

- 14b. Stamens 2.
 16a. Young branchlets puberulent; leaf blade 18–30 × 8–13 mm; inflorescence a bisexual axillary fascicle, usually with several male and 1 female flowers 12. *P. pulcher*
 16b. Branchlets glabrous; leaf blade 3–13 × 3–7 mm; inflorescence 1-flowered.
 17a. Branchlets terete, glabrous; pedicels 2–8 mm; styles connate at base 13. *P. franchetianus*
 17b. Branchlets angular, minutely papillate along upper side; pedicels 10–15 mm; styles free 14. *P. leptoclados*
- 9b. Male sepal margins entire.
 18a. Stamens 3, filaments ± free.
 19a. Shrubs; leaf blades thinly papery or membranous; male disk cup-shaped 17. *P. clarkei*
 19b. Herbs, branching mainly near base; leaf blades leathery or thinly leathery; male disk of separate glands.
 20a. Leaves ± distichous; stems usually ascending; female pedicel ca. 5 mm, disk orbicular, undivided; capsule with scalelike protuberances 15. *P. virgatus*
 20b. Leaves spiral; stems spreading; female pedicel 1.5–2 mm, disk of separate glands; capsule smooth 16. *P. maderaspatensis*
- 18b. Stamens 2–4, filaments 2 free, others connate.
 21a. Leaf blade margin hispidulous; ovary and fruits tuberculate 18. *P. urinaria*
 21b. Leaf blade not hispidulous; ovary and fruits smooth.
 22a. Male sepals 5 or 6; stamens 3.
 23a. Herbs.
 24a. Perennial herbs; leaf blade elliptic or obovate, lateral veins 3 pairs; male sepals and disk glands 6 19. *P. arenarius*
 24b. Annual herbs; leaf blade oblong-elliptic, lateral veins 4–7 pairs; male sepals and disk glands 5 20. *P. amarus*
- 23b. Shrubs.
 25a. Branchlets terete; male sepals and disk glands 5 21. *P. myrtifolius*
 25b. Branchlets angular; male sepals and disk glands 6.
 26a. Branchlets usually clustered at apex of erect main stem; leaf blade base oblique; filaments connate at base only 22. *P. rheophyticus*
 26b. Branchlets more evenly distributed along main stems; leaf blade base symmetrical; filaments connate into a column.
 27a. Leaf blade 3–14 × 1.5–3.5 cm; inflorescences on specialized racemelike leafless shoots, 2–10 cm; female disk cup-shaped, apex ± lacerate 23. *P. pachyphyllus*
 27b. Leaf blade 0.2–2 × 0.1–1.3 mm; inflorescence 1-flowered or a 4–6-flowered fascicle, subtended by normal leaves; female disk urceolate or disk-shaped, apex entire.
 28a. Leaf blade obovate or spatulate, apex obtuse or rounded, lateral veins obscure; stipule margins ciliate; bract margins lacerate; flowers usually solitary 24. *P. cochinchinensis*
 28b. Leaf blade oblong or lanceolate, apex apiculate, lateral veins prominent; stipule margins glabrous; bract margins entire; flowers 4–6-fascicled 25. *P. tsarongensis*
- 22b. Male sepals 4; stamens 2.
 29a. Branchlets, petioles, ovary, and fruits with stellate tufts of brown hairs; ovary 4–6-celled 26. *P. tsiangii*
 29b. Branchlets, petioles, ovary, and fruits glabrous; ovary 3-celled.
 30a. Annual herbs; stamen filaments free 27. *P. ussuriensis*
 30b. Shrubs; stamen filaments connate.
 31a. Leaf blade linear-oblong; flowers in glomerules 28. *P. taxodiifolius*
 31b. Leaf blade not linear-oblong; flowers solitary or fascicled.
 32a. Leaf blade 4–5 × ca. 2 mm, base oblique; flowers solitary 29. *P. nanellus*
 32b. Leaf blade 20–45 × 7–17 mm, base symmetrical; flowers fascicled.
 33a. Branchlets terete; leaf blade elliptic-ovate, lateral veins 6–9 pairs; male pedicels 5–7 mm 30. *P. guangdongensis*
 33b. Branchlets angular-winged; leaf blade ovate-lanceolate or lanceolate, lateral veins 3–5 pairs; male pedicels 1–8 cm.
 34a. Sepals purple; male pedicels 0.3–0.8 cm; female pedicels 0.6–1 cm 31. *P. bodinieri*
 34b. Sepals whitish; male pedicels 1–1.5 cm; female pedicels 2–2.3 cm 32. *P. fangchengensis*

1. *Phyllanthus emblica* Linnaeus, Sp. Pl. 2: 982. 1753.

余甘子 *yu gan zi*

Diasperus emblica (Linnaeus) Kuntze; *Dichelactina nodicaulis* Hance; *Embllica officinalis* Gaertner; *Phyllanthus mairei* H. Lévêillé.

Trees 3–8(–23) m tall, to 50 cm d.b.h., monoecious, deciduous; bark brownish; main stems terete, sparsely lenticellate, with very reduced short shoots producing groups of leafy shoots; leafy shoots angular, tawny pubescent, at start of growing season often with poorly developed leaves and densely flowered, later with fewer flowers and better-developed leaves.

