly lanceolate, oblong, or narrowly ovate, ragged-dentate; calyx lobes broadly deltate, 1 or 2 of them longer; fruiting calyx more than 5 cm; fruit erect 4. *A. tanguticus*

1. *Anisodus luridus* Link in Sprengel, Syst. Veg. 1: 699. 1825.

铃铛子 ling dang zi

Anisodus fischerianus Pascher; *A. luridus* var. *fischerianus* (Pascher) C. Y. Wu & C. Chen; *A. mairei* (H. Léveillé) C. Y. Wu & C. Chen; *A. stramonifolius* (Wallich) G. Don; *Nicandra anomala* Link & Otto; *Physalis stramonifolia* Wallich; *Scopolia anomala* (Link & Otto) Airy-Shaw; *S. lurida* (Link) Dunal; *S. mairei* H. Léveillé; *S. stramonifolia* (Wallich) Shrestha; *Whitleya stramonifolia* (Wallich) Sweet. For a discussion of the nomenclature and additional synonymy of this species, see D'Arcy & Zhang, *Novon* 2: 125. 1992.

Plants 5–120 cm tall, sometimes yellow-brown tomentose. Petiole 2–4 cm; leaf blade ovate or elliptic, 7–15(–22) × 4–8.5(–11) cm, papery, puberulent especially along veins, more so abaxially, base obtuse or slightly decurrent, margin entire or sinuate, apex acute. Flowers nodding. Pedicel 1–5 cm. Calyx campanulate to urceolate, 3–3.5 cm; ribs prominent, wavy, hirsute especially at base, apex sinuate or lobed; lobes short, sometimes unequal. Corolla pale yellow-green, ca. 3.5 cm, slightly exserted from calyx, pubescent adaxially and proximal to middle of tube abaxially, sometimes spotted adaxially; lobes slightly purplish, rounded. Filaments pubescent; anthers ca. 5 mm. Fruiting pedicel 2–2.5 cm, arching. Fruiting calyx twice as long as and enclosing capsule, ca. 5 cm; lobes indistinct, sometimes glabrescent. Fl. May–Aug, fr. Oct–Nov.

Grassy slopes and by streams in mountains; 3200–4200 m. Sichuan (Muli Xian), SE Xizang, NW Yunnan [Bhutan, India (Sikkim), Nepal].

The roots and seeds are used medicinally for alleviating pain and spasms.

Anisodus fischerianus is placed into synonymy here based on the original description of the species, which does not include

diagnostic features. Neither we nor the authors of the FRPS treatment, who recognized it as *A. luridus* var. *fischerianus*, have seen type material.

2. *Anisodus acutangulus* C. Y. Wu & C. Chen, *Acta Phytotax. Sin.* 15(2): 62. 1977.

三分子 san fen zi

Plants 1–1.5 m tall, glabrous or glabrescent. Roots stout, yellow-brown, pale yellow within. Petiole 0.5–1(–1.5) cm; leaf blade ovate or elliptic, 8–15 × 3–6 cm, papery or submembranous, base cuneate or slightly decurrent, margin entire, sinuate, or sometimes 1–3-toothed, apex acuminate. Pedicel ca. 2 cm. Calyx 3–4.5 cm, with 10 erect veins, glabrous or sparsely pubescent abaxially, irregularly 4- or 5-lobed; lobes narrowly deltate, 2 (or 3) of which are longer and larger, 2–2.5 cm. Corolla pale yellow-green, sometimes purplish; lobes purplish, similar to calyx in shape, barely exceeding calyx to about twice as long, 2.5–3(–4) cm, pubescent, with a purple spot at base of tube abaxially. Stamens included, about half as long as corolla; anthers 5–5.6 mm. Fruiting pedicel to 7 cm, curved. Fruiting calyx 3.5–4.5 cm. Capsule nodding.

- Grassy slopes, waste lands; 2800–3100 m. Sichuan, Yunnan.

- 1a. Calyx lobes and sinuses acute; leaves mostly entire; flowering calyx more than 3 cm, glabrous; corolla lobes pale yellow-green, long exserted, more than 2.5 cm 2a. var. *acutangulus*
- 1b. Calyx lobes short acute; leaves dentate; flowering calyx less than 2 cm, sometimes sparsely pubescent abaxially; corolla lobes purplish, barely exserted, less than 2.5 cm 2b. var. *breviflorus*

2a. *Anisodus acutangulus* var. *acutangulus*

三分子 san fen zi

Leaf blade entire or sinuate. Corolla pale yellow-green, sometimes purplish, similar to calyx in shape, about twice as long. Fruiting pedicel 5–7 cm. Fl. Jun-Aug, fr. Sep-Nov.

