

11. THLADIANTHA Bunge, Enum. Pl. Chin. Bor. 29. 1833.

赤廔属 *chi bao shu*

Lu Anmin (路安民 *Lu An-ming*); Charles Jeffrey

Herbs, perennial, climbing, scandent, or prostrate. Roots usually tuberous. Stems herbaceous, scabrous. Tendrils simple or 2-fid. Leaves mostly simple, vary rarely pedately 3–7-foliolate; leaf blade cordate, margin dentate. Plants dioecious. Male flowers in cymes-racemes or rarely solitary; calyx tube broadly campanulate or cupular; segments 5, linear, lanceolate, ovate-lanceolate, or oblong, 1–3-veined; corolla yellow, campanulate, 5-partite; segments oblong, broadly ovate, or obovate, usually 5–7-veined, entire; stamens 5, inserted on calyx tube, free, often 4 in pairs, other 1 free; filaments short; anthers oblong or ovoid, all 1-celled; anther cell erect; rudimentary ovary glandlike. Female flowers solitary or 2- or 3-fascicled on a short peduncle; calyx and corolla as in male flowers; ovary ovoid, oblong, or fusiform, smooth or verrucose; ovules numerous, horizontal; style 3-fid; stigmas 3, 2-lobed, reniform. Fruit fleshy, indehiscent, smooth or verrucose, many ribbed or not ribbed. Seeds numerous, horizontal.

Twenty-three species: Bhutan, China, India, Indonesia, Japan (introduced), Korea, Laos, Myanmar, Nepal, Thailand, Vietnam; 23 species (19 endemic) in China.

- 1a. Bracts in male flowers flabelliform, dentate.
 - 2a. Calyx segments entire, 0.6–3 mm wide 1. *T. cordifolia*
 - 2b. Calyx segments dentate or irregularly lobed, (3–)4–11 mm wide.
 - 3a. Calyx segments (3–)4–6 mm wide, with 1–3 triangular lobes 2. *T. grandisepala*
 - 3b. Calyx segments to 11 mm wide, flabelliform, margin irregularly lobed 3. *T. medogensis*
- 1b. Male flowers without flabelliform bracts.
 - 4a. Ovary and fruit scaly or verrucose.
 - 5a. Leaf blade ovate-lanceolate or narrowly ovate-triangular; ovary and fruit verrucose 23. *T. longifolia*
 - 5b. Leaf blade ovate-cordate; fruit with thick scales.
 - 6a. Ovary and fruit ovoid-globose, apex with a long rostrum, scales at base of fruit less than 5 mm, not adnate to pedicel 21. *T. pustulata*
 - 6b. Ovary and fruit ovoid-oblong, apex without a rostrum, scales at base of fruit to 10 mm, adnate to pedicel 22. *T. henryi*
 - 4b. Ovary and fruit not scaly or verrucose.
 - 7a. Leaves palmately deeply 5-lobed 20. *T. palmatipartita*
 - 7b. Leaves not palmately deeply 5-lobed.
 - 8a. Male flowers congested at apex of rachis into pseudocapitulum.
 - 9a. Calyx segments lanceolate, apex acute, 1-veined 18. *T. capitata*
 - 9b. Calyx segments linear, apex obtuse, 3-veined 19. *T. davidii*
 - 8b. Male flowers in cyme-panicle, panicle, raceme, or rarely solitary, but not capitellate.
 - 10a. Plants sparsely hairy or subglabrous.
 - 11a. Calyx segments 1-veined.
 - 12a. Basal lateral vein along base of leaf blade; calyx segments linear, over 9 mm 13. *T. oliveri*
 - 12b. Basal lateral vein not along base of leaf blade; calyx segments triangular-lanceolate, 4–5 mm 14. *T. montana*
 - 11b. Calyx segments 3-veined.
 - 13a. Tendrils 2-fid, leaves not lobed or lobed 17. *T. dentata*
 - 13b. Tendrils simple, leaves not lobed.
 - 14a. Leaf blade broadly ovate-cordate; tendrils filiform; pedicel in male flowers 1.2–2.5 cm; fruit with a long beak 15. *T. maculata*
 - 14b. Leaf blade narrowly ovate or narrowly ovate-lanceolate; tendrils robust; pedicel 0.5–1 cm; fruit without beak 16. *T. punctata*
 - 10b. Plants with dense multicellular setae, very rarely subglabrous.
 - 15a. Leaves simple, unlobed or margin lobed or serrate, or pedately 3–5-foliolate 4. *T. hookeri*
 - 15b. Leaves unlobed, rarely irregularly lobed.
 - 16a. Tendrils simple.
 - 17a. Male flowers solitary or in a short raceme, bracts leaflike 5. *T. dubia*
 - 17b. Male flowers without bracts.
 - 18a. Petiole less than 1.5 cm, leaf blade lanceolate or narrowly ovate 6. *T. sessilifolia*
 - 18b. Petiole over 2 cm, leaf blade ovate-cordate 7. *T. villosula*

- 19a. Male flowers dimorphic, solitary, and in raceme with (2 or)3(–5) flowers in axil of same leaf 8. *T. dimorphantha*
- 19b. Male flowers in panicle or raceme.
- 20a. Stem and leaves with pale yellow multicellular setae or very rarely subglabrous, sinus at base of leaf closed; fruit orange-red when mature 9. *T. nudiflora*
- 20b. Stem and leaves with gray-white multicellular setae, sinus at base of leaf open; fruit whitish yellow when mature.
- 21a. Calyx segments broadly lanceolate or obovate-oblong, 10–15 mm 10. *T. longisepala*
- 21b. Calyx segments triangular-lanceolate, less than 10 mm.
- 22a. Ovary and fruit with dense yellow-brown spiniform setae; seeds 6.5–7 mm, sparsely irregularly verrucose on surface ... 11. *T. setispina*
- 22b. Ovary and fruit with long setae; seeds 4.5–5 mm, not verrucose on surface 12. *T. lijiangensis*

1. *Thladiantha cordifolia* (Blume) Cogniaux in A. Candolle & C. Candolle, Monogr. Phan. 3: 424. 1881.

大苞赤堇 da bao chi bao

Luffa cordifolia Blume, Bijdr. 929. 1826; *Gymnopetalum piperifolium* Miquel; *Thladiantha calcarata* C. B. Clarke; *T. calcarata* var. *subglabra* Cogniaux; *T. calcarata* var. *tonkinensis* Cogniaux; *T. cordifolia* var. *tomentosa* A. M. Lu & Zhi Y. Zhang; *T. cordifolia* var. *tonkinensis* (Cogniaux) A. M. Lu & Zhi Y. Zhang; *T. globicarpa* A. M. Lu & Zhi Y. Zhang; *T. omeiensis* T. Y. Zhu; *T. tonkinensis* Gagnepain; *Trichosanthes javanica* Miquel.