Leaves distichous; stipules triangular-ovate, 0.8–1.5 mm, brown, margins entire or denticulate, ciliate; petiole 0.3–0.7 mm; leaf blade oblong or linear-oblong, 8–23 × 1.5–6 mm, papery to leathery, paler abaxially, green adaxially, drying reddish or brownish, base shallowly cordate and slightly oblique, margin narrowly revolute, apex truncate, rounded or obtuse, mucronate or retuse at tip; lateral veins 4–7 pairs. Fascicles with many male flowers and sometimes 1 or 2 larger female flowers. Male flowers: pedicels 1–2.5 mm; sepals 6, membranous, yellow, obovate or spatulate, subequal, 1.2–2.5 × 0.5–1 mm, apex obtuse or rounded, margin entire or shallowly denticulate; disk glands 6, subtriangular; stamens 3; filaments coherent into column, 0.3–0.7 mm; anthers erect, oblong, 0.5–0.9 mm, longitudinally dehiscent, apex mucronate. Female flowers: pedicels ca. 0.5 mm; sepals 6, oblong or spatulate, 1.6–2.5 × 0.7–1.3 mm, apex obtuse or rounded, thicker, margin membranous, ± lobate; ovary ovoid, ca. 1.5 mm, 3-celled; styles 3, (1–)2.5–4 mm, connate at base, deeply bifid, lobes divided at tip. Fruit a drupe, globose, 1–1.3 cm in diam., exocarp fleshy, pale green or yellowish white, endocarp crustaceous. Seeds reddish, 5–6 × 2–3 mm. Fl. Apr–Jun, fr. Jul–Sep.

Dry open sparse forests or scrub, village groves; 200–2300 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Jiangxi, Sichuan, Taiwan, Yunnan [Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand; South America (cultivated)].

The mature fruits are very sour and contain 1%–1.8% Vitamin C. They are eaten raw or sweetened or preserved. The seeds, roots, and leaves are used as medicine. The dried leaves are sometimes used as fillings in pillows.

2. *Phyllanthus glaucus* Wallich ex Müller Argoviensis, *Linnaea* 32: 14. 1863.

青灰叶下珠 qing hui ye xia zhu

Phyllanthus flueggeiformis Müller Argoviensis.

Shrubs up to 4 m tall, monoecious, glabrous throughout; branches terete; branchlets delicate. Stipules ovate-lanceolate, membranous; petiole 2–4 mm; leaf blade elliptic or oblong, 2.5–5 × 1.5–2.5 cm, membranous, slightly glaucous abaxially, base obtuse to rounded, apex acute, apiculate; lateral veins 8–10 pairs. Inflorescence an axillary fascicle, usually with several male and 1 female flowers; pedicels filamentous, slightly stout at apex, calyx ca. 3 mm wide. Male flowers: pedicels ca. 8 mm; sepals 6, ovate; disk glands 6; stamens 5; filaments free; anthers longitudinally dehiscent. Female flowers: pedicels ca. 9 mm; sepals 6, ovate, persistent in fruit; disk cupular; ovary ovoid, 3-celled; styles 3, connate at base. Fruit a berry, globose to oblate, ca. 1 cm in diam., black-purple. Seeds tawny. Fl. Apr–Jul, fr. Jul–Oct.

Scrub, open forests; 200–1000 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Xizang, Yunnan, Zhejiang [Bhutan, India, Nepal].

The roots are used medicinally for infantile malnutrition due to intestinal parasites.

3. *Phyllanthus flexuosus* (Siebold & Zuccarini) Müller Argo-

viensis in A. Candolle, *Prodr.* 15(2): 324. 1866.

落萼叶下珠 luo e ye xia zhu

Cicca flexuosa Siebold & Zuccarini, *Abh. Math.-Phys. Cl. Konigl. Bayer. Akad. Wiss.* 4(2): 143. 1845; *Glochidion flexuosum* (Siebold & Zuccarini) Müller Argoviensis; *Hemicicca flexuosa* (Siebold & Zuccarini) Hurusawa; *H. japonica* Bailon; *Phyllanthus japonicus* (Baillon) Müller Argoviensis.

Shrubs up to 3 m tall, monoecious, glabrous throughout; main branches slightly zigzag, with distinct short shoots; leafy branchlets 8–15 cm, brownish. Leaves progressively larger along shoot, distichous; stipules ovate-triangular, caducous; petioles 2–3 mm, rugulose when dried; leaf blade elliptic to ovate, 2–4.5 × 1–2.5 cm, papery, slightly white-green abaxially, base obtuse to rounded, apex acuminate or obtuse; lateral veins 5–7 pairs. Inflorescence an axillary fascicle with up to 5 male and 1 female flowers. Male flowers: pedicels short; sepals 5, broadly ovate or rounded, ca. 1 mm, dark purple; disk glands 5; stamens 5; filaments free; anthers 0.3–0.4 mm, longitudinally dehiscent. Female flowers ca. 3 mm in diam.; pedicels ca. 1 cm; sepals 6, ovate or elliptic, ca. 1 mm, caducous; disk glands 6; ovary ovoid, 3-celled; styles 3, bifid at apex, exerted from calyx. Fruit a berry, oblate, ca. 6 mm wide, 3-celled. Seeds subtriangular, ca. 3 mm. Fl. Apr–May, fr. Jun–Sep.

