

65. EXCOECARIA Linnaeus, Syst. Nat., ed. 10, 2: 1288. 1759.

海漆属 hai qi shu

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Commia Loureiro.

Trees or shrubs, with milky juice, glabrous. Leaves alternate or opposite, petiolate; stipules small, caducous; leaf blade entire or serrulate, penninerved. Flowers unisexual (plants monoecious or dioecious), apetalous, without disk, in axillary or terminal racemelike thyrses. Male flowers (sub)sessile; sepals 3, small, imbricate, free; stamens 3; filaments free; anthers longitudinally dehiscent, without pistillode. Female flowers sessile to pedicellate; calyx 3-lobed or 3-partite; ovary 3-celled, smooth; ovules 1 per locule; stigmas extended or recurved, free to slightly connate at base, undivided, eglandular. Capsules dehiscent into 2-valved cocci; columella persistent, winged. Seeds globose, estrophiolate; epispem crustaceous; endosperm fleshy; cotyledon broad and flattened.

About 35 species: Africa, Asia, Australia, Pacific islands; five species (two endemic) in China.

- 1a. Leaves opposite above, alternate on lower parts.
 - 2a. Leaf blade purple or dark red abaxially..... 1. *E. cochinchinensis*
 - 2b. Leaf blade green or greenish abaxially when old.
 - 3a. Leaf blade ca. 3 × as long as wide, apex acuminate, not falcate, petiole 3–13 mm 1. *E. cochinchinensis*
 - 3b. Leaf blade more than 5 × as long as wide, apex acuminate-falcate, petiole 3–5 mm 2. *E. venenata*
- 1b. Leaves alternate on all parts.
 - 4a. Leaf blade serrulate; male bracts 2- or 3-flowered 5. *E. acerifolia*
 - 4b. Leaf blade entire or nearly so; male bracts 1-flowered.
 - 5a. Petioles 2-glandular at apex; plants dioecious 3. *E. agallocha*
 - 5b. Petioles not glandular at apex; plants monoecious 4. *E. kawakamii*

1. *Excoecaria cochinchinensis* Loureiro, Fl. Cochinch. 2: 612. 1790.

红背桂 hong bei gui

Evergreen shrubs to 1 m tall; branches glabrous, many lenticellate, often much branched. Leaves opposite, rarely alternate or nearly 3-woiled; stipules ovate, ca. 1 mm; petiole 3–13 mm, eglandular at apex; leaf blade narrowly elliptic or oblong, 6–14 × 2–4 cm, papery, glabrous, green adaxially, purple or dark red abaxially, or green or greenish abaxially when old, base attenuate, margin serrulate, apex long acuminate; midvein convex on both surfaces, lateral veins 8–12. Flowers dioecious in axillary or terminal racemes; male inflorescences 1–2 cm, female ones 3–5-flowered, slightly shorter than male. Male flowers: pedicels ca. 1.5 mm; bracts broadly ovate, ca. 1.7 × 1.7 mm, serrulate inside base, 2-glandular, each bract 1-flowered; bractlets 2, linear, ca. 1.5 mm, lacerate-serrulate on upper part, 2-glandular at base; sepals 3, lanceolate, ca. 1.2 mm, serrulate at apex; stamens exerted from calyx; anthers rounded, slightly shorter than filaments. Female flowers: pedicels strong, 1.5–2 mm, bract and bractlets as in male; sepal 3, slightly connate at base, ovate, ca. 1.8 × 1.2 mm; ovary globose, glabrous; styles 3, free or ± connate at base, ca. 2.2 mm. Capsules globose, ca. 8 mm in diam., truncate at base, concave at apex. Seeds nearly globose, ca. 2.5 mm in diam. Fl. almost throughout year. $2n = 22$.

Evergreen or deciduous forests, secondary forests, thickets, also cultivated; below 1500 m. Fujian, Guangdong, Guangxi, Hainan, Taiwan, Yunnan [Laos, Malaysia, Myanmar, Thailand, Vietnam; originally from Vietnam, widely cultivated].

- 1a. Leaf blade purple or dark red abaxially 1a. var. *cochinchinensis*

- 1b. Leaf blade green or greenish abaxially when old 1b. var. *viridis*

1a. *Excoecaria cochinchinensis* var. *cochinchinensis*

红背桂(原变种) hong bei gui (yuan bian zhong)

Antidesma bicolor Hasskarl; *Excoecaria bicolor* (Hasskarl) Zollinger & Hasskarl; *E. bicolor* var. *purpurascens* Pax & K. Hoffmann; *Sapium cochinchinense* (Loureiro) Kuntze.

Leaf blade purple or dark red abaxially.

Thickets, also cultivated. SW Guangxi (Longzhou); cultivated in Fujian, Guangdong (Guangzhou), Hainan, Taiwan, Yunnan [native to Vietnam; widely cultivated].

This variety is cultivated for ornamental purposes because of the bi-colored leaves. All parts are used as medicine for measles, parotitis, tonsillitis, and lumbar muscle strain.