Vines, climbing, herbaceous, pubescent. Stems much branched, robust, angular-sulcate. Petiole slender, 4–10(–12) cm; leaf blade ovate-cordate, 8–15 × 6–11 cm, membranous or papery, adaxially scabrous, pubescent, or with setae on an enlarged base, veins densely pubescent, both surfaces densely pale yellow pubescent, basal vein along margin of base of blade, base cordate, margin irregularly dentate, apex acuminate or shortly so; sinus at base often open, sometimes closed, 1–3 cm deep, 0.5–2 cm wide. Tendrils simple, pubescent at first, glabrescent. Male flowers: 3 to several in dense short raceme; peduncle robust, 4–15 cm, pubescent; bracts imbricate, flabelliform, 1.5–2 cm, both surfaces pubescent; pedicels slender, ca. 5 mm; calyx tube campanulate, 5–6 mm, 5-partite; segments linear, ca. 10 × 1 mm, 1-veined, apex caudate-acuminate; corolla segments ovate or elliptic, ca. 17 × 7 mm, apex shortly acuminate or acute; filaments ca. 4 mm; rudimentary ovary semiglobose. Female flowers solitary; calyx and corolla as in male flowers; ovary oblong, base obtuse, pubescent; styles 3-fid; stigmas enlarged, reniform, 2-lobed. Fruit oblong, 3–5 × 2–3 cm, with scabrous rind, slightly pubescent, with 10 longitudinal striae, obtuse at both ends. Seeds broadly ovate, 4–5 × 3–3.5 mm, ca. 2 mm thick, reticulate. Fl. and fr. May–Nov.

Streamsides, forests; 800–2600 m. Guangdong, Guangxi, Sichuan, Yunnan [India, Indonesia, Laos, Myanmar, Nepal, Thailand, Vietnam].

De Wilde and Duyfjes (Blumea 51: 513–514. 2006) considered *Thladiantha calcarata* var. *tonkinensis* (as *T. tonkinensis* Gagnepain) and *T. globicarpa* to be species distinct from *T. cordifolia*, differing in their smaller, non-fenestrate fruit and the latter from the former by its narrower calyx segments.

2. *Thladiantha grandisepala* A. M. Lu & Zhi Y. Zhang, Bull. Bot. Res., Harbin 1(1–2): 67. 1981.

大萼赤堇 da e chi bao

Vines, climbing, herbaceous. Stems and branches slender, angular-sulcate, at first densely pubescent, glabrescent. Petiole 4–8 cm; leaf blade narrowly ovate-cordate, 10–16 × 6–11 cm, membranous, adaxially scabrous, with setae on an enlarged base, veins densely pubescent, basal vein along margin of base of leaf, base cordate, margin dentate, apex shortly acuminate; sinus at base open, semicircular, 1–2 cm deep, 0.5–1 cm wide. Male flowers: 5–9 in pedunculate raceme; bracts flabelliform, 12–15 × 15–17 mm, both surfaces pubescent, margin irregularly dentate; pedicels slender, 5–10 mm, pubescent; calyx tube campanulate, ca. 4 mm; segments broadly lanceolate to narrowly ovate, slightly irregular, ca. 1.5 cm × 4–6 mm, distinctly 3-veined, apex usually irregularly 2- or 3-lobed; corolla segments narrowly oblong, ca. 2 × 1 cm, apex shortly acuminate; filaments pubescent; rudimentary ovary semiglobose. Female flowers solitary; pedicels 2–5 cm, pubescent; calyx segments broadly lanceolate or narrowly ovate, to 18 × ca. 6 mm, 3-veined, margin often 2- or 3-lobed, apex acuminate; corolla segments ca. 3 × 1.4 cm; ovary narrowly oblong, 15–18 × 4–6 mm, densely yellow villous, base narrow, apex subtruncate; style filiform, 3-fid; stigma enlarged, 2-lobed. Fruiting pedicel robust, 3–5 cm, subglabrous; fruit elliptic, 2.5–3 × ca. 1.5 cm, pubescent, obtuse at both ends. Fl. Jun–Aug, fr. Aug–Oct.

• Mountain slopes, forests; 2100–2400 m. Yunnan.

3. *Thladiantha medogensis* A. M. Lu & J. Q. Li, Acta Bot. Yunnan. 14: 133. 1992.

墨脱赤堇 mo tuo chi bao

Herbs, scandent. Stem slender, angular-sulcate, sparsely puberulent. Petiole 3.5–5 cm, pubescent and sparsely setose; leaf blade ovate-cordate, 8–11 × 5–5.6 cm, papery or submembranous, abaxially sparsely pubescent and setose, adaxially densely setose at first, ultimately punctate-scabrous, basal lateral veins along margin of sinus, base emarginate, margin callose-dentate, apex shortly acuminate. Tendrils simple, pubescent. Male flowers in a raceme; peduncle robust, 8–24 cm; bracts ca. 2 × 2.2 cm, margin irregularly 5- or 6-obtusely dentate; pedicel slender, 7–10 mm, sparsely pubescent; calyx tube campanulate, ca. 2.5 × 3.5 mm; segments ca. 10 × 11 mm, 3-

veined, margin irregularly 3–5-dentate; corolla segments narrowly oblong, 8–9 × 3–3.5 mm, apex acuminate; filaments ca. 1.5 mm, sparsely pubescent; anthers oblong, ca. 3 mm; rudimentary ovary subglobose, ca. 2 mm in diam. Fruit solitary, subcylindric, ca. 3.2 × 2 cm, longitudinally striate, rounded at apex and base.

- About 1800 m. SE Xizang (Médog).

4. *Thladiantha hookeri* C. B. Clarke in J. D. Hooker, Fl. Brit. India 2: 631. 1879.

异叶赤虬 yi ye chi bao

Hemsleya tonkinensis Cogniaux; *H. trifoliolata* Cogniaux; *H. yunnanensis* Cogniaux; *Thladiantha digitata* H. Léveillé; *T. heptadactyla* Cogniaux; *T. hookeri* var. *heptadactyla* (Cogniaux) A. M. Lu & Zhi Y. Zhang; *T. hookeri* var. *palmatifolia* Chakravarty; *T. hookeri* var. *pentadactyla* (Cogniaux) A. M. Lu & Zhi Y. Zhang; *T. hookeri* f. *quinquefoliata* Chakravarty; *T. hookeri* f. *trifoliolata* (Cogniaux) Chakravarty; *T. pentadactyla* Cogniaux; *T. trifoliolata* (Cogniaux) Merrill.

