

11. CURCUMA Linnaeus, Sp. Pl. 1: 2. 1753, nom. cons.

姜黄属 jiang huang shu

Rhizomes branched, fleshy, aromatic, often with tuber-bearing roots. Leaves basal; leaf blade broadly lanceolate or oblong, rarely narrowly linear. Inflorescence a terminal spike on pseudostems or on separate shoots arising from rhizomes, sometimes appearing before leaves; peduncle erect; bracts connate for ca. 1/2 their length and forming pouches, spreading at free ends, each subtending a cincinnus of 2–7 flowers, apical bracts often differently colored, large, sterile, forming a coma; bracteoles free to base. Calyx usually shortly tubular, split on 1 side, apex 2- or 3-lobed or -toothed. Corolla funnelform; lobes ovate or oblong, subequal or central lobe longer, apex mucronate. Lateral staminodes petaloid, basally adnate to filament and labellum. Labellum with a thickened, central portion and thinner, lateral lobes overlapping with lateral staminodes. Filament short, broad; anther versatile, base usually spurred; connective appendage absent. Ovary 3-loculed. Capsule ellipsoid, 3-valved, dehiscent.

About 50 species: SE Asia, one species in Australia; 12 species (six endemic, one introduced) in China.

- 1a. Inflorescences terminal on pseudostems; plants flowering in autumn.
- 2a. Leaf blade pubescent on both surfaces 11. *C. kwangsiensis*
- 2b. Leaf blade glabrous on both surfaces.
- 3a. Leaf blade with a purple band along center.
- 4a. Rhizomes yellow inside; leaf blade 13–15 cm wide, midvein green; coma bracts deep purple except for white base 1. *C. yunnanensis*
- 4b. Rhizomes green inside; leaf blade 5–7 cm wide, midvein red; coma bracts white with purple apex 2. *C. exigua*
- 3b. Leaf blade without a purple band along center.
- 5a. Rhizomes and coma bracts white; labellum white with central, yellow band 3. *C. sichuanensis*
- 5b. Rhizomes orange or yellow; coma bracts white and green, sometimes tinged reddish purple; labellum yellow or yellowish.
- 6a. Rhizomes orange and bright yellow; coma bracts white and green, sometimes tinged reddish purple; labellum yellowish with central, yellow band 4. *C. longa*
- 6b. Rhizomes pale yellow; coma bracts white, partly with green stripe; labellum yellow with small, brown stripe on central band 5. *C. viridiflora*
- 1b. Inflorescences on separate shoots arising from rhizomes; plants flowering in summer.
- 7a. Leaf blade glabrous on both surfaces.
- 8a. Leaf blade with purple midvein 6. *C. zanthorrhiza*
- 8b. Leaf blade without purple midvein.
- 9a. Rhizomes yellow inside, bluish green outside; coma bracts whitish, apex red and pink; corolla red 7. *C. amarissima*
- 9b. Rhizomes yellowish inside, whitish outside; coma bracts rose; corolla white 8. *C. wenyujin*
- 7b. Leaf blade pubescent on both surfaces or abaxially only.
- 10a. Leaf blade with purple cloud at center; rhizomes pale blue, pale green, yellowish green, or yellow 9. *C. phaeocaulis*
- 10b. Leaf blade without purple cloud at center; rhizomes white to yellow.
- 11a. Coma bracts absent 10. *C. flaviflora*
- 11b. Coma bracts pale red, or white tinged with red.
- 12a. Leaf blade pubescent on both surfaces; rhizomes white or creamy white 11. *C. kwangsiensis*
- 12b. Leaf blade pubescent abaxially only; rhizomes yellow 12. *C. aromatica*

1. Curcuma yunnanensis N. Liu & S. J. Chen, Guihaia 7: 16. 1987.

顶花莪术 ding hua e zhu

Rhizomes green inside; roots tuberous at tip. Leaf sheath rusty; petiole 4.5–15 cm; leaf blade with ca. 2 cm purple cloud at center, oblong or broadly lanceolate, 45–50 × 13–15 cm, glabrous, midvein green, base attenuate, apex caudate. Inflorescences terminal on pseudostems; peduncle ca. 3.2 cm; spike cylindric, 13–16 × 7–8.5 cm; fertile bracts green, pale purple at margin and apex, ovate-elliptic, ca. 5 × 2.3 cm; coma bracts deep purple except for white base, oblong, ca. 6 × 1.8 cm. Calyx white with pink apex, ca. 1.9 cm. Corolla tube pink, ca. 3.8 cm, villous at throat; lobes purple, suborbicular, ca. 1.1 × 1 cm. Lateral staminodes yellow, subovate. Labellum yellow, obo-

vate, ca. 1.5 × 1.7 cm, apex emarginate. Filament flattened; anther white, ca. 5 mm. Ovary villous. Fl. Jul. 2n = 63*.