1b. *Excoecaria cochinchinensis* var. *viridis* (Pax & K. Hoffmann) Merrill, Philipp. J. Sci. 15: 244. 1919.

绿背桂花 lü bei gui hua

Excoecaria bicolor var. *viridis* Pax & K. Hoffmann in Engler, Pflanzenr. 52(IV. 147. V): 159. 1912; *E. bicolor* var. *orientalis* (Pax & K. Hoffmann) Gagnepain; *E. cochinchinensis* var. *formosana* (Hayata) Hurusawa; *E. crenulata* Wight var. *formosana* Hayata; *E. formosana* (Hayata) Pax & K. Hoffmann; *E. orientalis* Pax & K. Hoffmann.

Leaf blade green or greenish abaxially when old.

Evergreen or deciduous forests, secondary forests; below 1500 m. Guangdong, Guangxi, Hainan, Taiwan [Laos, Malaysia, Myanmar, Thailand, Vietnam].

2. *Excoecaria venenata* S. K. Lee & F. N. Wei, *Guihaia* 2: 129. 1982.

鸡尾木 *ji wei mu*

Shrubs, up to 3 m tall, monoecious; branchlets green or purple, glabrous, longitudinally angular. Stipules ovate, 1–1.5 mm; petioles 3–5 mm, eglandular at apex; leaves opposite or occasionally alternate; leaf blade narrowly lanceolate or narrowly elliptic, 9–15 × 1.5–3 cm, subleathery, reddish or only veins adaxially purple when young, green on both surfaces, glabrous, base cuneate, margin sparsely serrulate, apex acuminate, with falcate mucro; midvein elevated on both surfaces, lateral veins 10–13 pairs, at 60°–80°. Flowers in axillary 8–20 mm racemes, female in lower part, male in upper part. Male flowers: bracts broadly ovate, ca. 1.2 × 1.2 mm, base bilateral, each with 1 rotund gland, each bract 1-flowered; bracteoles 2, linear, base 2-glandular; sepals 3, linear-lanceolate, margins sparsely serrulate; stamens 3, rarely 2, longer than sepals; anthers subglobose, slightly shorter than filaments. Female flowers not seen. Capsules globose, ca. 7 mm in diam., triangular; styles persistent. Seeds subglobose, ca. 4 mm in diam., with maculate stripes. Fl. Aug–Oct.

- Limestone forests, bushlands. SW Guangxi.

The leaves are used in Guangxi as a medicine for ringworm.

3. *Excoecaria agallocha* Linnaeus, *Syst. Nat.*, ed. 10, 2: 1288. 1759.

海漆 *hai qi*

Commia cochinchinensis Loureiro.

Trees deciduous, up to 15 m tall; branches lenticellate, glabrous. Leaves alternate throughout; stipules ovate, 1.5–2 mm; petiole 1.5–3 cm; leaf blade elliptic or broadly elliptic, rarely ovate-oblong, 4.5–10 × 3–5 cm, subleathery, base obtuse or broadly cuneate, margin entire or indistinctly serrulate, with 2 distinct glands at base near junction with petiole, apex obtusely acuminate; midvein stout, concave adaxially, convex abaxially, lateral veins 10–13, arcuately ascending steeply and running close to edge some distance before terminating. Flowers dioecious, in axillary, solitary or double racemelike thyrses; male inflorescences 3–4.5 cm, dense and catkinlike, female ones shorter. Male flowers 1 per bract; bracts broadly ovate, fleshy, ca. 2 × 2 mm, base inside 2-glandular, branchlets lanceolate; sepals linear-acuminate, ca. 1.2 mm; stamens usually exceeding sepals. Female flowers: bracts and bracteoles as in male; pedicels slightly longer than male ones (elongating to 5 mm in fruit); sepals broadly ovate or triangular, slightly connate at base, ca. 1.4 × 1 mm; ovary ovoid; stigmas, ca. 3 mm, free, revolute at apex. Capsules globose, trisulcate, 7–8 × ca. 10 mm; cocci ovoid, rostrate at apex. Seeds globose, ca. 4 mm in diam. Fl. and fr. Jan–Sep. *2n* = 140.

Mangrove and tidal forests, brackish areas and rice fields; sea level to 100 m. Guangdong, Guangxi, Hainan, Taiwan [Cambodia, India, Indonesia, Japan (Ryukyu Islands), Malaysia, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; Australia, Pacific islands].

This species is cultivated for ornamental purposes.

4. *Excoecaria kawakamii* Hayata, *Icon. Pl. Formos.* 3: 173. 1913.