Open forests or scrub; 700–1500 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Sichuan, Yunnan, Zhejiang [Japan].

4. *Phyllanthus oligospermus* Hayata, *Icon. Pl. Formos.* 9: 93. 1920.

少子叶下珠 shao zi ye xia zhu

Deciduous shrubs, monoecious, glabrous throughout; branchlets slender, purplish. Stipules lanceolate or linear, 2–3 mm; petiole ca. 2 mm; leaf blade oblong-elliptic or elliptic, 1.8–4.3 × 1–1.6 cm, papery, glaucescent abaxially, green adaxially, base cuneate or acute, apex obtuse, cuspidate at tip; lateral veins 7–11 pairs, raised on both surfaces. Inflorescence an axillary fascicle with 10–25 male flowers and 1 (rarely more) female flower. Male flowers: pedicels filamentous 3–5 mm; sepals 5(–7), spreading, yellow, ovate to elliptic, apex obtuse; disk 5(–7)-lobed, lobes alternate with stamens; stamens 4 or 5(–7); filaments free, ca. 1.5 mm; anthers reniform. Female flowers: pedicels 3–5 mm; sepals 5, green or greenish white, oblong-lanceolate, ca. 2.5 mm; disk annular or shallowly lobed; ovary broadly ovate, ca. 1.5 × 1 mm; styles 3, ca. 0.3 mm, connate at base, spreading, sometimes reflexed. Fruit a succulent berry, globose, 4–6 mm in diam., red to purplish black, ca. 4- or 5-seeded. Seed trigonous, 2.5–3 mm, smooth or nearly so. Fl. Jun–Jul, fr. Jul–Aug.

• Montane shrub fields. Taiwan (Hualian, Pingdong, Taoyuan).

5. *Phyllanthus reticulatus* Poiret in Lamark, *Encycl.* 5: 298. 1804.

小果叶下珠 xiao guo ye xia zhu

Cicca microcarpa Bentham; *C. reticulata* (Poiret)

Kurz; *Glochidion microphyllum* Ridley; *Kirganelia multiflora* Baillon; *K. reticulata* (Poir.) Baillon; *K. sinensis* Baillon; *Phyllanthus dalbergioides* Wallich ex J. J. Smith; *P. erythrocarpus* Ridley; *P. microcarpus* (Benth.) Müller Argoviensis; *P. multiflorus* Poir.; *P. multiflorus* Willdenow (1805), not Poir. (1804); *P. reticulatus* var. *glaber* Müller Argoviensis; *P. sinensis* Müller Argoviensis; *P. takaoensis* Hayata.

Shrubs to 4 m tall, monoecious; branches brownish; young branchlets, leaves, and pedicels yellowish pubescent or puberulent or glabrous. Stipules subulate-lanceolate, brown, 1–3 mm, hard and spiny when dry; petiole 2–5 mm; leaf blade varying in shape, mostly elliptic to ovate, 1–5(–6.5) × 0.7–3 cm, membranous to papery, base obtuse to rounded, apex acute or obtuse to rounded; lateral veins 5–7 pairs, usually prominent on both surfaces. Inflorescence an axillary fascicle, rarely a cyme, with 2–10 male and 1 or 2 female flowers. Male flowers: pedicels delicate, 5–10 mm; sepals 5 or 6, in 2 series, ovate or obovate, unequal, 0.7–1.5 × 0.5–1.2 mm, entire; disk glands 5, scalelike, ca. 0.5 mm wide; stamens 5, erect, 3 with longer filaments coherent in a central column, 2 with shorter filaments, free; anthers triangular, longitudinally dehiscent. Female flowers: pedicels 4–8 mm, delicate; sepals 5 or 6, in 2 series, unequal, broadly ovate, 1–1.6 × 0.9–1.2 mm, puberulent inside at base; disk glands 5 or 6, oblong or obovate; ovary 4–12-celled, smooth; styles free, bifid at apex, lobes linear, revolute and connivent over top of ovary. Fruit a berry, globose to obovate, 4–6 mm wide, black and dark purplish at maturity, 4–12-celled, 8–16-seeded. Seeds trigonous, 1.6–2 mm, brown. Fl. Mar–Jun, fr. Jun–Oct. $x = 13$.

Open forests, scrub; 200–800 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan [Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; W Africa, NE Australia].

Glabrous plants have been recognized as var. *glaber*, but such forms occur sporadically throughout the range of the species and are of dubious taxonomic value.

6. *Phyllanthus chekiangensis* Croizat & F. P. Metcalf, *Lingnan Sci. J.* 20: 194. 1942.

浙江叶下珠 zhe jiang ye xia zhu

Phyllanthus kiangsiensis Croizat & F. P. Metcalf; *P. leptocladus* Benth. var. *pubescens* P. T. Li & D. Y. Liu.

