

24. COLOCASIA Schott in Schott & Endlicher, Melet. Bot. 18. 1832, nom. cons., not Link (1795).

芋属 *yu shu*

Li Heng (李恒 *Li Hen*); Peter C. Boyce

Leucocasia Schott.

Herbs, seasonally dormant or evergreen, small, medium sized, or gigantic, latex-bearing. Stem either a hypogeal, subglobose or subcylindric tuber or mostly epigeal, massive. Leaves several, rosulate in acaulescent plants, forming a terminal crown in arborescent species. Petiole glabrous, sometimes strikingly glaucous, rarely pubescent, sheath rather long; leaf blade peltate, ovate-cordate to sagittate-cordate, abaxially glabrous, glaucous, pruinose, rarely pilose; posterior lobes rounded, shortly to almost entirely connate; basal ribs well developed, primary lateral veins pinnate, forming submarginal collective vein, 1 or 2 marginal veins also present, secondary and tertiary laterals arising from primaries at a wide angle, then arching strongly toward leaf margin and forming inconspicuous interprimary collective veins, higher order venation reticulate. Inflorescences 1 to many per each floral sympodium, appearing with leaves; peduncle mostly shorter than petioles. Spathe constricted between tube and limb, sometimes with a second weaker constriction above male zone of spadix; tube persistent, enlarging in fruit and then splitting open irregularly from apex, with convolute margins, usually much shorter than limb, ovoid or oblong; limb either remaining erect, and ± furred, or opening and then reflexed at anthesis, later deciduous, white or yellow, very narrowly lanceolate to oblong or boat-shaped. Spadix sessile, shorter than spathe; female zone short, separated from male by narrower zone of sterile male flowers or contiguous with male zone; male zone cylindrical to fusiform; terminal appendix erect, ± smooth, narrowly conic to fusiform or subulate, sometimes reduced to a small, mucronate stub, or absent. Flowers unisexual, naked. Ovary ovoid or oblong, 1-loculed; ovules many, hemiorthotropous; funicles relatively long; placentae 2–5, parietal; stylar region short, narrowed or not, sometimes ± absent; stigma disciform-capitate or weakly lobed. Interpistillar staminodes present in some species, these weakly clavate, equaling associated pistil; interfloral synandrodes (where present) depressed obpyramidal, laterally compressed, truncate. Male flowers 3–6-androus; stamens connate into ± truncate synandrium; thecae lateral, oblong-linear, dehiscing by apical pore. Infructescence erect or declined by flexing of peduncle. Fruit a greenish to whitish or dull orange, obconic or oblong, strongly fruit-smelling berry, many seeded; stigma remnants persistent. Seed tiny, ovoid to ellipsoid; testa thickish, costate; embryo axile, cylindrical; endosperm copious.

About 20 species: tropical and subtropical Asia; six species in China.

- 1a. Petioles and peduncle pubescent; leaf blade abaxially pilose 1. *C. menglaensis*
- 1b. Plants glabrous.
 - 2a. Plants gigantic, often exceeding 2 m tall; petioles and abaxial surface of leaves white pruinose; inflorescence arising as a fan of 5–13 inflorescences; spathe limb pure white 2. *C. gigantea*
 - 2b. Plants small to large (very rarely exceeding 1.5 m tall); petioles and abaxial surface of leaves at most grayish glaucous; inflorescence solitary or in pairs, rarely 4 together and then not in a fan; spathe limb not pure white.
 - 3a. Plants large, with tuberous, rhizomatous, or stoloniferous stems; spathes yellow.
 - 4a. Leaf blade adaxially matte waxy-glaucous and water-shedding (water sometimes forming “mercury droplets”); spathe limb dull yellow, opening only at base slightly above constriction, remainder staying furred; infructescence declined 3. *C. esculenta*
 - 4b. Leaf blade adaxially glossy and wettable (water forming an even coating); spathe limb bright yellow, spreading and opening flat; infructescence erect 4. *C. antiquorum*
 - 3b. Plants small, stoloniferous; spathes pale green or somewhat purplish or purplish brown.
 - 5a. Stolons very slender, much branched; leaves frequently with dark patches between primary lateral veins; female and male zones contiguous 5. *C. affinis*
 - 5b. Stolons robust, little branched; leaves usually concolorous green; female and male zones separated by a zone of synandrodes 6. *C. fallax*

1. *Colocasia menglaensis* J. T. Yin, H. Li & Z. F. Xu, Ann. Bot. Fenn. 41: 223. 2004.