兰屿土沉香 *lan yu tu chen xiang*

Shrubs; branches robust, glabrous. Leaves subleathery, alternate, usually fascicled at apex of branchlets; stipules caducous; petioles robust, flattened, 1–1.5 cm, eglandular at apex; leaf blade oblanceolate or obovate-oblong, 9–18 × 2.5–3.5 cm, glabrous, base cuneate or attenuate, margin entire, apex obtuse; midvein flat adaxially, elevated abaxially, lateral veins many, almost at a right angle to midvein. Flowers unisexual, monoecious and androgynous or dioecious in alternate fascicled racemes; inflorescences 7–10 cm, male in upper part, female in lower part. Male flowers: bracts broadly ovate, ca. 2 × 2 mm, base with 2 glands, margin praemorse, each bract with 1 flower; pedicels ca. 0.5 mm, glabrous; sepals 3, broadly ovate or ovate-triangular, ca. 1.4 × 1 mm, margins sparsely serrulate; stamens 3; anthers reniform, mucronate at apex. Female flowers: each bract with 1 flower; pedicels ca. 1 mm; sepals 3, cordate, ca. 1.5 × 1.5 mm, margins sparsely serrulate; ovary ovate, ca. 1.5 mm; style 3-lobed, recurved. Capsules not seen. Fl. Feb.

- Sparse or dense forests. Taiwan (Huoshao Dao, Lan Yu).

5. *Excoecaria acerifolia* Didrichsen, *Vidensk. Meddel. Naturhist. Foren. Kjøbenhavn* 1857: 129. 1857.

云南土沉香 *yun nan tu chen xiang*

Shrubs 1–3 m tall, glabrous; branchlets longitudinally angulate, sparsely lenticellate. Leaves alternate; stipules small, gland-shaped, ca. 0.5 mm; petioles 2–5 mm, eglandular; leaf blade ovate, ovate-lanceolate, or lanceolate, rarely elliptic, 5–13 × 0.8–6 cm, papery, base attenuate, sometimes obtuse, margins densely acutely glandular-serrate, apex acuminate or long acuminate to caudate-acuminate; midvein elevated on both surfaces, lateral veins 6–10. Flowers unisexual, monoecious and androgynous in terminal and axillary 2.5–6 cm racemes, female in lower part, male in upper part. Male flowers: pedicels short; bracts broadly ovate or triangular, ca. 1.3 × 1.5 mm, apex acute, base bilateral, each with 1 rotund gland, each bract with 2 or 3 flowers; sepals 3, lanceolate, ca. 1.2 × 0.6–0.8 mm; stamens 3; anthers globose, longer than filaments. Female flowers: pedicels short; bracts ovate, ca. 2.5 × 1.5 mm, aristate at apex, acumen to 1.5 mm, base bilateral, each with 1 rounded gland; bractlets 2, oblong, ca. 1.5 cm, apex irregularly 3-serrulate; sepals 3, slightly connate at base, ovate, ca. 1.5 × 1.2 mm, apex acute, margins serrulate; ovary globose, ca. 1.5 mm in diam. Capsules subglobose, triangular, ca. 1 cm in diam. Seeds ovoid, gray-black when dry, smooth, ca. 4 mm in diam.

Montane forests and thickets, along rivers and streams in bushlands; 1200–3000 m. Gansu, Guangzhou, Hubei, Hunan, Sichuan, Yunnan [India, Nepal].

- 1a. Leaf blade ovate or ovate-lanceolate, rarely elliptic, 6–13 × 2–6 cm, apex acuminate 5a. var. *acerifolia*

1b. Leaf blade lanceolate, 5–9 × 0.8–2 cm,

apex long acuminate to caudate-acuminate 5b. var. *cuspidata*

5a. *Excoecaria acerifolia* var. *acerifolia*

云南土沉香(原变种) yun nan tu chen xiang (yuan bian zhong)

Excoecaria acerifolia var. *himalayensis* (Klotzsch) Müller Argoviensis; *E. himalayensis* (Klotzsch) Müller Argoviensis; *Stillingia himalayensis* Klotzsch.

Leaf blade ovate or ovate-lanceolate, rarely elliptic, 6–13 × 2–6 cm, apex acuminate. Fl. Jun–Aug. $2n = 24$.

Montane forests and thickets; 1200–3000 m. Guangzhou, Hubei, Hunan, Sichuan, Yunnan [India, Nepal].

The seed oil content is up to 26%. The oil is used as soap.

5b. *Excoecaria acerifolia* var. *cuspidata* (Müller Argoviensis) Müller Argoviensis in A. Candolle, Prodr. 15(2): 1222. 1866.

狭叶海漆 xia ye hai qi

Excoecaria himalayensis var. *cuspidata* Müller Argoviensis, Linnaea 32: 122. 1863; *E. acerifolia* var. *lanceolata* Pax & K. Hoffmann; *E. cuspidata* (Müller Argoviensis) Chakrabarty & M. Gangopadhyay.

Leaf blade lanceolate, 5–9 × 0.8–2 cm, apex long acuminate to caudate-acuminate. Fr. Jun–Sep.

Along rivers and streams in bushlands; ca. 1700 m. Gansu, Sichuan, Yunnan [India].

Fl. China 11: 280–282. 2008.