Shrubs up to 1 m tall, glabrous except for pubescent ovary and fruits; stem terete, brownish; branches brownish; branchlets usually grouped in upper part of branches, delicate, 6–20(–30) cm, with longitudinal stripes. Leaves distichous, along branchlets arranged into 15–30 pairs; stipules lanceolate; petiole 5–10 mm; leaf blade elliptic or elliptic-lanceolate, 8–15 × 3–7 mm, papery or thinly papery, base ± oblique, margin revolute when dry, apex acute; lateral veins 3 or 4 pairs, delicate. Inflorescence an axillary fascicle, 1- to several flowered. Male flowers 2–3 mm in diam.; pedicels 4–6 mm; sepals 4, ovate-triangular, 1–1.5 × 0.6–1 mm, purple, margin fimbriate or erose; disk slightly fleshy, unlobed, margin thickened, crenate; stamens 4. Female

flowers 3–4.5 mm in diam.; pedicels 6–12 mm; sepals 6; ovary obovate, ca. 1 × 1.5 mm, 3-celled, densely curved or rugose-undulate pubescent; styles 3, bifid at apex. Capsules obovate, ca. 5 × 7 mm, 3-lobed, densely curved pubescent. Seeds reniform-triangular, 2–2.5 × 1.25–1.75 mm, tawnyish. Fl. Apr–Aug, fr. Jul–Oct.

• Montane sparse forests or scrub; 300–800 m. Anhui, Fujian, Guangdong, Guangxi, Hubei, Hunan, Jiangxi, Zhejiang.

7. *Phyllanthus sootepensis* Craib, *Contrib. Fl. Siam.* 185. 1911.

云葵叶下珠 yun tai ye xia zhu

Phyllanthus subpulchellus Croizat.

Shrubs 0.3–2 m tall, monoecious, glabrous throughout; stem gray-brown; branches terete, branchlets alternate or 2- or 3-fascicled on short shoots, delicate, 5–15 cm. Leaves distichous; stipules lanceolate, ca. 2 mm, brown; petiole ca. 1 mm; leaf blade broadly elliptic, 5–17 × 4–8 mm, papery, base rounded or obtuse, margin slightly revolute, brownish when dry, apex acute; lateral veins 4–6 pairs, bifurcate at apex. Inflorescences axillary, unisexual, proximal axils with fascicles of male flowers, distal axils with solitary female flowers. Male flowers: pedicels filamentous, 4–12 mm; sepals 4, broadly ovate, ca. 1.5 × 1 mm, margin erose or irregularly serrulate; disk glands 4, elliptic; stamens 4, filaments connate into a short column. Female flowers: pedicels delicate, 7–15(–20) mm; sepals 6, obovate to orbicular, 1.2–2(–3.8) × 0.7–1.3(–2.5) mm, margin obscurely erose or subentire, reflexed and persistent in fruit; disk glands 6, as high as middle of ovary; ovary globose; styles 3, bifid at apex. Fruiting pedicels 1–1.5(–2.5) cm; capsule globose, ca. 3 mm in diam., 3-celled. Seeds trigonous, ca. 1.5 × 1 mm. Fl. and fr. Jul–Oct.

Montane scrub, wastelands; 500–1300 m. S Yunnan [Thailand].

8. *Phyllanthus fimbriicalyx* P. T. Li, *Acta Phytotax. Sin.* 25: 380. 1987.

穗萼叶下珠 sui e ye xia zhu

Shrubs, ca. 1 m tall, monoecious; stem gray-brown, hispid; branches terete, to 70 cm, hispid. Stipules ovate-lanceolate, 3–5 mm; petiole ca. 3 mm, hispid; leaf blade oblong or oblong-ovate, 7–12 × 3–4.5 cm, papery, abaxially scurfy-hairy, adaxially glabrous, base rounded, oblique, apex shortly acuminate; lateral veins 7 or 8 pairs. Inflorescence an axillary cyme, 3–7-flowered, those along proximal part of branchlet male, distal inflorescences female; peduncle short; bracts lanceolate, membranous. Male flowers: pedicels filamentous, 1–1.5 cm, sparsely pubescent; sepals 4, oblong-ovate, ca. 2 mm, purple, puberulent outside, glabrous inside, margin fimbriate; disk glands 4; stamens 4; filaments connate; anthers transversely dehiscent. Female flowers: pedicels ca. 1 cm, thicker at apex, pubescent; sepals 5, oblong-elliptic, ca. 3 × 1.5 mm, both surfaces puberulent, margin fimbriate; disk cup-shaped, as long as ovary and enclosing it, apex slightly undulate; ovary subglobose, 3-celled; styles 3, deeply bifid at apex, lobes erect, linear. Fl. Jun–Sep, fr. Aug–

Oct.

- Valley scrub, sparse forests; 1000–1100 m. SW Yunnan.

9. *Phyllanthus gracilipes* (Miquel) Müller Argoviensis, *Linnaea* 32: 47. 1863.

毛果叶下珠 *mao guo ye xia zhu*

Reidia gracilipes Miquel, *Fl. Ned. Ind.* 1(2): 374. 1859; *Eriococcus gracilis* Hasskarl; *Phyllanthus concinnus* Ridley; *P. discofractus* Croizat; *P. gracilis* Roxburgh; *P. hullettii* Ridley; *R. gracilis* (Hasskarl) Miquel.