• Shrubby or grassy areas. W Yunnan (Wanding Zhen).

2. Curcuma exigua N. Liu in N. Liu & S. J. Chen, Guihaia 7: 15. 1987.

细莪术 xi e zhu

Plants 40–80 cm tall. Rhizomes many branched, yellow inside, fleshy; roots bearing tubers. Leaf sheath pale green; petiole 5–8 cm; leaf blade green with purple, narrow band along red midvein, lanceolate to broadly so, ca. 20 × 5–7 cm, glabrous, base cuneate, apex caudate. Inflorescences terminal on pseudostems; peduncle ca. 3.6 cm; spike cylindric, ca. 9 × 2.5 cm; fertile bracts ovate-elliptic; coma bracts white with purple

apex, oblong, ca. 4.2×1 cm, glabrous. Calyx ca. 1.3 cm, apex 2-toothed. Corolla pale purple; tube ca. 1.4 cm, villous at throat; lobes yellow, elliptic, ca. 1.5 cm. Lateral staminodes yellow, obovate, ca. $1 \text{ cm} \times 5$ mm. Labellum suborbicular, ca. 1.2×1.1 cm, apex yellow with deeply colored center, emarginate. Ovary pilose. Capsule subglobose. Fl. Aug–Oct.

• SW Sichuan (Miyi Xian).

3. Curcuma sichuanensis X. X. Chen, Guihaia 4: 133. 1984.

川郁金 chuan yu jin

Curcuma albicomata S. Q. Tong.

Plants 0.7–1.5 m tall. Rhizomes white or yellowish inside, fragrant; roots tuberous at tip. Petiole 12–30 cm; leaf blade elliptic or elliptic oblong, $35–85 \times 13–21$ cm, glabrous, base attenuate, oblique, apex caudate. Inflorescences terminal on pseudostems; peduncle 15–22 cm; spike cylindric, $14–20 \times 5–8$ cm; fertile bracts ovate, $3.5–4.5 \times 2–3.2$ cm, apex obtuse; coma bracts white, sometimes slightly purple-red apically, ovate or elliptic oblong, apex acute. Calyx clavate, ca. 1 cm, apex irregularly 3-toothed. Corolla tube pale yellow, funnelform, $2.5–3.2$ cm; lobes yellowish, oblong, central one ca. 2×1.3 cm, apex mucronate. Lateral staminodes pale yellow, obovate, ca. 2×1.1 cm, apex 2-cleft. Labellum white with a yellow band at center, ovate, ca. 2×1.6 cm, apex convex, emarginate. Ovary villous. Capsule globose. Seeds small. Fl. Jul.

• Riversides; ca. 900 m. Sichuan, SW Yunnan (Jinghong Xian).

4. Curcuma longa Linnaeus, Sp. Pl. 1: 2. 1753.

姜黄 jiang huang

Curcuma domestica Vahl.

Plants ca. 1 m tall. Rhizomes many branched, orange or bright yellow, cylindric, aromatic; roots tuberous at tip. Petiole 20–45 cm; leaf blade green, oblong or elliptic, $30–45(–90) \times 15–18$ cm, glabrous, base attenuate, apex shortly acuminate. Inflorescences terminal on pseudostems; peduncle 12–20 cm; spike cylindric, $12–18 \times 4–9$ cm; fertile bracts pale green, ovate or oblong, 3–5 cm, apex obtuse; coma bracts spreading, white and green, sometimes tinged reddish purple, apex acute. Calyx white, 0.8–1.2 cm, puberulent, apex unequally 3-toothed. Corolla pale yellow; tube to 3 cm; lobes deltoid, 1–1.5 cm, central one larger, apex mucronate. Lateral staminodes shorter than labellum. Labellum yellowish with central, yellow band, obovate, 1.2–2 cm. Anther spurred at base. Ovary sparsely hairy. Fl. Aug.

Cultivated. Fujian, Guangdong, Guangxi, Sichuan, Taiwan, Xizang, Yunnan [native origin unknown; cultivated throughout tropical Asia].

Used medicinally and for spice.

5. Curcuma viridiflora Roxburgh, Fl. Ind. 1: 34. 1820.

二黄 er huang

Plants 50–70 cm tall. Rhizomes many branched, pale yellow inside; roots bearing tubers. Leaf blade dark green, ovate, ca. $30 \times 7–8$ cm. Inflorescences terminal on pseudostems; ped-

uncle ca. 10 cm; spike $10–15 \times 5–7$ cm; fertile bracts pale green, elliptic-lanceolate; coma bracts white, partly with green stripe, 6–7.5 cm. Calyx white, ca. 1 cm. Corolla tube much longer than calyx; lobes pale pink. Lateral staminodes elliptic, ca. $1.4 \text{ cm} \times 9$ mm. Labellum yellow with a central, brown, narrow stripe, transversely oblong, ca. 1.6×1.8 cm. Filament ca. 4 mm; anther with spreading spurs at base. Fl. Jul.