勐腊芋 *meng la yu*

Herbs, terrestrial, stoloniferous. Rhizome 20–40 × 3–7 cm; stolons 6–10 per plant, pale green, trailing horizontally, simple, 15–20 cm × ca. 4 mm; internodes cylindrical, ca. 4 cm, without tubercles. Leaves 5 or 6 together; petiole pale greenish, cylindrical, ca. 50 × 1 cm, pubescent, proximal half sheathing; leaf blade pale green abaxially, glossy green adaxially, peltate, ovate-cordate, ca. 40 × 25 cm, membranous, pilose; primary lateral

veins 7–9 pairs, sharply raised abaxially; marginal vein 1–3 mm from margin, inconspicuous. Inflorescences (2 or)3(or 4); peduncle pale green, cylindrical, shorter than petioles, ca. 20 cm, pubescent. Spathe greenish, constricted between proximal tubular part and limb, proximal part nearly fusiform, 3–6 × ca. 1.2 cm; limb basally open, apically convolute, erect, not reflexed, yellowish, oblong-lanceolate, 13–18 × 4–6 cm. Spadix sessile, shorter than spathe; female zone green, cylindrical, ca. 2 × 1 cm, separated from male zone by a narrower zone of synandrodes; ovary ovoid to oblong, ca. 1.5 mm, 1-locular; placentae 4 or 5, parietal; stylar region short; stigma disciform-capitate; sterile

zone between female and male zones cylindrical, ca. 1 cm × 6 mm; sterile male flowers: synandroses depressed obpyramidal, apex subtruncate; male zone yellowish, cylindrical, ca. 3.5 cm × 7 mm; male flowers 8–11-anded; thecae oblong-linear, dehiscent by apical pore; appendix pale yellowish, narrowly conic, ca. 3.5 × 0.5 cm, rugose at base. Berry not seen. Fl. Mar–Jun.

By streams at humid forest margins; 1000–1100 m. Yunnan (Mengla) [Laos, N Myanmar (Bhamo), N Thailand].

2. *Colocasia gigantea* (Blume) J. D. Hooker, Fl. Brit. India 6: 524. 1893.

大野芋 da ye yu

Caladium giganteum Blume, Cat. Gew. Buitenzorg, 103. 1823; *Leucocasia gigantea* (Blume) Schott.

Herbs, large to gigantic, evergreen, with massive, stout epigeal stem. Leaves very large; petiole pale green, strikingly pruinose, to 2.5 m, proximal half sheathing; leaf blade white pruinose abaxially, especially when immature, green or pale green adaxially, ovate-cordate, 25–250 × 17–150 cm, membranous, base cordate, peltate, margin undulate, apex shortly acuminate. Inflorescences 5–13 arising from leaf axil (actually terminal on shoot and displaced by new shoot); peduncle pruinose, cylindrical, 30–80 × 1–2 cm, each with a membranous cataphyll nearly equaling length of peduncle. Spathe 12–24 cm; tube green, ellipsoid, 3–6 × 1.5–2 cm; limb erect, white, oblong-boat-shaped, distinctly constricted, 8–19 × 2–3 cm. Spadix 9–20 cm; female zone white or cream-colored, conic; sterile zone 3–4.5 cm, slender; male zone 5–14 cm; appendix very short, 1–5 mm, apex acute. Berry oblong, ca. 5 mm. Seeds many, fusiform, with many distinct longitudinal striations. Fl. Apr–Jun, fr. Sep. $2n = 28$.