Shrubs up to 3 m tall, ?dioecious; stem in upper part and branches rufous puberulent. Leaves distichous; stipules ovate-lanceolate, to 1.5 mm; petiole 2–3 mm, puberulent; leaf blade elliptic to obliquely oblong-lanceolate, 2.5–10 × 1.5–4 cm, membranous to thinly papery, ash gray adaxially when dry, brown-reddish abaxially, glabrous or puberulent beneath, base rounded, apex acute or acuminate; lateral veins ca. 6 pairs, delicate. Inflorescence an axillary cyme, many flowered. Male flowers ca. 4 mm in diam.; pedicels ca. 10 mm; sepals 4, ovate-triangular, 2–3 × 1.5–2 mm, purplish, margin irregularly serrate; disk urn-shaped; stamens 4; filaments connate. Female flowers ca. 7 mm; pedicels 1–1.5 cm; sepals 6, 2-seriate, ovate-triangular, 2–3.5 × 1.5–2 mm, ribbed, margin fimbriate; disk cup-shaped, subentire or shallowly 6-lobed, enclosing base of ovary; ovary subglobose, longitudinally angular, tuberculate; styles 3, erect, deeply bifid. Fruiting pedicels to 5 cm; capsules oblate, ca. 6 mm in diam., 3-celled, densely rufous crispate lanate. Fl. May–Aug, fr. Aug–Nov.

Open forests; ca. 900 m. W Guangxi [Indonesia, Thailand, Vietnam].

10. *Phyllanthus forrestii* W. W. Smith, *Notes Roy. Bot. Gard. Edinburgh* 8: 195. 1914.

刺果叶下珠 *ci guo ye xia zhu*

Phyllanthus echinocarpus T. L. Chin.

Shrubs ca. 20 cm tall, monoecious, glabrous except for hispidulous female pedicels; branchlets terete, delicate. Leaves distichous; stipules membranous, ovate-lanceolate, 1.2–2 mm; petiole ca. 1 mm; leaf blade suborbicular to oblong, 1–2 × 0.6–1 cm, usually largest along middle of branchlet, smaller toward base and apex, thinly papery, adaxially green, abaxially glaucous-green, base rounded or obtuse, apex rounded and apiculate; lateral veins 4–7 pairs, obscure. Inflorescence an axillary fascicle, male flowers several, female solitary. Male flowers: pedicels ca. 2 mm; sepals 4, ovate-lanceolate, ca. 2.5 mm, purple, margin irregularly serrulate; disk glands 4, linear-oblong; stamens 2; filaments very short, connate; anthers free, connectives slightly elevated. Female flowers: pedicels 1–2 cm; sepals 6, 2-seriate, ovate-lanceolate, ca. 6 mm, apex with awn-shaped acumen, margin irregularly serrulate; disk disk-shaped, 6-lobed at apex, lobes rounded; ovary ovoid, with dense, soft, ca. 0.5 mm prickles; styles 3, connate at base, bifid at apex, lobes subulate. Capsules globose, ca. 7 mm in diam., with dense, soft prickles. Fl. Jun–Aug, fr. Aug–Oct.

- Scrub; 300–3300 m. Guizhou, Hubei, Sichuan, Yunnan.

11. *Phyllanthus hainanensis* Merrill, *Lingnan Sci. J.* 14: 20. 1935.

海南叶下珠 *hai nan ye xia zhu*

Shrubs to 2 m tall, erect, monoecious, glabrous throughout; stem gray-brown; branchlets angular, 10–25 cm. Stipules linear-lanceolate, 1–1.5 mm, hard when dry; petiole very short; leaf blade nearly oblong, 10–25 × 4–8 mm, membranous, abaxially greenish or glaucous-green, adaxially green, base obliquely broadly cuneate, margin slightly revolute, apex acute, apiculate; midrib purple, lateral veins 4 or 5 pairs. Male inflorescences along middle to lower axils of branchlets, usually 2- or 3-flowered. Male flowers: pedicels 3–10 mm; sepals 4, red, ovate-elliptic, ca. 1.2 × 1 mm, midrib slightly thicker abaxially, margin lacerate, apex acuminate; disk glands 4, patelliform; stamens 2; filaments connate at base; anthers free, transversely dehiscent. Female flowers: pedicels 20–35 mm; sepals 5, red, lanceolate, ca. 2.5 mm, nearly equal, midrib slightly thicker abaxially, margin membranous, deeply lacerate; disk glands 6, ± square, ca. 0.5 × 0.5 mm, margin entire or obscurely undulate; ovary subglobose, ca. 1 mm in diam., 3-celled; styles 3, free, bifid nearly to base, horizontal. Fruiting sepals persistent; capsules oblong-ovate, ca. 3 × 2 mm. Seeds small, ca. 2 × 0.8 mm, reddish. Fl. and fr. almost throughout year.

- Scrub, open forests; 200–400 m. S Hainan.

12. *Phyllanthus pulcher* Wallich ex Müller Argoviensis, *Linnaea* 32: 49. 1863.

云桂叶下珠 *yun gui ye xia zhu*

Diasperus pulcher (Wallich ex Müller Argoviensis) Kuntze; *Epistylum pulchrum* Baillon; *Phyllanthus asteranthos* Croizat.