Vines, climbing, herbaceous. Tuber obovate-spheroid. Stems 2–4(–10) m, to 10 mm in diam., much branched, subglabrous. Petiole 3–6 cm, glabrous or puberulent; leaf blade pedately 3–7-foliolate or undivided; leaflets oblong-lanceolate, broadly lanceolate, lanceolate, or linear-lanceolate, median leaflet 6–15 × 1–3 cm, membranous, abaxially subglabrous, adaxially scabrous, margin dentate, apex acuminate. Tendrils filiform, simple, smooth. Male flowers in raceme or solitary; rachis filiform, 2–4 cm, glabrous, ebracteate; pedicel of solitary flowers to 2.5 cm; calyx tube broadly campanulate, 3–4 × 6–7 mm, sparsely pubescent; segments erect, narrowly triangular, ca. 4 × 1.5 mm, 3-veined; corolla segments ovate, 10–12 × ca. 5 mm; filaments 2–3 mm, glabrous; anthers oblong, ca. 2 mm. Female flowers solitary; pedicel filiform, 2–4 cm, at first puberulent, ultimately glabrous; calyx and corolla as in male flowers; calyx segments ca. 10 mm; corolla segments ca. 2 cm; ovary fusiform, 1–2 cm × 2–3 mm, densely yellow-brown pubescent, attenuate at both ends; style ca. 4 mm, 2-fid; stigmas enlarged, ca. 3 mm. Fruit oblong, 4–6 × 2–3 cm, smooth, rounded at both ends. Seeds broadly ovate, 6–7 × ca. 5 mm, smooth, base obtuse-rounded. Fl. and fr. Apr–Oct.

Forest margins on mountain slopes; 1200–1800 m. Yunnan [Bhutan, NE India, Laos, Myanmar, Thailand, Vietnam].

5. *Thladiantha dubia* Bunge, Enum. Pl. Chin. Bor. 29. 1833.

赤虬 chi bao

Plants climbing, herbaceous, pale yellow pubescent-hirsute. Roots tuberous. Stems robust, angular-sulcate. Petiole robust, 2–6 cm; leaf blade broadly ovate-cordate, 5–8 × 4–9 cm, both surfaces scabrous, hirsute on veins, basal lateral veins along margin of blade base, base cordate, margin irregularly dentate, apex acute or shortly acuminate; sinus deep, suborbicular or semicircular, 1–1.5 cm deep, 1.5–3 cm wide. Tendrils filiform, simple. Male flowers solitary or several congested on short rachis into pseudoraceme; pedicel filiform, 1.5–3.5 cm, pubescent; calyx tube very short, subrotate, 3–4 × 7–8 mm; segments reflexed, lanceolate, 12–13 × 2–3 mm; stamens 4 con-

nected in pairs and 1 free, 2–2.5 mm, puberulent; anthers ovoid, ca. 2 mm; rudimentary ovary semiglobose. Female flowers solitary; pedicels slender, 1–2 cm, pubescent; calyx and corolla as in male flowers; staminodes 5; ovary oblong, 5–8 mm, densely pale yellow pubescent; style 3-fid; stigma enlarged, reniform, 2-lobed. Fruit orange-yellow, ovoid-oblong, 4–5 cm × ca. 28 mm, pubescent, with 10 longitudinal striae, base slightly attenuate. Seeds black, ovate, 4–4.3 × 2.5–3 mm, ca. 1.5 mm thick, smooth. Fl. Jun–Aug, fr. Aug–Oct.

Forest margins, valleys; 300–1800 m. Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Ningxia, Shaanxi, Shandong, Shanxi, N Sichuan [Korea; introduced in Japan].

The fruit and roots are used medicinally.

6. *Thladiantha sessilifolia* Handel-Mazzetti, Symb. Sin. 7: 1061. 1936.

短柄赤虬 duan bing chi bao

Vines, herbaceous. Roots tuberous. Stem and branches slender, at first sparsely puberulent, glabrescent. Petiole very short, 5–15(–40) mm, pubescent or subglabrous; leaf blade lanceolate or ovate-lanceolate, 8–16 × 2–4.5 cm, papery, abaxially densely pubescent, adaxially scabrous, subglabrous, base cordate, margin sparsely dentate, apex acuminate; sinus closed, basal lateral veins not along blade base. Tendrils filiform, usually simple. Male flowers 2–5 in pedunculate short raceme, sometimes solitary; bract ovate, ca. 2 mm; pedicels slender, 5–10 mm, pubescent or subglabrous; calyx tube campanulate, ca. 3 × 5 mm, sparsely pubescent; segments lanceolate, ca. 5 × 1.5 mm, 3-veined, apex subulate-acuminate; corolla segments ovate, ca. 15 × 7–8 mm, often 5-veined, apex acuminate; stamens inserted on limb of calyx tube; filaments ca. 3 mm; anthers elliptic, 2–3 mm; rudimentary ovary yellow, semiglobose. Female flowers solitary; pedicel slender, 2–3 cm, puberulent or subglabrous; calyx and corolla as in male flowers; ovary oblong, 15–22 × 5–10 mm, densely yellow-brown villous, apex attenuate; style slender, 3-fid; stigma enlarged, reniform, 2-lobed; staminodes 2–3 mm. Fruit ovoid-oblong. Fl. May–Aug, fr. Aug–Nov.

• Thickets or forests on mountain slopes, wetlands on ditch sides. SW Sichuan, Yunnan.

The tuberous roots are used medicinally.

- 1a. Petiole very short, 5–15 mm, pubescent 6a. var. *sessilifolia*
 1b. Petiole longer, 20–40 mm, subglabrous 6b. var. *longipes*

6a. *Thladiantha sessilifolia* var. *sessilifolia*

短柄赤虬(原变种) duan bing chi bao (yuan bian zhong)

Petiole very short, 5–15 mm, pubescent; leaf blade lanceolate or ovate-lanceolate. Tendrils simple.

• Thickets on mountain slopes, wetlands on ditch sides. SW Sichuan.

The tuberous roots are used medicinally.

6b. *Thladiantha sessilifolia* var. *longipes* A. M. Lu & Zhi Y.

Zhang, Bull. Bot. Res., Harbin 1(1–2): 77. 1981.

沧源赤虬 *cang yuan chi bao*

Petiole longer, 20–40 mm, subglabrous. Tendrils simple or 2-fid.

- Forests; ca. 1000 m. Yunnan.

7. *Thladiantha villosula* Cogniaux in Engler, Pflanzenr. 66(IV. 275. I): 44. 1916.

长毛赤虬 *chang mao chi bao*

Thladiantha villosula var. *nigrita* A. M. Lu & Zhi Y. Zhang.

Vines, climbing, herbaceous, densely glandular-villous and sparsely multicellular-setose. Stem much branched; branches slender. Petiole slender, 3–6 cm; leaf blade adaxially dark green, ovate-cordate, broadly ovate-cordate, or suborbicular, 6–12 × 5–10 cm, membranous, abaxially pubescent, basal lateral veins along margin of blade base, base cordate, margin dentate, apex shortly acuminate; sinus rounded, 1–2 cm deep, 1–1.5 cm wide. Tendrils filiform, simple. Male flowers usually 2–7 in a raceme; peduncle 1–3 cm, usually bearing leaflike bract; bract 1–1.5 × ca. 1 cm, densely pubescent, margin dentate, apex acuminate; pedicel 1–2.5 cm; calyx tube broadly campanulate; segments yellow-green, narrowly lanceolate, 4–6 × ca. 1.5 mm, 3-veined; corolla segments ovate or narrowly ovate, 12–15 × 6–8 mm, 5-veined, apex obtuse; stamens 4 connected in pairs and 1 free; filaments filiform, 2–3 mm; anthers oblong, ca. 2 mm; rudimentary ovary semiglobose. Female flowers solitary; pedicels slightly robust; calyx segments narrowly lanceolate, 5–6 × ca. 1 mm, 3-veined, apex acuminate; corolla segments narrowly ovate, ca. 20 × 15 mm, 5-veined, apex acuminate; staminodes glandular; ovary narrowly oblong, 15–18 × 3–4 mm, densely pale yellow glandular villous; style stout, 3-fid; stigma enlarged, reniform, 2-lobed. Fruiting pedicel stout, 2–3 cm; fruit red-brown, oblong, to 7 × ca. 3.5 cm, both surfaces reticulate, base obtuse, apex attenuate. Fl. and fr. summer.