Valley forests, limestone-associated, usually on moist but well-drained sites, also cultivated; 100–700 m. Fujian, Guangdong, Guangxi, Jiangxi, Yunnan; cultivated in Anhui, Guizhou, Hunan, Sichuan, and Zhejiang [Cambodia, Laos, Malaysia (Peninsular), Myanmar, Thailand, Vietnam; widely cultivated in SE Asia].

3. *Colocasia esculenta* (Linnaeus) Schott in Schott & Endlicher, Melet. Bot. 18. 1832.

芋 yu

Arum esculentum Linnaeus, Sp. Pl. 2: 965. 1753; *A. colocasia* Linnaeus; *Caladium colocasia* (Linnaeus) W. Wight; *C. esculentum* (Linnaeus) Ventenat; *Calla gaby* Blanco; *Colocasia antiquorum* Schott var. *esculenta* (Linnaeus) Schott ex Seemann; *C. formosana* Hayata; *C. konishii* Hayata; *C. neocaledonica* Van Houtte.

Rhizome vertical to horizontal, tuberous, 3–5 cm or more (up to 15 cm) in diam. Stolons long or absent. Leaves 2 or 3 or more; petiole green, 25–80 cm, sheathing for 1/3–2/3 length; leaf blade adaxially matte waxy-glaucous and water-shedding (water sometimes forming “mercury droplets”), oblong-ovate to suborbicular, 13–45 × 10–35 cm, base shallowly cordate (sinus 1–4 cm), apex broadly and shortly cuspidate. Peduncle usually solitary, 16–26 cm. Spathe tube green, 3.5–5 × 1.2–1.5 cm;

limb open proximally, cream-colored to golden yellow, lanceolate or elliptic, 10–19 × 2–5 cm, apex acuminate. Spadix: female zone conic, 3–3.5 × ca. 1.2 cm; ovary 1–3 mm in diam.; stigma subsessile, narrower than apex of ovary; sterile zone narrowly cylindrical, 3–3.3 cm; sterile flowers (pistils) seen from above elongate, ca. 0.5 mm in diam.; male zone cylindrical, 4–6.5 cm × ca. 7 mm; appendix narrowly conic, 15–45 × ca. 2 mm. Berry green, ca. 4 mm. Seeds few; synandria ca. 1 mm high, ca. 0.8 mm in diam. Fl. Feb–Apr (Yunnan), or Aug–Sep (Qin Ling area). $2n = 26, 28, 30, 36, 38, 42, 44, 46, 48, 52, 58, 84, 116$.

Widely cultivated usually near farmhouses or in water fields; also naturalized or perhaps native in wet places in forests, valleys, swamps, wastelands, and at watersides. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [widely cultivated in tropics and subtropics].

This very variable species is widely cultivated throughout the tropics, and many wild or naturalized clones are found in S Asia, Malaysia, and the Pacific islands. The spathes, spadices, and spadix appendixes vary considerably, although the floral organs have not been observed in many cultivated clones. This wide variation is attributable to cultivation selections, escapes, naturalizations, and re-domestications. It seems best, therefore, to treat *Colocasia esculenta* as a single species rather than formally recognize infraspecific taxa or segregate species (see Hay, Sandakania 7: 31–48. 1996).

The rhizomes, petioles, and inflorescences are used as a vegetable. The rhizomes are used medicinally for treating swellings, abscesses, snake and insect bites, and swollen lymph nodes in the neck.

4. *Colocasia antiquorum* Schott in Schott & Endlicher, Melet. Bot. 18. 1832.

滇南芋 dian nan yu

Colocasia esculenta (Linnaeus) Schott var. *antiquorum* (Schott) F. T. Hubbard & Rehder; *C. fontanesii* Schott; *C. gaoligongensis* H. Li & C. L. Long; *C. gongii* C. L. Long & H. Li; *C. lihengiae* C. L. Long & K. M. Liu; *C. tonoiimo* Nakai.