Shrubs 0.5–1.5 m tall, monoecious, glabrous except for puberulent or ciliate young branches and bracts; stem and branches terete; branches to 40 cm, puberulent. Leaves distichous, 15–30 pairs along each branchlet; stipules triangular-lanceolate, 3–4 × 1.5–2 mm, reddish brown, entire or obscurely serrulate; petiole 0.8–1.5 mm; leaf blade obliquely oblong to ovate-oblong, 1.8–3 × 0.8–1.3 cm, membranous, abaxially gray-green, adaxially green, margins slightly revolute; lateral veins 4–6 pairs, obscure. Inflorescence a bisexual axillary fascicle, usually with several male and 1 female flower, flowers with ciliate bracts at base. Male flowers: pedicels delicate, 5–10 mm; sepals 4, ovate-triangular, 2–3 × 1–2 mm, dark red, margins lacerate; disk glands 4, ± square or reniform, 0.5–0.7 mm wide, flat, membranous; stamens 2; filaments short, connate; anthers longitudinally dehiscent. Female flowers: pedicels filamentous, 15–23 mm; sepals 6, ovate-triangular, 3.5–4 × ca. 1.5 mm, margins lacerate, midrib thicker abaxially; disk disk-shaped, fleshy, surrounding ovary at base, apex 6-lobed; ovary subglobose, smooth, 3-celled; styles 3, spreading, bifid at apex. Fruiting pedicels ca. 2.5 cm; sepals persistent; capsules subglobose, ca. 3 mm in diam., brownish, smooth. Fl. May–Sep, fr.

Aug–Nov.

Open forests, riverside scrub; 700–1800 m. Guangxi, Yunnan [Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Vietnam].

13. *Phyllanthus franchetianus* H. Léveillé, Bull. Géogr. Bot. 25: 23. 1915.

云贵叶下珠 yun gui ye xia zhu

Phyllanthus leiboensis T. L. Chin.

Shrubs 1–2 m tall, monoecious, glabrous throughout; stems red-brown; branches terete; branchlets delicate, gray-green, usually 1 to several clustered on short shoots. Leaves densely distichous, 12–20 pairs per branchlet; stipules linear-lanceolate, 1–2 mm; petiole ca. 0.5 mm; leaf blade obliquely elliptic, slightly falcately inflected, 3–7 × ca. 3 mm, papery, base obliquely rounded, apex apiculate, abaxially pale greenish; lateral veins 3 or 4 pairs, obscure. Male inflorescences axillary along lower part of branchlet, usually 1-flowered. Male flowers: pedicels 2–4 mm, filamentous; sepals 4, oblong-ovate, ca. 1.2 mm, red, margins irregularly lacerate-serrate; disk glands 4, oblong; stamens 2; filaments very short, connate; anthers free, reniform, transversely dehiscent. Female flowers solitary, axillary on upper part of branchlet; pedicel 5–8 mm, thicker apically; sepals 6, persistent in fruit, oblong-ovate, ca. 2 mm, margins lacerate-serrate; disk disk-shaped, apex shallowly undulate; ovary subglobose, smooth, 3-celled; styles 3, connate at base, bifid at apex, lobes subulate. Capsules globose, ca. 5 mm in diam., smooth. Seed ovoid, ca. 1.5 mm. Fl. Feb–Jul, fr. Jun–Sep.

• Scrub, open forests; 400–1000 m. Guizhou, Sichuan (Jinyang, Leibo), Yunnan (Daguan, Gengma, Yanjin, Yuanjiang, Yuanyan).

14. *Phyllanthus leptocladus* Bentham, Fl. Hongk. 312. 1861.

细枝叶下珠 xi zhi ye xia zhu

Epistylum leptocladon Hance; *Phyllanthus glabrocapsulus* F. P. Metcalf.

Shrubs ca. 1 m tall, monoecious, glabrous except for branchlets; branchlets delicate, angular, pubescent along 1 line. Stipules lanceolate or linear-lanceolate; petiole ca. 1 mm; leaf blade membranous, obovate or elliptic, slightly falcate, 6–13 × 4–7 mm, abaxially glaucous-green, sometimes whole plant suffused red, base oblique, apex with deciduous 1.5–3 mm mucro, later acute; lateral veins ca. 5 pairs. Male inflorescences 1-flowered, axillary. Male flowers: pedicels to 1 cm; sepals 4, oblong-ovate, ca. 2 × 1 mm, acute, margins lacerate-serrate; disk glands 4, rotund, truncate at apex; stamens 2; filaments short, connate. Female flowers: pedicels to 1.5 cm; sepals 6, lanceolate, margins lacerate-serrate; disk urn-shaped, apex entire or slightly crenate; ovary globose, smooth; styles 3, free, horizontal. Capsules oblate, ca. 5 mm in diam. Seeds tuberculate. Fl. May–Sep, fr. Jul–Nov.

• Scrub; 100–600 m. Fujian, Guangdong, Yunnan.

15. *Phyllanthus virgatus* G. Forster, Fl. Ins. Austr. 65. 1786.