SW Taiwan (Gaoxiong Shi) [Indonesia, Malaysia, Thailand].

Specimens from Taiwan have not been seen by the present authors.

6. Curcuma zanthorrhiza Roxburgh, Fl. Ind. 1: 25. 1820.

印尼莪术 yin ni e zhu

Plants to 2 m tall. Rhizomes few, few branched, orange or orange-red inside, paler on younger parts, short; roots with large tubers. Ligule small; petiole ca. 10 cm; leaf blade green with purple midvein, oblong, $40–80 \times 15–20$ cm, glabrous. Inflorescences on separate shoots arising from rhizomes; peduncle 15–25 cm; spike $16–25 \times 8–10$ cm; fertile bracts pale green, ca. 3×3.5 cm; coma bracts purple, ca. 7×3 cm, apical ones much narrower; bracteoles ca. 2.5 cm. Calyx white-green, ca. 1.4 cm, pubescent, apex 3-toothed. Corolla tube ca. 3.5 cm; lobes pale purple, ovate, ca. 1.7×1.5 cm. Lateral staminodes yellowish tinged with purple, oblong, ca. 1.7×1 cm. Labellum yellowish with deeply colored, median band, square, ca. 2×2 cm. Anther ca. 4 mm, base with spurs ca. 3 mm. Fl. Apr. $2n = 63^*$.

Riversides; ca. 800 m. S Yunnan [Indonesia, Malaysia, Thailand].

7. Curcuma amarissima Roscoe, Monandr. Pl. Scitam. t. 101. 1826.

味极苦姜黄 wei ji ku jiang huang

Plants ca. 1 m tall. Rhizomes yellow inside, bluish green outside, large, bitter; root tubers white inside. Petiole reddish brown, long; leaf blade green, oblong, ca. 45×14 cm, glabrous. Inflorescences on separate shoots arising from rhizomes; spike cylindric, ca. 14×9 cm; fertile bracts ovate, ca. 5 cm; coma bracts whitish, apex red and pink. Calyx ca. 1 cm, apex 3-lobed. Corolla red; tube ca. 2 cm; lobes oblong, ca. 1 cm, apex acute. Lateral staminodes and labellum yellow. Labellum semielliptic, 3-lobed; central lobe with central, deep yellow band, apex emarginate. Ovary puberulent. Fl. May.

Forest floors; ca. 800 m. S Yunnan (Mengla Xian) [Bangladesh].

8. Curcuma wenyujin Y. H. Chen & C. Ling, Acta Pharm. Sin. 16(5): 387. 1981.

温郁金 wen yu jin

Plants 0.8–1.6 m tall. Rhizomes yellowish inside, whitish outside, ovoid, robust, fleshy; roots fusiform tuberous at tip. Petiole ca. 30 cm; leaf blade oblong or ovate-oblong, $35–75 \times 14–22$ cm, glabrous, base subrounded or broadly cuneate, apex acute or shortly caudate. Inflorescences on separate shoots arising from rhizomes; peduncle 15–20 cm; spike 20–30 cm; coma bracts tinged with red, oblong, 5–8 cm, apex acute; fertile bracts green, ovate, 3–5 cm. Calyx white, 1–1.2 cm. Corolla

white; tube ca. 2.8 cm, white villous at throat; lobes ca. 1.5 × 1.2 cm. Lateral staminodes yellow, petaloid, oblong, ca. 1.7 cm. Labellum reflexed, yellow with deeply colored center, obovate, ca. 2.2 cm, apex emarginate. Filament very short; anther with 2 spurs at base. Ovary densely hirsute. Fl. May–Jun. $2n = 63^*$.

• Guangdong, Guangxi, Zhejiang.

This species was described in FRPS as *Curcuma aromatica* ‘Wenyujin’ (i.e., a cultivar).

Cultivated for medicine.

9. Curcuma phaeocaulis Valeton, Bull. Jard. Bot. Buitenzorg, sér. 2, 27: 69. 1918.

莪术 e zhu

Plants ca. 1 m tall. Rhizomes pale blue, pale green, yellowish green, or yellow; roots tuberous at tip. Leaf sheaths dark brown; petiole longer than leaf blade; leaf blade with purple cloud at center and green midvein, oblong-lanceolate, 25–60 × 10–15 cm, adaxially glabrous, abaxially sparsely pubescent. Inflorescences on separate shoots arising from rhizomes; spike 10–18 × 5–8 cm; fertile bracts white-green, pink at apex, broadly lanceolate, apex acuminate or acute; coma bracts white, apex deep red. Calyx ca. 1.5 cm. Corolla tube white, ca. 3 cm; lobes red, ca. 1.5 cm. Lateral staminodes petaloid. Labellum subobovate, ca. 2 × 1.2–1.5 cm, yellowish with deep yellow center; central lobe 2-cleft at apex. Filament broad; anther ca. 4 mm, base spurred. Ovary villous. Fl. May–Jul. $2n = 84^*$.