Herbs, perennial, terrestrial, with stolons (stoloniferous runners) and a usually erect rhizome. Rhizome 120–135 × 12–18 cm; stolons (stoloniferous runners) 6–12, trailing horizontally, pale green to pale purple, simple, thin, 70–80 × ca. 0.5 cm; internodes cylindrical, 15–25 cm, without tubercles. Leaves 4–8 together; petiole light green to reddish purple, 55–140 cm, sheathing in basal 1/2; leaf blade pale green or yellow-green abaxially, sometimes with a purple margin, green or yellow-green adaxially, glossy and wetttable (water forming an even coating), peltate, ovate-cordate to sagittate-cordate, 30–80 × 18–70 cm, membranous; primary lateral veins 5–9, pale green or purple, interprimary veins inconspicuous. Inflorescences 3–5 (or 6); peduncle green or purple, cylindrical or subtrigonal, shorter than petioles, 40–70 × 1.5–2 cm. Spathe constricted between tube and blade; tube yellowish green or purple, oblong, 4–12 × 1.4–4.5 cm, subcylindrical; limb convolute at base, suberect to reflexed, golden yellow, sometimes with purple margin, oblong, oblong-lanceolate, or obovate, 7–24 × 4–14 cm, apex obtuse or acute. Spadix sessile, shorter than spathe; female zone golden yellow, cylindrical, 2–3 × 0.3–0.75 cm, ca. 1/2 as long as spadix, with a few yellow interpistillar staminodes; female flowers obovoid; ovary 1-loculed; placentae 2; stigma

sessile or subsessile, disciform, 6-lobed; sterile zone whitish, cylindrical, 1–5 × 0.3–1.8 cm; synandrodies depressed obpyramidal; male zone yellow, cylindrical, 3.5–14 × 0.4–1.5 cm; synandria 3–10-anded, yellow, 1–2 mm; appendix absent or erect, narrowly conic, ca. 5 cm. Fruit not seen. Fl. May–Sep. $2n = 28$.

Dense rain forests, evergreen broad-leaved forests, and forest margins in valleys in limestone areas, along streams in evergreen broad-leaved forests, moist shaded thickets; 600–1200 m. S and W Yunnan (Mengla, Tengchong, Yingjiang) [NE India, N Laos, N Myanmar, N Thailand].

5. *Colocasia affinis* Schott, Bonplandia (Hannover) 7: 28. 1859.

卷苞芋 juan bao yu

Colocasia bicolor C. L. Long & L. M. Cao.

Herbs, perennial, terrestrial, with stolons and tubercles. Stolons trailing horizontally, pale green, thin, 3.7–40 cm × ca. 4 mm, branched; internodes cylindrical, 2.7–9 cm, with tubercles; tubercles triangular or ovate, ca. 2 cm in diam. Leaves 3–7; petiole light green or greenish white, without transverse purple lines, cylindrical, 20–45 cm; leaf blade pale green abaxially, green or light green adaxially, with 4–6 pairs of large purple spots (lighter when growing in a very shady environment), peltate, ovate-cordate, (5–)16–21 × (4.7–)13–16 cm, membranous; primary lateral veins in 3 or 4 pairs, marginal veins inconspicuous. Inflorescences 1–3; peduncle pale green, cylindrical, much shorter than petioles, 6.4–15 cm. Spathe constricted; tube convolute, green, almost cylindrical, 1.3–2.7 × 0.6–1.8 cm; limb usually reflexed at anthesis, yellow, greenish white, or yellowish, oblong-lanceolate, 4.2–7.8 × 1.6–3.3 cm. Spadix sessile, shorter than spathe; female zone cylindrical, short, 0.9–1.7 cm × 3–8 mm; female flowers green; ovary ovoid; ovules ca. 30; funicle long; placentae parietal; stigma sessile; sterile zone absent between female and male zones or cream-colored, 0.5–0.8 cm × 0.8–2 mm; male zone yellowish, pale pink, or cream-colored, 1–1.7 cm × 2.5–5 mm; male flowers 6–8-anded; stamens connate into a synandrium, yellow; appendix reddish purple, greenish white, or light yellow, cylindrical in proximal part but conic in distal part, 1.7–5.1 cm × 1.5–6 mm. Young berry green. Fl. Jun–Aug, fr. Jul–Oct. $2n = 28$.