黄珠子草 huang zhu zi cao

Phyllanthus simplex Retzius; *P. simplex* var. *virgatus* (G. Forster) Müller Argoviensis.

Annual herbs, usually erect, sometimes prostrate, to 60(–100) cm tall, monoecious, glabrous throughout; stem usually slightly woody at base; branchlets angled. Stipules membranous, ovate-triangular, ca. 1 mm, brown; petiole short, nearly absent; leaf blade thinly leathery, linear-lanceolate, oblong, or narrowly elliptic, 5–25 × 2–7 mm, base slightly obliquely rounded, apex obtuse or acute; midrib raised abaxially, flattened adaxially, lateral veins obscure. Plants monoecious. Inflorescences bisexual axillary fascicles usually with 2–4 male and 1 female flower. Male flowers: pedicels ca. 2 mm; sepals 6, broadly ovate or rotund, ca. 0.5 mm; disk glands 6, oblong; stamens 3; filaments free; anthers subglobose. Female flowers: pedicels ca. 5 mm; sepals 6, ovate-oblong, ca. 1 mm, reflexed, purple with whitish membranous margins, persistent in fruit; disk orbicular, undivided; ovary globose, 3-celled, with raised scales, rarely smooth; styles 3, bifid nearly to base, usually recurved. Fruiting pedicels 5–12 mm; capsules oblate, 2–3 mm in diam., purple, with raised scales or smooth. Seeds trigonous, 1.2–1.5 mm, finely warty. Fl. Apr–May, fr. Jun–Nov.

Montane grass-slopes or mixed deciduous forests, savannas; 200–1400 m. Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Shaanxi, Shanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Nepal, Sri Lanka, Thailand, Vietnam; Pacific islands (Polynesia)].

All parts are used medicinally for infantile malnutrition caused by intestinal parasites.

16. *Phyllanthus maderaspatensis* Linnaeus, Sp. Pl. 2: 982. 1753.

麻德拉斯叶下珠 ma de la si ye xia zhu

Herbs, perennial but often flowering in first year, 0.15–0.9(–1.2) m tall, monoecious, glabrous throughout; stem usually woody at base; branching mostly basal, all similar, erect or ascending. Leaves spiral; stipules ovate, 1.5–2(–4) mm, petiole very short; leaf blade linear-lanceolate to obovate, (7–)10–30(–60) × (1–)2–7(–17) mm, leathery, gray-green, base rounded, apex shortly acuminate; lateral veins obscure. Inflorescences axillary fascicles, most axils with 1 female flower, distal axils with 1–4 male flowers. Male flowers: pedicels ca. 1 mm; sepals 6, suborbicular, ca. 1 × 0.8 mm, margins entire; disk glands 6, small and smooth; stamens 3; filaments connate at base; anthers longitudinally dehiscent. Female flowers: pedicels 1.5–2 mm; sepals 6, suborbicular to subspatulate, ca. 2 × 1.5 mm, margin entire; persistent in fruit; disk glands 6, ± square; ovary globose, 3-celled, smooth; styles 3, ± free. Fruit a capsule, oblate, 1.2–2 × ca. 3 mm, olive green, smooth. Seed 3-sided, ca. 1.3 mm, light brown, with rows of minute tubercles on back and sides.

Slopes with scrub, elsewhere often in disturbed areas. Hong Kong [India, Indonesia, Pakistan, Sri Lanka; Africa, SW Asia, Australia].

Phyllanthus maderaspatensis is known from the Flora area from a

single 19th-century collection from Hong Kong. Elsewhere it is a very successful adventive in drier regions. The description is based largely on material from outside China.

17. *Phyllanthus clarkei* J. D. Hooker, Fl. Brit. India 5: 197. 1887.

滇藏叶下珠 dian zang ye xia zhu

Phyllanthus simplex Retzius var. *tongkinensis* Beille.

Shrubs up to 1.5 m tall, monoecious, glabrous throughout; stems terete, brown, much branched; branches 9–26 cm, slightly angular at upper part. Stipules triangular, brown; petiole ca. 1 mm; leaf blade obovate, sometimes elliptic, 5–15 × 4–8 mm, thinly papery or membranous, base broadly cuneate or rounded, apex rounded or obtuse; lateral veins 4–6 pairs, flattened adaxially, slightly elevated. Inflorescences axillary, 1-flowered; pedicels with several bracteoles at base. Male flowers: pedicels ca. 3 mm; sepals 6, oblong, ca. 1 mm, margin entire, membranous, midrib thicker abaxially, persistent in fruit; disk cupular, shallowly undulate at apex; stamens 3; filaments free. Female flowers: pedicels ca. 8 mm; sepals and disk as in male; ovary globose; styles 3, spreading, deeply bifid. Fruiting pedicels 5–10 mm, delicate; capsules globose, 3–4(–5) mm in diam., red, smooth, 3-locular. Seeds trigonous, 2–2.5 × 1.5–2 mm. Fl. Jun–Sep, fr. Jul–Nov.

Open forests, riverside scrub; 800–3000 m. Guangxi, Guizhou, Xizang, Yunnan [India, Myanmar, Pakistan, Thailand, Vietnam].