- Ditch sides in forests or thickets; 2000–2800 m. Gansu, Guizhou, S Henan, W Hubei, S Shaanxi, Sichuan.

8. *Thladiantha dimorphantha* Handel-Mazzetti, Oesterr. Bot. Z. 83: 235. 1934.

山西赤虬 *shan xi chi bao*

Vines, climbing, herbaceous. Stem and branches angular-sulcate, pubescent and white setose at first, later glabrescent. Petiole 4–8 cm; leaf blade broadly ovate-cordate, 6–12 × 4–10 cm, undivided, abaxially pubescent, adaxially scabrous, densely setose, margin dentate, apex shortly acuminate or acute; basal sinus open, semicircular, 5–15 mm deep, 10–25 mm wide. Tendrils filiform, simple or 2-fid. Male flowers dimorphic, solitary one larger, smaller ones in a raceme; pedicel slender, 10–18 mm, pubescent; calyx pubescent; tube broadly campanulate, 3–4 mm; segments lanceolate, 4–6 mm, 3-veined, apex acuminate; corolla segments ovate, 10–12 × 5–6 mm, apex acute; filaments 2–2.5 mm; anthers elliptic, 3–3.5 mm. Female flowers solitary or binary; pedicels 5–10 mm; calyx and corolla as in male flowers; corolla segments obovate, 20–25 × ca. 10 mm,

apex slightly obtuse; staminodes 5, sparsely puberulent, apex slightly enlarged; ovary fusiform, densely villous; style 3-fid, ca. 2 mm; stigma enlarged, 2-lobed.

- Mountain slopes, roadsides; 1800–2400 m. E Shaanxi, S Shaanxi.

9. *Thladiantha nudiflora* Hemsley, J. Linn. Soc., Bot. 23: 316. 1887.

南赤虬 *nan chi bao*

Plants densely pubescent-hispid. Roots tuberous. Stems herbaceous, angular-sulcate. Petiole stout, 3–10 cm; leaf blade ovate-cordate, broadly ovate-cordate, or suborbicular-cordate, 5–15 × 4–12 cm, abaxially densely pale yellow pubescent, adaxially densely setose, basal lateral veins along blade base, margin serrate, apex acuminate or acute; basal sinus open or sometimes closed, 2–2.5 cm deep, 1–2 cm wide. Tendrils densely hispid, 2-fid. Male raceme many flowered; peduncle filiform, 4–8 cm, densely pubescent; pedicels filiform, 1–1.5 cm; calyx densely villous; tube broadly campanulate, 5–6 mm in diam.; segments ovate-lanceolate, 5–6 × ca. 2.5 mm, 3-veined, apex acute; corolla segments ovate-oblong, 12–16 × 6–7 mm, 5-veined, apex acute or obtuse; filaments puberulent, ca. 4 mm; anthers ovoid-oblong, ca. 2.5 mm. Female flowers solitary; pedicels slender, 1–2 cm, villous; calyx and corolla as in male flowers; ovary narrowly oblong, 12–15 × 4–5 mm, densely villous-hispid, base obtuse-rounded, apex attenuate; style 3-fid; stigma enlarged, reniform, 2-lobed; staminodes 5, ca. 1.5 mm. Fruiting pedicel robust, 2.5–5.5 cm; fruit red or red-brown when mature, oblong, 4–5 × 3–3.5 cm, glabrescent, apex obtuse. Seeds ovate or broadly so, ca. 5 × 3.5–4 mm, 1–1.5 mm thick, reticulate, base rounded, apex acute. Fl. May–Aug, fr. Aug–Nov.

Forest margins on mountain slopes. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Zhejiang [Philippines].

- 1a. Male flowers ebracteate 9a. var. *nudiflora*
- 1b. Male flowers with leaflike bracts 9b. var. *bracteata*

9a. *Thladiantha nudiflora* var. *nudiflora*

南赤虬(原变种) *nan chi bao* (*yuan bian zhong*)

Cucumis courtoisii H. Léveillé; *Thladiantha formosana* Hayata; *T. harmsii* Cogniaux; *T. nudiflora* var. *macrocarpa* Z. Zhang; *T. nudiflora* var. *membranacea* Z. Zhang.

Male flowers ebracteate.

Forest margins on mountain slopes. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Zhejiang [Philippines].

9b. *Thladiantha nudiflora* var. *bracteata* A. M. Lu & Zhi Y. Zhang, Bull. Bot. Res., Harbin 1(1–2): 84. 1981.

西固赤虬 *xi gu chi bao*

Male flowers with leaflike bracts; bracts broadly ovate-cordate, 10–12 × ca. 5 mm, pubescent, margin dentate.

- Gansu (Xigu).

10. *Thladiantha longisepala* C. Y. Wu, A. M. Lu & Zhi Y. Zhang, Bull. Bot. Res., Harbin 1(1–2): 86. 1981.

长萼赤堇 chang e chi bao

Herbs, climbing. Stem and branches angular-sulcate, at first puberulent and sparsely setose, glabrescent. Petiole slender, 4–7 cm, puberulent; leaf blade ovate-cordate or broadly ovate-cordate, 8–14 × 6–10 cm, membranous, abaxially puberulent, adaxially densely setose, base cordate, margin serrate, apex shortly acuminate; sinus 1–2 cm deep, 1.5–3 cm wide. Tendrils robust, elongate, 2-fid. Male panicle much branched, 5–13 cm, sparsely pubescent, usually with a leaflike bract at base of branch; bract ovate, 15–25 × 10–15 mm, apex acuminate or long acuminate. Male flowers: pedicel slender, 1–4 cm, pubescent; calyx tube campanulate; segments broadly lanceolate, 12–15 × 3–4 mm, distinctly 3-veined, apex acuminate, reflexed; corolla segments narrowly ovate, 20–22 × 8–9 mm, 5-veined, apex acuminate; filaments ca. 4 mm, puberulent; anthers ovoid, ca. 3 mm; rudimentary ovary semiglobose. Female flowers: 2–5 on a short peduncle; pedicels 3–6 cm; ovary densely setose and pubescent, oblong, ca. 1 cm. Fruiting peduncle robust, 3–6 cm, puberulent; fruit oblong, scabrous, yellow-brown pubescent and setose, apex and base obtuse. Fl. and fr. Jun–Oct.

• Thickets on mountain slopes and riversides; 2400–3500 m. NW Yunnan.