Yunnan; cultivated in Fujian, Guangdong, Guangxi, and Sichuan [Indonesia, Vietnam].

Curcuma phaeocaulis has been misidentified as *C. aeruginosa* Roxburgh, *C. caesia* Roxburgh, and *C. zedoaria* (Christmann) Roscoe in the Chinese literature.

10. Curcuma flaviflora S. Q. Tong, Acta Bot. Yunnan. 8: 37. 1986.

黄花姜黄 huang hua jiang huang

Plants 30–40 cm tall. Rhizomes small, aromatic; roots fusiform tuberous at tip. Petiole 4–7 cm; leaf blade 20–24 × 7–8 cm, adaxially glabrous, abaxially densely pubescent, base cuneate, apex acuminate. Inflorescences on separate shoots arising from rhizomes; peduncle 5–9 cm, scalelike sheaths purplish red; spike 4.5–6 × 2.5–3 cm; fertile bracts pale purplish red, ovate-orbicular to ovate, 4–4.5 × 2.6–3 cm, densely pubescent, apex acuminate; coma bracts absent. Calyx ca. 2 cm, apex 3-toothed, ciliate. Corolla tube white, ca. 4 cm, densely white pubescent, throat glabrous; lobes pale yellow, narrowly lanceolate, 1.8–2.4 cm × 7–9 mm. Lateral staminodes pale yellow with deep yellow center, elliptic, ca. 2.2 × 1.2 cm. Labellum pale yellow with deep yellow center, obovate, 2.5–2 cm, glabrous, base with 2 longitudinal, red stripes, apex 2-cleft. Ovary white pubescent. Fl. Jun.

• Forests; ca. 1400 m. SW Yunnan (Menghai Xian).

11. Curcuma kwangsiensis S. G. Lee & C. F. Liang, Acta Phytotax. Sin. 15(2): 110. 1977.

广西莪术 guang xi e zhu

Curcuma chuanyujin C. K. Hsieh & H. Zhang.

Rhizomes white or pale creamy inside, ovate-globose, 4–5 × 2.5–3.5 cm; roots bearing tubers. Ligule ca. 1.5 mm; petiole 2–11 cm; leaf blade elliptic-lanceolate, 14–40 × 4.5–9.5 cm, pubescent, base attenuate, apex acuminate. Inflorescences terminal on pseudostems or on separate shoots arising from rhizomes; peduncle 7–14 cm; spike ca. 15 × 7 cm; fertile bracts greenish, broadly ovate, ca. 4 cm; coma bracts pale red, oblong. Calyx white, ca. 1 cm. Corolla tube ca. 2 cm, villous at throat; lobes red, ovate, ca. 1 cm. Lateral staminodes oblong. Labellum yellowish, suborbicular; central lobe 2-cleft at apex. Filament broad; anther ca. 4 mm, base spurred. Ovary villous. Fl. May–Jul. $2n = 84^*$.

• Shrubby and grassy areas. Guangdong, Guangxi, Sichuan, Yunnan.

Medicinal.

12. Curcuma aromatica Salisbury, Parad. Lond. 1: t. 96. 1807.

郁金 yu jin

Plants ca. 1 m tall. Rhizomes yellow inside, elliptic or narrowly so, fleshy, aromatic; roots with fusiform tubers. Petiole equaling leaf blade; leaf blade oblong, 30–60 × 10–20 cm, adaxially glabrous, abaxially pubescent, base attenuate, apex narrowly caudate. Inflorescences on separate shoots arising from rhizomes, usually appearing before leaves; spike cylindric, ca. 15 × 8 cm; fertile bracts pale green, ovate, 4–5 cm; coma bracts white, tinged with red, narrowly oblong, pubescent, apex mucronate. Calyx sparsely hairy, 0.8–1.5 cm. Corolla tube funnelform, 2.3–2.5 cm, villous at throat; lobes pinkish white, oblong, ca. 1.5 cm. Lateral staminodes yellowish, obovate-oblong, ca. 1.5 cm. Labellum yellow, obovate, ca. 2.5 cm, apex emarginate. Ovary villous. Fl. Apr–Jun. $2n = 42$.

Wild and cultivated. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Sichuan, Xizang, Yunnan, Zhejiang [Bhutan, India, Myanmar, Nepal, ?Sikkim, Sri Lanka].

Medicinal.

