

48. LUCULIA Sweet, Brit. Fl. Gard. 2: t. 145. 1826.

滇丁香属 dian ding xiang shu

Chen Tao (陈涛); Charlotte M. Taylor

Shrubs or trees, unarmed. Raphides absent. Leaves opposite, sometimes with domatia; stipules caducous, interpetiolar, triangular, acute. Inflorescences terminal and sometimes in axils of uppermost leaves giving tripartite appearance, cymose and usually rounded-corymbiform, pedunculate, bracteate with bracts caducous. Flowers pedicellate, bisexual, distylous, generally showy. Calyx limb deeply 5-lobed, lobes well developed to subleaflike, usually deciduous shortly after anthesis and often before corolla. Corolla red to pink or white, salverform; tube prolonged and in long-styled form expanded in throat to enclose anthers, with upper part of throat spreading with lobes at anthesis, glabrous inside; lobes 5, imbricate (and apparently quincuncial) in bud, rounded, margins usually crisped and slightly irregular, sometimes with a lamellate basal appendage on each side. Stamens 5, inserted in upper part of corolla tube, included in long-styled form or partially to completely exerted in short-styled form; filaments short; anthers dorsifixed. Ovary 2-celled, ovules numerous in each cell on axile placentas; stigmas 2, linear, included in short-styled form or exerted in long-styled form. Fruit capsular, obovoid to ellipsoid, smooth, septically dehiscent from apex for half or completely, woody, becoming deflexed, with calyx limb caducous; seeds numerous, small, fusiform, flattened, prolonged into narrow wings at each end; endosperm fleshy; embryo minute, slightly clavate; cotyledons obtuse.

About five species: Bhutan, China, India, Myanmar, Nepal, Thailand, Vietnam; three species (one endemic) in China.

The relationships of *Luculia* have not been clear until recently, when molecular studies (e.g., Bremer et al., Syst. Biol. 48: 413–435. 1999) found it to be basal in the Rubiaceae. Additional references regarding *Luculia*'s biology and classification, not listed here, were cited by Rydin et al. (Pl. Syst. Evol. 278: 101–120. 2009).

The treatment here summarizes the existing taxonomy, as a basis for future work; it seems possible that there are only two species in China, but evaluation of this is beyond the scope of this study and the available specimens. Hutchinson (in Sargent, Pl. Wilson. 3: 408. 1916) gave taxonomic significance at the species level to the presence vs. absence of "striking flap-like processes upon and continuous between the lobes of the corolla" for separating species of *Luculia*; these structures have not been much studied or detailed by other authors.

- 1a. Corolla tube 30–50 mm; corolla lobes 12–15 mm wide, suborbicular to broadly elliptic, without lamellate appendages at their bases ..... 1. *L. gratissima*
- 1b. Corolla tube 25–32 mm; corolla lobes 9–15 mm wide, obovate to suborbicular, usually with a lamellate appendage at each side of base inside.
  - 2a. Inflorescence axes, hypanthium portion of calyx, and fruit glabrous or sparsely hirtellous or pilosulous, surfaces of structures easily visible between trichomes ..... 2. *L. pinceana*
  - 2b. Inflorescence axes, hypanthium portion of calyx, and fruit densely tomentose, surfaces of structures completely covered by pubescence ..... 3. *L. yunnanensis*

1. *Luculia gratissima* (Wallich) Sweet, Brit. Fl. Gard. 2: t. 145. 1826.

馥郁滇丁香 fu yu dian ding xiang

*Cinchona gratissima* Wallich in Roxburgh, Fl. Ind. 2: 154. 1824; *Mussaenda luculia* Buchanan-Hamilton ex D. Don, nom. illeg. superfl.

Shrubs or small trees, to 5 m tall, with thin pale brown bark; branches somewhat flattened to subterete, pilosulous [to glabrous], sometimes with sparse elliptic lenticels. Petiole 0.8–2 cm, pilosulous to glabrous; leaf blade drying papery or thinly leathery, elliptic, lanceolate-elliptic, lanceolate, or elliptic-oblong, 5–15 × 2–6 cm, adaxially glabrous, abaxially pilosulous at least along principal veins, base cuneate or acute, apex acute to acuminate; secondary veins 8–12 pairs, sometimes with pilosulous domatia; stipules lanceolate to narrowly lanceolate, 6–8 mm, glabrous to strigillose, acute to acuminate. Inflorescence corymbiform, many flowered, villosulous to pilosulous; peduncle 2–3 cm; branched portion 3–5 × 6–8 cm (not including corollas); bracts linear to narrowly ligulate, 4–7 mm, acute; pedicels 4–5 mm. Calyx glabrous to densely hirtellous; ovary por-

tion obovoid, 3–4 mm; lobes lanceolate, oblanceolate, or narrowly ligulate, 10–16 mm, acute. Corolla red, outside glabrous; tube 30–50 mm, slenderly cylindrical; lobes suborbicular to broadly elliptic, 11–12 × 12–15 mm, rounded. Capsule 1–2 × 1–1.5 cm, pilosulous to glabrous; seeds 2–3 mm, spongy-reticulate. Fl. and fr. Apr–Nov.

Forests or thickets on mountains; 800–2400 m. Xizang (Mêdog), Yunnan [Bhutan, NE India, Myanmar, Nepal, Thailand, Vietnam].