11. *Thladiantha setispina* A. M. Lu & Zhi Y. Zhang, Bull. Bot. Res., Harbin 1(1–2): 87. 1981.

刚毛赤堇 gang mao chi bao

Herbs, climbing. Stems and branches sparsely puberulent, ultimately glabrous, smooth, angular-sulcate. Petiole slender, 3.5–5.5 cm, glabrous; leaf blade ovate-cordate, 6–8(–14) × 4–6(–10) cm, membranous or papery, abaxially densely pale yellow pubescent, adaxially setose, basal lateral veins along blade base, base cordate, margin serrulate, apex acuminate; sinus open, semicircular, 1–1.5 cm deep, 1–2 cm wide. Tendrils filiform, glabrous, 2-fid. Male flowers numerous in a ca. 17 cm panicle; peduncle robust, sparsely pubescent, usually with a bract at base of branches; bract 2–2.5 × 1.5–2 cm; pedicel 1–1.5 cm; calyx tube campanulate; segments triangular-lanceolate, 5–6 × ca. 2.5 mm, 3-veined, apex acuminate; corolla segments oblong, 18–20 × 6–8 mm, glabrous, 5-veined, apex acuminate; filaments ca. 4 mm, puberulent; anthers elliptic, ca. 3 mm. Female flowers solitary, or 3–5 on a 3–4 cm peduncle; pedicel slender, 3–5 cm, sparsely puberulent; calyx tube campanulate; segments ca. 7.5 mm, ca. 2.5 mm wide at base, glabrous, 3-veined, apex acuminate; corolla segments 4–4.5 × 1.8–2 cm; ovary oblong, 10–12 × 6–7 mm, densely yellow-brown setose; style 3-fid; stigma enlarged, reniform, 2–2.5 mm, 2-lobed. Fruiting peduncle robust, 3–6 cm, glabrescent; fruit black-brown, oblong, 3–3.5 × 2–2.5 cm, scabrous, yellow-brown setose, apex and base obtuse. Seeds yellow-brown when dry, narrowly ovate, 6–7 × 3–3.5 mm, ca. 1.5 mm thick, smooth, base subrounded, apex obtuse. Fl. and fr. Jun–Oct.

• Mountain slopes, roadsides; ca. 3000 m. W Sichuan, E Xizang.

12. *Thladiantha lijiangensis* A. M. Lu & Zhi Y. Zhang, Bull. Bot. Res., Harbin 1(1–2): 88. 1981.

丽江赤堇 li jiang chi bao

Thladiantha cinerascens C. Y. Wu ex A. M. Lu & Zhi Y. Zhang; *T. henryi* Hemsley var. *subtomentosa* Handel-Mazzetti; *T. lijiangensis* var. *latisepala* A. M. Lu & Zhi Y. Zhang.

Herbs, climbing. Root robust. Stem and branches distinctly angular-sulcate, at first pubescent, glabrescent. Petiole slender, 2–6 cm, pubescent and sparsely setose; leaf blade ovate-cordate, 4–11 × 3–7 cm, membranous, abaxially glaucous and setose, adaxially pale yellow pubescent, base cordate, margin dentate, apex acuminate; sinus 1–2 cm deep, 1–2.5 cm wide. Male panicle much branched, with many flowers; peduncle 7–16 cm, usually with a leaflike bract at base of branches; bract ovate, 1–2 cm; pedicels filiform, 1–2 cm, puberulent; calyx pubescent; tube campanulate; segments triangular-lanceolate, ca. 5 × 1.5–2 mm, 1-veined, apex shortly acuminate; corolla segments ovate, 12–15 × ca. 6 mm, 5-veined, apex acute; filaments ca. 2.5 mm; anthers narrowly ovoid, ca. 2.5 mm; rudimentary ovary semiglobose, ca. 1.5 mm in diam. Female flowers larger than male flowers, solitary or binary, sometimes 3 at apex of 15–25 mm peduncle; pedicels 4–6 cm; calyx segments lanceolate, ca. 6 × 1.5 mm, sparsely puberulent, 1-veined; corolla segments ovate, 30–35 × ca. 13 mm, puberulent, 5-veined, apex acuminate; ovary ellipsoid, 10–13 × 6–7 mm, densely yellow hispidulous, base subrounded, apex truncate; style ca. 4 mm, 3-fid; stigma reniform, 2–2.5 mm wide, 2-lobed. Fruiting peduncle 3–4 cm, puberulent; fruit 3–4 × 2–2.5 cm. Seeds gray-black, broadly ovate, ca. 5.5 × 4 mm, smooth. Fl. and fr. May–Oct.

• Forests, mountain slopes; 2400–3200 m. NW Yunnan.

13. *Thladiantha oliveri* Cogniaux ex Mottet, Rev. Hort. 75: 473. 1903.

鄂赤堇 e chi bao

Thladiantha glabra Cogniaux.

Herbs, climbing. Stem and branches slender, glabrous, angular-sulcate. Petiole 5–15 cm, subglabrous; leaf blade broadly ovate-cordate, 10–20 × 8–18 cm, membranous, abaxially sparsely setose, adaxially scabrous, basal lateral veins along base of sinus, margin dentate, apex acute or acuminate; sinus open, 1.5–3 cm deep. Tendrils glabrous, 2-fid. Male flowers numerous at apex of peduncle; peduncle over 20 cm; pedicels 5–10 mm, slender; calyx tube broadly campanulate; segments reflexed, linear, 7–9 mm, 1-veined, apex acuminate; corolla segments ovate-oblong, 18–22 × 7–9 mm, 5-veined, apex acuminate; filaments 2–3 mm, sparsely puberulent; anthers ovoid-oblong, ca. 2 mm; rudimentary ovary globose. Female flowers solitary or 2–4 on a 10–15 mm peduncle; pedicels 2–4 cm, subglabrous; calyx segments reflexed, linear, 10–12 mm; corolla segments 2–4 × ca. 1.2 cm; staminodes linear, ca. 2 mm; ovary ovoid, 10–12 mm, base truncate, apex attenuate. Fruit ovoid, 3–4 × 2–2.5 cm, glabrous, smooth, base truncate, apex attenuate. Seeds ovate, compressed, 5–6 × 3–3.5 mm, ca. 1.5 mm thick, base obtuse, apex attenuate. Fl. and fr. May–Oct.

• Thickets, roadsides, or wetlands in river valleys; 600–2100 m. Gansu, Guizhou, NW Hubei, S Shaanxi, E and S Sichuan.

14. *Thladiantha montana* Cogniaux in Engler, Pflanzenr.

66(IV. 275. I): 48. 1916.