Moist shaded places in forests and at forest margins, hillsides in limestone areas; 800–1400 m. S Yunnan (Jinghong, Lancang, Mengla, Simao) [N Bangladesh, NE India, N Myanmar, Nepal].

6. *Colocasia fallax* Schott, Bonplandia (Hannover) 7: 28. 1859.

假芋 jia yu

Colocasia heterochroma H. Li & Z. X. Wei; *C. kerrii* Gagnepain; *C. tibetensis* J. T. Yin; *C. yunnanensis* C. L. Long & X. Z. Cai.

Herbs, small to somewhat robust, stoloniferous. Rhizome erect, up to 7 × 1–1.5 cm; stolons pale green or pale purple, erect or creeping, mostly simple, 5–60 cm × up to 6 mm, internodes 0.5–1.5 cm, bearing ovoid or cylindrical-ovoid tubercles to 3.5 cm in diam., or without tubercles. Leaves 3–8; petiole green, sometimes with transverse purple lines, cylindrical, 12–57 cm, sheathing for almost 1/2 length; leaf blade paler or slightly glaucous abaxially, green or with dark purple patches between primary veins adaxially, cordate-peltate, ovate-cordate, or narrowly oblong-ovate, 8–36 × 3.3–29 cm, membranous, apex apiculate; primary lateral veins 5–7. Inflorescences 1–5 together; peduncle green, cylindrical, 4–23 cm, slender. Spathe constricted or not between tube and limb; tube green, funnel-form or subcylindrical, 1.7–4.2 × 0.7–1.7 cm, margins convolute; limb at anthesis proximally gaping, distally convolute, erect, sometimes slightly reflexed after anthesis, orange-yellow, golden yellow, or yellowish basally, violet apically, narrowly lanceolate to oblong-lanceolate, 5–11.2 × 2.7–4.8 cm, apex long acuminate. Spadix sessile, to 6.5 cm, shorter than spathe; female zone yellow, pale yellowish, or green, conic or cylindrical, 1–2.6 cm × 4–6 mm, with 4–6 rows of whitish or yellow staminodes at base; ovary green, speckled white, subglobose or ovoid to oblong, ca. 1 mm, 1-loculed; placentae 3; stigma sessile or subsessile, disciform-capitate, or disciform at base and tapering distally into a linear point to 0.5 mm; sterile zone present between female and male zones; male zone yellow, cylindrical, 1.1–4.6 cm × 3–6 mm; synandria golden yellow, polygonal, 6–12-anded; distal sterile zone (between male zone and appendix) cream-colored, cylindrical, 0.5–1.2 cm × 1–3 mm, with white hairs, hairs 10–15 mm at anthesis, disappearing on drying; synandrodies broadly oblong to depressed ovate or depressed obpyramidal, apex truncate or subtruncate; appendix absent or yellowish, cylindrical or narrowly conic, 2.5–4.5 cm × 1–2.5 mm, scaly-rough, base distinctly constricted or not, apex acute. Berry ripening yellow, ovoid, ca. 2 mm. Fl. Mar–Sep, fr. Jul–Oct. $2n = 28$.

Dense forests, humid forest margins, moist mossy rock faces in forests, valley scrub, moist shaded places along streams; 700–1400 m. SE Xizang (Médog), S and W Yunnan [N Bangladesh, Bhutan, NE India, Nepal, Thailand].

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