• Grassy slopes, wastelands; 2800–3100 m. SW Sichuan, NW Yunnan.

The roots, which are extremely toxic, are used medicinally to ease pain and for stomachache.

2b. *Anisodus acutangulus* var. *breviflorus* C. Y. Wu & C. Chen, *Acta Phytotax. Sin.* 15(2): 63. 1977.

三分七 san fen qi

Leaf blade with 1(–3) pairs of coarse teeth. Corolla mostly included, usually only barely exceeding calyx, lobes purplish. Fruiting pedicel to 5 cm. Fl. Jun-Jul, fr. Sep-Nov.

• Grassy woods, near edges of forests, wastelands, by stones near fields; 2900–3100 m. SW Sichuan, NW Yunnan.

The roots have similar but weaker medical effects than var. *acutangulus*.

3. *Anisodus carniolicoides* (C. Y. Wu & C. Chen) D'Arcy & Z. Y. Zhang, *Novon* 2: 126. 1992.

赛葛蓉 sai lang dang

Scopolia carniolicoides C. Y. Wu & C. Chen, *Acta Phytotax. Sin.* 15(2): 59. 1977; *S. carniolicoides* var. *dentata* C. Y. Wu & C. Chen.

Rhizomes yellow. Stems sometimes pale purple, erect. Petiole 1.2–3(–5) cm; leaf blade elliptic to ovate, 6–18(–21)×3–7.5(–12) cm, papery, glabrous, base cuneate or slightly decurrent, margin entire, sinuate, or irregularly dentate, apex acute or acuminate. Pedicel stout, 1.5–4 cm. Calyx campanulate, 2–3×1.5–2.5 cm, short lobed, becoming 1- or 2-parted and irregular during corolla egress. Corolla pale yellow-green, ca. 4.5 cm; lobes purple striate abaxially, indistinct, short mucronate. Anthers 6–7 mm. Disc pale yellow. Fruiting pedicel ca. 4 cm. Fruiting calyx ca. 3 cm, leathery. Fruit subglobose, ca. 1.5 cm in diam. Fl. May-Jul, fr. Sep-Oct.

• Grassy slopes, thickets at forest edges, rock crevices; 3000–4500 m. SE Qinghai, Sichuan, NW Yunnan.

The rhizomes are bitter and poisonous and are used medicinally for treating injury, bleeding wounds, and pain of rheumatism and arthritis.

4. *Anisodus tanguticus* (Maximowicz) Pascher, *Repert. Spec. Nov. Regni Veg.* 7: 167. 1909.

山葛蓉 shan lang dang

Scopolia tangutica Maximowicz, *Bull. Acad. Imp. Sci. Saint Pétersbourg* 27: 508. 1882; *Anisodus tanguticus* var. *viridulus* C. Y. Wu & C. Chen.

Herbs perennial, 40–80(–100) cm tall. Roots stout. Stems glabrous or pubescent. Petiole 1–3.5 cm; leaf blade lanceolate, oblong, or ovate, 8–20×2.5–9 cm, thick papery, glabrous or rarely pubescent, entire or coarsely 1- or 2-toothed. Flowers nodding or erect; pedicel 1.5–8(–11) cm, glabrous or pubescent. Calyx campanulate to nearly funnelform, 2.5–4 cm; lobes broadly deltate, apex acute or obtuse, somewhat unequal, glabrescent. Corolla purple or dark-purple, sometimes pale yellow-green, resembling calyx in shape, 2.5–3.8 cm, only limb exerted; tube pubescent adaxially, especially at base; lobes half rounded. Stamens less than half as long as corolla; filaments ca. 0.8 mm; anthers

oblong, 5–6 mm. Style 1.2 cm. Fruiting pedicel 6–8 cm, erect. Fruiting calyx ca. 6–7.5 cm, with prominent ribs and netted veins. Capsule ca. 2 cm in diam. Fl. May-Jun, fr. Jul-Aug.

Sunny grassy slopes; 2000–4400 m. Gansu, Qinghai, NW and SW Sichuan, E Xizang, NW Yunnan [Nepal].

The roots are used medicinally for relieving pain.