山地赤廔 shan di chi bao

Herbs, climbing, glabrous. Stem and branches angular-sulcate. Petiole slender, 8–10 cm; leaf blade ovate-cordate or broadly ovate-cordate, 10–16 × 8–12 cm, submembranous or thickly papery, adaxially scabrous, base cordate, margin dentate, apex acuminate; sinus suborbicular. Tendrils 2-fid. Male flowers 5–10 in raceme or panicle, sometimes 3 or 4 inflorescences in same leaf axil; rachis slender, 6–10 cm; pedicels filiform, 5–10 mm; calyx tube cupular; segments triangular-lanceolate, ca. 4 × 1 mm, 1-veined, apex obtuse; corolla segments narrowly ovate, 8–12 × ca. 5 mm, 5-veined, apex acuminate; stamens inserted on tube; filaments 4 connected in pairs and 1 free, 2–3 mm, sparsely pubescent; anthers oblong, ca. 2 mm; rudimentary ovary subglobose, ca. 2 mm in diam. Female flowers solitary, or 2 or 3 on a 1–2.5 cm peduncle; pedicels slender, 1–4 cm, glabrous; calyx and corolla as in male flowers; staminodes 2.5–3 mm, glandular, with 3 membranous scales; scales oblong, 3–4 mm, apex obtuse; ovary narrowly oblong, 10–15 × 3–4 mm, smooth, subglabrous, base truncate, apex attenuate; style slender, 5–6 mm, 3-fid; stigma suborbicular, 4.5–5 mm wide, 2-lobed. Fruiting peduncle smooth; fruit oblong, 4–6 × 3–4 cm, both ends obtuse-rounded. Seeds narrowly ovate, 4–5 × 2–3 mm, ca. 1.5 mm thick, base rounded. Fl. Aug–Oct, fr. Oct–Nov.

- Forests, mountain slopes, valley sides; 800–3200 m. Yunnan.

15. *Thladiantha maculata* Cogniaux in Engler, Pflanzentr. 66(IV. 275. I): 49. 1916.

斑赤廔 ban chi bao

Herbs, climbing. Roots tuberous. Stem and branches slender, angular, puberulent or subglabrous. Petiole slender, 4–9 cm, puberulent; leaf blade broadly ovate-cordate, 7–13 × 5–10 cm, membranous, abaxially puberulent, adaxially setose, basal lateral veins along base of blade, base cordate, margin dentate or irregularly serrate, apex shortly acuminate; sinus open, semi-circular. Tendrils filiform, simple, subglabrous or sparsely puberulent. Male flowers in a raceme of 3–6(–8) flowers; rachis slender, 3–4 cm, puberulent; pedicels filiform, 12–25 mm, smooth; calyx tube broadly campanulate; segments narrowly triangular-lanceolate, ca. 4 mm, pubescent, 3-veined, apex acuminate; corolla segments ovate, 12–15 × ca. 7 mm, 5-veined, apex acute or shortly acuminate; filaments ca. 3 mm, puberulent; anthers oblong, ca. 2 mm; rudimentary ovary semiglobose. Female flowers solitary; pedicels filiform, 25–35 mm, pubescent; calyx segments linear-subulate, 7–8 mm, puberulent; corolla segments as in male flowers; ovary oblong or narrowly fusiform, ca. 10 mm, densely pale yellow pubescent, base truncate, apex acuminate; style 3-fid; stigma enlarged, reniform, 2-lobed. Fruiting peduncle 3–4 cm, puberulent, glabrescent; fruit orange-red, fusiform, 5–7 × 2–2.8 cm, smooth, subglabrous, base attenuate, apex acuminate, rostrate. Seeds narrowly ovate, 4–5 × ca. 2.5 mm, ca. 1.5 mm thick, smooth. Fl. May–Aug, fr. Oct.

- Valleys, forests; 500–1800 m. Henan, W Hubei.

16. *Thladiantha punctata* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 119. 1911.

台灣赤廔 tai wan chi bao

Herbs, climbing; whole plant subglabrous. Stems and branches with obvious longitudinal striae. Petiole 3–12 cm, sometimes sparsely shortly setose in upper part; leaf blade abaxially pale green, adaxially dark green, narrowly ovate or narrowly ovate-lanceolate, 8–16(–20) × 6–10(–12) cm, membranous, glabrous, lateral veins at base not bordering sinus, margin dentate or sinuate-dentate, apex acuminate; basal sinus semicircular, 1–2 cm deep, 0.5–1.5 cm wide. Tendrils simple. Male flowers: inflorescences racemose or paniculate, rarely flowers solitary; peduncles slender, 4–8 cm; pedicels filiform, 0.5–1 cm; calyx tube broadly campanulate, 5–6 mm; segments lanceolate, ca. 8 mm, ca. 2 mm wide at base, 3–5-veined, acuminate at apex; stamens 4 in pairs and 1 free; filaments ca. 4 mm, base pubescent; anthers oblong, 2–3 mm; rudimentary ovary semiglobose, 2–3 mm in diam., with 3 membranous scales at base; scales yellow, ca. 3 mm. Female flowers usually solitary, rarely 2 at apex of peduncle; peduncles ca. 1 cm; pedicels 2–5 cm, glabrous; calyx and corolla as in male flowers but corolla usually larger than in male flowers; segments 2–2.5 × 1.1–1.2 cm, acuminate at apex; staminodes 4 in pairs and 1 free, ca. 1 mm; ovary ovoid, 1–1.3 × 0.4–0.6 cm, slightly pubescent, glabrescent, base rounded, apex attenuate; styles 2–3 mm, 3-fid; stigma reniform, expanded, 1.5–2 mm in diam. Fruiting pedicel 3–7 cm, glabrous; fruit ovoid or oblong, 3–5 × 2–3.5 cm, smooth, base obtuse-rounded, apex mucronate. Seeds brown, broadly ovoid, 5–6 × 3–4 mm, ca. 1 mm thick, base rounded, apex slightly narrowed. Fl. May–Jun, fr. Jul–Aug.

- Mountain slopes, forests, wet places; 600–900 m. Anhui, Fujian, Jiangxi, Taiwan, Zhejiang.

17. *Thladiantha dentata* Cogniaux in Engler, Pflanzentr. 66(IV. 275. I): 44. 1916.

齿叶赤廔 chi ye chi bao

Herbs, climbing, stout; whole plant almost glabrous. Stem and branches smooth, angular-sulcate. Petiole robust, 5–16 cm; leaf blade ovate-cordate or broadly ovate-cordate, 12–20 × 8–12 cm, abaxially glabrous, adaxially scabrous, basal lateral veins not along margin of blade, margin dentate, apex shortly acuminate; basal sinus open or sometimes closed. Tendrils 2-fid. Male flowers: inflorescence racemose or paniculate; rachis slender, 8–12 cm; pedicels filiform, 1–1.5 cm; calyx tube cupular; segments oblong-lanceolate, ca. 5 × 1.5 mm, 3-veined, apex obtuse; corolla segments ovate-oblong, ca. 12 × 5–6 mm, 3–5-veined, apex acute; stamens 4 in pairs and 1 free; filaments ca. 4 mm; anthers elliptic, ca. 2 mm; rudimentary ovary semiglobose, ca. 2 mm in diam., with 3 scales at base; scales yellow, ca. 3 mm. Female flowers solitary, or 2–5 at apex of 1–1.5 cm peduncle; pedicels 3–6 cm, glabrous; calyx segments lanceolate, 4–5 × ca. 1.5 mm, 3-veined, apex acute; corolla segments ovate-oblong, ca. 15 × 7–8 mm, 5-veined, apex acute; staminodes 5, 4 in pairs, other free, ca. 2.5 mm; ovary narrowly oblong, 13–16 × 4–6 mm, smooth, base slightly rounded or truncate, apex attenuate; style 2–3 mm, 3-fid; stigma reniform, 2-lobed. Fruiting peduncle 2–3.5 cm; fruit narrowly ellipsoid or narrowly ovoid, 3.5–6 × 2.5–3.5 cm, smooth, rounded at both ends, apex mucronate. Seeds yellow-white, narrowly ovate, ca. 6 × 3.5 mm, smooth, base rounded, apex slightly attenuate. Fl.

summer, fr. Oct–Nov.