W. C. Chen (in FRPS 71(1): 239. 1999) distinguished this from other species of *Luculia* in part by its villous pubescence on the calyx and hypanthium, but some individual specimens seen vary from densely pubescent to glabrous. The pollination biology of this species was studied by Murray (Ann. Bot. 65: 691–698. 1990).

2. *Luculia pinceana* Hooker in Curtis, Bot. Mag. 71: t. 4132. 1845.

滇丁香 dian ding xiang

Shrubs or trees, 2–10 m tall; branches flattened to subterete, with usually rather dense elliptic lenticels, hirtellous to glabrous. Petiole 1–3.5 cm, glabrous or hirtellous; leaf blade drying stiffly papery to thinly leathery and paler below, elliptic,

elliptic-oblong, or oblanceolate, 5–22 × 2–8 cm, adaxially glabrous, abaxially glabrous or hirtellous to strigillose on principal veins to throughout, base cuneate, acuminate, or obtuse, apex acuminate; secondary veins 9–14 pairs, often with pilosulous domatia; stipules triangular to narrowly triangular, 5–19 mm, glabrous, long acuminate. Inflorescence corymbiform, many flowered, glabrous; peduncle 2–8 cm; branched portion 2–6 × 3–8 cm (not including corollas); bracts stipuliform, linear-lanceolate, 12–15 mm, glabrous, acute; pedicels 2–6 mm. Calyx glabrous or sparsely hirtellous; ovary portion cylindrical-obovoid, 4–5 mm; lobes lanceolate to narrowly oblanceolate, 8–18 × 2–6 mm, often ciliate, acute. Corolla red or rarely white, glabrous; tube slenderly cylindrical, 30–32 mm; lobes suborbicular, 15–22 × 11–15 mm, at base with a lamellate appendage on each side inside, apex rounded. Capsules obovoid to ellipsoid-obovate, 15–25 × 5–10 mm, weakly longitudinally ridged, glabrous or sparsely hirtellous; seeds ca. 4 mm. Fl. and fr. Mar–Dec.

Forests or thickets on mountain slopes, streamsides in valleys; 600–3000 m. Guangxi, Guizhou, Xizang, Yunnan [India, Myanmar, Nepal, Vietnam].

The varieties below were recognized by W. C. Chen in FRPS (71(1): 239–241. 1999) and are included here for reference.

- 1a. Branchlets and peduncles glabrous ..... 2a. var. *pinceana*  
1b. Branchlets and peduncles pubescent ..... 2b. var. *pubescens*

**2a. *Luculia pinceana* var. *pinceana***

滇丁香(原变种) dian ding xiang (yuan bian zhong)

*Luculia intermedia* Hutchinson.

Branchlets and peduncles glabrous. Fl. and fr. Mar–Nov.

Forests or thickets on mountain slopes, streamsides in valleys; 600–3000 m. Guangxi, Guizhou, Xizang, Yunnan [India, Myanmar, Nepal, Vietnam].

**2b. *Luculia pinceana* var. *pubescens* (W. C. Chen) W. C. Chen, Fl. Reipubl. Popularis Sin. 71(1): 241. 1999.**

毛滇丁香 mao dian ding xiang

*Luculia intermedia* var. *pubescens* W. C. Chen, Acta Phytotax. Sin. 22: 139. 1984.

Branchlets and peduncles pubescent. Fl. and fr. Apr–Dec.

• Forests or thickets on mountain slopes or at streamsides; 600–1800 m. Guangxi (Napo), Xizang (Mêdog), Yunnan.

**3. *Luculia yunnanensis* S. Y. Hu, J. Arnold Arbor. 32: 398. 1951.**

鸡冠滇丁香 ji guan dian ding xiang

Shrubs and trees, 3.5(–10) m tall; branches weakly flattened to terete, densely tomentose to hirtellous, with dense elliptic lenticels. Petiole 0.8–2 cm, sparsely pilosulous to glabrous; leaf blade drying leathery or stiffly papery, oblanceolate, oblanceolate-oblong, or elliptic-oblong, 5.5–18 × 2–5.5 cm, adaxially glabrous, abaxially glabrous except strigose to pilose along principal veins, base cuneate or acute, apex acute to acuminate; secondary vein 9–14 pairs, usually with pilosulous domatia; stipules lanceolate to narrowly triangular, 4–14 mm,

glabrous, acute to acuminate. Inflorescence corymbiform, many flowered, densely tomentose; peduncle 1.5–3.5 cm; branched portion 5–10 × 6–15 cm (not including corollas); bracts linear to narrowly spatulate, 5–15 mm; pedicels 3–10 mm. Calyx with ovary portion obconic, 5–6 mm, densely tomentose; lobes lanceolate to narrowly ligulate or narrowly oblanceolate, 12–20 × 3–3.5 mm, glabrous except strigose along veins and margins, apex acute to shortly acuminate. Corolla red, outside glabrous; tube 25–32 mm, cylindrical to slightly funnelliform; lobes suborbicular to obovate, 13–18 × 9–12 mm, with 2 lamellate appendages or crests at each side of base inside, apex rounded. Capsules obovoid, 1.5–2.5 × 0.5–0.8 mm, smooth to weakly ridged, densely tomentose; seeds 2–4 mm. Fl. and fr. Mar–Nov.

- Forests or thickets on mountains; 1200–3200 m. Yunnan.

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