• Roadsides, valley sides, thickets, mountain slopes; 500–2000 m. Guizhou, W Hubei, Hunan, Sichuan.

18. *Thladiantha capitata* Cogniaux in Engler, Pflanzenr. 66(IV. 275. I): 51. 1916.

头花赤虬 tou hua chi bao

Vines, climbing, herbaceous. Stem and branches angular-sulcate, subglabrous. Petiole slender, 7–9 cm, glabrous; leaf blade abaxially pale green, broadly ovate or broadly ovate-triangular, 10–15(–20) × 8–12(–15) cm, membranous, both surfaces glabrous, adaxially scabrous, basal lateral veins along margin of sinus, margin sparsely dentate, apex acuminate; basal sinus 1.5–3 cm deep, 2–3.5 cm wide. Tendrils glabrous, 2-fid. Male flowers at apex of peduncle in congested subumbel, umbelliform raceme, or pseudocapitulum, usually 8–15-flowered; peduncle (2–)5–11(–17) cm, glabrous, sometimes with a bract; bract ovate, 1.5–3 × 1–2.8 cm; pedicels filiform, 4–8 mm; calyx tube obconical, ca. 5 mm; segments linear-lanceolate, ca. 10 × 1.5 mm, abaxially puberulent, adaxially glabrous, 1-veined, apex acute; corolla segments narrowly ovate, 10–12 × 5–6 mm, adaxially pubescent, 5-veined, apex acute; filaments 4–4.5 mm, puberulent; anthers ovoid-oblong, 2–2.2 mm. Female flowers solitary, or 2 or 3 flowers at apex of peduncle; pedicels 3–5 cm when flowers solitary; calyx segments linear-lanceolate, 8–12 × 1.5–1.8 mm, 1-veined; corolla segments oblong, 15–28 × 1–12 mm, 5-veined, apex acuminate; ovary narrowly oblong, 15–18 mm, smooth, base subtruncate, apex attenuate; style slender, ca. 5 mm, 3-fid; stigma enlarged, reniform, ca. 2 mm wide. Fruit oblong, ca. 4 × 2.5 cm. Fl. and fr. May–Nov.

• Forest margins, thickets, mountain slopes; 1000–2700 m. W Sichuan.

19. *Thladiantha davidii* Franchet, Nouv. Arch. Mus. Hist. Nat., sér. 2, 8: 243. 1885 [“*davidi*”].

川赤虬 chuan chi bao

Thladiantha legendrei Gagnepain.

Herbs, climbing. Stems and branches glabrous, longitudinally angular-sulcate. Petiole 6–8 cm, glabrous; leaf blade ovate-cordate, 10–20 × 6–12 cm, membranous, abaxially glabrous, adaxially densely setose, basal lateral veins along margin of sinus, margin dentate, apex acuminate; basal sinus rounded, sometimes closed. Tendrils 2-fid. Male flowers 10–20 at apex of peduncle in congested subumbelliform raceme; peduncle 10–20 cm, sometimes with a leaflike bract; bract 15–20 × 10–13 mm; pedicels slender, 3–6 mm or sometimes to 15 mm; calyx tube obconical; segments lanceolate-oblong, 10–12 × ca. 2.5 mm, abaxially puberulent, distinctly 3-veined, apex obtuse or acute; corolla segments ovate, ca. 15 × 9 mm, adaxially glandular pubescent, 5-veined, apex obtuse, base of corolla with 2 yellow scales; filaments 3–4 mm, sparsely puberulent; anthers elliptic, ca. 1.5 mm. Female flowers solitary, or 2 or 3 at apex of peduncle; peduncle ca. 1(–3) cm; pedicels 1.5–3 cm; calyx tube obconical; segments lanceolate-oblong, 10–15 × ca. 3 mm, distinctly 3-veined, base slightly narrowed, apex obtuse; corolla segments oblong, 2.5–2.7 × 1–1.2 cm, 5-veined, apex acumi-

nate; ovary narrowly oblong, ca. 15 × 5–6 mm, smooth, subglabrous, base truncate, apex slightly attenuate; style 3-fid; stigma 2-lobed, reniform. Fruit oblong, 3–4.5 × 2–2.4 cm, base and apex obtuse. Seeds yellow-white, ovate, compressed, 3–4 × ca. 2.5 mm, smooth. Fl. and fr. May–Nov.

• Roadsides, valleys, thickets; 1100–2100 m. Guizhou, W Sichuan.

20. *Thladiantha palmatipartita* A. M. Lu & C. Jeffrey, Novon 10: 398. 2000.

掌叶赤虬 zhang ye chi bao

Herbs, scandent. Stems sulcate-angular, 1–3 m, puberulent or glabrescent. Tendrils simple, pubescent. Petiole 3–7 cm, puberulent; leaf blade broadly ovate or orbicular in outline, 8–17 × 9–16 cm, papery, abaxially densely pubescent, adaxially densely punctate, palmately deeply 5-lobed; lobes oblong, margin irregularly dentate, apex acute or acuminate. Flowers unisexual. Male flowers: panicle short, many flowered; peduncle 2.5–3 cm, robust, puberulent; pedicels slender, filiform, 5–12 mm; calyx tube cupular, pubescent; segments 5, broadly lanceolate, 1.2–1.5 × ca. 0.5 cm, 3-veined, apex acuminate; corolla campanulate; segments 5, narrowly oblong or lanceolate-oblong, 1.5–1.8 × ca. 0.6 cm, 3-veined, apex acuminate; filaments ca. 2 mm; anthers ca. 3 mm, 1-celled. Female flowers solitary or paired; calyx and corolla as in male flowers; ovary narrowly oblong, 1.5–2 cm, villous; style columnar, apically 3-fid; stigmas dilated, 2-lobed. Fruit oblong, ca. 7.5 × 3.5 cm, smooth, base attenuate, apex rounded. Seeds numerous, horizontal, ca. 6 × 3 mm, smooth. Fl. Jun, fr. Sep.

• Open situations in scrub; ca. 3000 m. Yunnan.

21. *Thladiantha pustulata* (H. Léveillé) C. Jeffrey ex A. M. Lu & Zhi Y. Zhang, Bull. Bot. Res., Harbin 1(1–2): 74. 1981.

云南赤虬 yun nan chi bao

Herbs, climbing. Roots tuberous. Stem and branches angular-sulcate, pubescent and villous. Petiole slender, 3–7 cm, pubescent and villous; leaf blade ovate-cordate, 6–11 × 4–9 cm, abaxially puberulent and setose on veins, adaxially densely setose, scabrous, basal lateral veins along margin of sinus, base cordate, margin irregularly serrate, apex shortly acuminate; sinus open, semicircular, 15–20 mm deep, 10–20 mm wide. Tendrils simple, pubescent. Male flowers 3–6 at apex of peduncle in sparse racemes; peduncle 2–5 cm, pubescent; pedicels filiform, 2–4 cm; calyx tube campanulate, ca. 4 × 4–5 mm; segments slightly reflexed, linear or linear-lanceolate, 4–12 mm, 3-veined, apex acuminate; corolla segments ovate-lanceolate, ca. 15 × 6 mm, apex acute; filaments filiform, 3–4 mm, puberulent; anthers oblong, ca. 2 mm. Female flowers solitary, larger than male flowers; pedicel slender, pubescent; calyx segments linear, 8–9 mm; corolla segments ovate-lanceolate, ca. 20 × 7 mm, distinctly 3–5-veined, apex shortly acuminate; ovary ovoid, ca. 7 × 6 mm, pubescent and villous, apex shortly rostrate; style ca. 5 mm, 3-fid; stigma enlarged, 2-lobed, reniform. Fruiting pedicel 2–3 cm, sparsely pubescent; fruit ovoid, 2–3 cm in diam., verrucose. Seeds broadly ovate, 6–7 × ca. 3.5 mm, ca. 1.5 mm thick, punctate, base slightly obtuse. Fl. and fr. Apr–Nov.

• Valleys, thickets, forest margins; 1100–2600 m. Chongqing, Guizhou, Sichuan, Yunnan.

- 1a. Leaf blade lobed; calyx segments
4–8 mm 21a. var. *pustulata*
1b. Leaf blade dentate, undivided;
calyx segments 9–12 mm 21b. var. *jingfushanensis*

21a. *Thladiantha pustulata* var. *pustulata*

云南赤虬(原变种) yun nan chi bao (yuan bian zhong)

Melothria pustulata H. Léveillé, Cat. Pl. Yun-Nan, 65. 1916; *M. mairei* H. Léveillé; *Thladiantha yunnanensis* Gagnepain.

Leaf blade lobed. Calyx segments 4–8 mm.

• Valleys, thickets; 1500–2600 m. Guizhou, Yunnan.

21b. *Thladiantha pustulata* var. *jingfushanensis* A. M. Lu & J. Q. Li, Acta Bot. Yunnan. 14: 134. 1992.

金佛山赤虬 jin fo shan chi bao

Leaf blade margin dentate, undivided. Calyx segments 9–12 mm.

• Wetlands in valleys, forest margins; 1100–1800 m. Chongqing (Jinfo Shan), Sichuan.

22. *Thladiantha henryi* Hemsley, J. Linn. Soc., Bot. 23: 316. 1887.

皱果赤虬 zhou guo chi bao

Thladiantha dictyocarpa Handel-Mazzetti; *T. henryi* var. *verrucosa* (Cogniaux) A. M. Lu & Zhi Y. Zhang; *T. verrucosa* Cogniaux.

Vines, climbing. Roots tuberous, enlarged. Stem and branches longitudinally angular-sulcate, sparsely puberulent, glabrescent. Petiole slender, 4–12 cm, puberulent; leaf blade broadly ovate-cordate, 8–16 × 7–14 cm, membranous, abaxially puberulent, adaxially white setose, basal lateral veins along

base of blade, base cordate, margin dentate, sometimes irregularly triangular-serrate, apex acute or shortly acuminate; sinus open, semicircular, 1–3 cm deep, 1–2 cm wide. Tendrils filiform, 2-fid or simple. Male flowers 6–10 at apex of peduncle in raceme or panicle; peduncle 5–12 cm, puberulent; pedicel 1–3 cm, puberulent; calyx tube campanulate, 5–7 mm in diam.; segments lanceolate, 10–12 mm, puberulent, 1-veined, apex acuminate; corolla segments oblong-elliptic or oblong, ca. 20 × 6 mm, 5-veined, apex shortly acuminate or acute; stamens 4 connected at base in pairs and 1 free; filaments 4–5 mm, puberulent, with 3 scales at base; anthers oblong, ca. 4 mm; rudimentary ovary absent. Female flowers solitary, or 2 or 3 to many in a raceme; pedicels 2–6 cm; calyx and corolla as in male flowers; staminodes 5, ca. 2.5 mm; ovary narrowly ovoid or ovoid-oblong, verrucose-rugose; style 3–4 mm; stigma enlarged, reniform, 2-lobed. Fruiting pedicel 6–9 cm; fruit ellipsoid, 5–10 × 3–4 cm, rugose, base attenuate at pedicel to 10 mm. Seeds narrowly ovate, 5–6 × 2–2.5 mm, smooth. Fl. and fr. Jun–Nov.

• Thickets, forests, roadsides; 1100–2000 m. W Hubei, W Hunan, S Shaanxi, E Sichuan.

23. *Thladiantha longifolia* Cogniaux ex Oliver, Hooker's Icon. Pl. 23: t. 2222. 1892.

长叶赤虬 chang ye chi bao

Vines, climbing. Stems and branches slender, angular, glabrous or sparsely pubescent. Petiole 2–7 cm, glabrous or shortly pubescent; leaf blade ovate-lanceolate or narrowly ovate-triangular, 8–18 × 4–8 cm, membranous, abaxially subglabrous, adaxially white setose, basal lateral veins not along base of blade, base cordate, margin dentate, apex acute or shortly acuminate; sinus open, semicircular, 1.5–2 cm deep, 1.5–2.5 cm wide. Tendril filiform, simple, glabrous. Male flowers 3–9(–12) at apex of peduncle in a raceme; peduncle slender, 2–2.5 cm; pedicels 1–2 cm, sparsely pubescent, glabrescent; calyx tube shortly campanulate, ca. 0.6 cm wide at apex, pubescent on veins; segments triangular, 7–8 mm, 1-veined; corolla segments oblong or elliptic, 1.5–2 × 0.8–1 cm, 5-veined, apex slightly obtuse; stamens 4 connected in pairs at base and 1 free; filaments ca. 3 mm; anthers oblong, 2.5–3 mm. Female flowers solitary, or 2 or 3 flowers on short peduncle; pedicels 2–4 cm; calyx and corolla as in male flowers; staminodes 5, subulate, ca. 1.5 mm, 4 in pairs, 1 free; ovary ovoid, acuminate at both apex and base, base emarginate and with lobules, rugose; style 3-fid; stigma enlarged, reniform. Fruit broadly ovoid, ca. 4 cm, verrucose, base slightly emarginate. Seeds ovate, 6–8 × 3–4.5 mm, 1–1.5 mm thick, apex obtuse. Fl. Apr–Jul, fr. Aug–Oct.

• Mountain slopes, forests, valleys, thickets; 1000–2200 m. Guangxi, Guizhou, Hubei, Hunan, Sichuan.

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