18. *Phyllanthus urinaria* Linnaeus, Sp. Pl. 2: 982. 1753.

叶下珠 ye xia zhu

Diasperus urinaria (Linnaeus) Kuntze; *Phyllanthus alatus* Blume; *P. cantoniensis* Hornemann; *P. cantoniensis* Schweigger (1812), not Hornemann (1807); *P. chamaepeuce* Ridley; *P. lepidocarpus* Siebold & Zuccarini; *P. leprocarpus* Wight; *P. nozeranii* Rossignol & Haicour.

Annual herbs, erect or procumbent, up to 80 cm tall; stem much branched at base; branches prostrate to ascending, winged, hispidulous along one side. Leaves distichous; stipules ovate-lanceolate, ca. 1.5 mm, base conspicuously auriculate; petiole very short; leaf blade papery, oblong or oblong-obovate or nearly linear, sometimes slightly falcate, 4–10 × 2–5 mm, abaxially gray-green or pale, or sometimes reddish tinged, adaxially bright or dark green, base mostly obtuse, sometimes conspicuously oblique, margin ciliate, apex rounded, obtuse, or acutely mucronulate; lateral veins 4 or 5 pairs, conspicuous. Plants monoecious. Flower fascicles male along distal part of branchlets, 2–4-flowered, female along middle and lower part of branchlets, 1-flowered; pedicel ca. 0.5 mm, with 1–2 bracteoles at base. Male flowers: sepals 6, elliptic to oblong-obovate, 0.3–0.6 × 0.2–0.4 mm, yellowish white, apex obtuse; disk glands 6, green; stamens 3; filaments completely united into a slender column. Female flowers: pedicels ca. 0.5 mm; sepals 6, ovate to ovate-lanceolate, subequal, ca. 1 mm, margin membranous, yellowish white, persistent in fruit; disk orbicular, entire; ovary ovoid or spherical, with conspicuous

raised scales; styles 3, free, bifid at apex, lobes revolute. Capsules globose, 2–2.5 mm in diam., with reddish blotches, scurfy-tuberculate. Seed 3-sided, 1–1.2 × 0.9–1 mm, light grayish brown, with 12–15 sharp transverse ridges on back and sides, often with 1–3 deep circular pits on side. Fl. Apr–Jun, fr. Jul–Nov.

Dry fields, roadsides, wastelands, forest margins; below 100–600 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, India, Indonesia, Japan, Laos, Malaysia, Nepal, Sri Lanka, Thailand, Vietnam; South America].

19. *Phyllanthus arenarius* Beille in Lecomte, Fl. Indo-Chine 5: 587. 1927.

沙地叶下珠 sha di ye xia zhu

Perennial herbs, glabrous throughout; stem erect or slightly prostrate to ascending, up to 30 cm tall, woody at base, purplish. Stipules narrowly triangular, less than 1 mm, deep purple; petiole very short; leaf blade elliptic or obovate, 3–15 × 2.5–10 mm, thinly leathery or papery, base broadly cuneate or obtuse, slightly oblique, margin slightly revolute when dry, apex rounded, mucronate; lateral veins ca. 3 pairs. Plants monoecious. Inflorescences axillary, unisexual, with many bracteoles at base; bracteoles many, ovate, apex acute, brown; male inflorescences along upper parts of branchlets, 2-flowered, usually only 1 flower developed, female inflorescences along middle to lower part of branchlets, 1-flowered. Male flowers: pedicels short; sepals 6, oblong or obovate, subequal, ca. 0.5 mm, margin membranous; disk glands 6, small; stamens 3; filaments connate at base; anthers longitudinally dehiscent. Female flowers: pedicels very short; sepals 6, shape as in male, ca. 0.7 mm, apex obtuse, purple; disk patelliform, margin entire; ovary globose, 3-celled; styles 3, free, bifid at apex, lobes revolute. Capsules globose-triangular, 2.5–3 mm in diam. Seed brownish; testa granular. Fl. May–Jul or Aug, fr. Jun–Oct.

Coastal sandy loam soil, montane open forests; below 100–1300 m. Guangdong, Hainan, SW Yunnan [Vietnam].

- 1a. Leaf blade 3–9 × 2.5–4.5 mm 19a. var. *arenarius*
1b. Leaf blade ca. 15 × 10 mm 19b. var. *yunnanensis*

19a. *Phyllanthus arenarius* var. *arenarius*

沙地叶下珠(原变种) sha di ye xia zhu (yuan bian zhong)

Leaf blade 3–9 × 2.5–4.5 mm. Fl. May–Jun, fr. Jun–Oct.

Coastal sandy loam soil; below 100–200 m. Guangdong, Hainan [Vietnam].

19b. *Phyllanthus arenarius* var. *yunnanensis* T. L. Chin, Acta Phytotax. Sin. 19: 350. 1981.

云南沙地叶下珠 yun nan sha di ye xia zhu

Leaf blade larger, ca. 15 × 10 mm. Fl. Aug.

- Open forests; ca. 1300 m. SW Yunnan.

20. *Phyllanthus amarus* Shumacher & Thonning, Kongl. Danske Vidensk. Selsk. Skr. 4: 195. 1829.

苦味叶下珠 ku wei ye xia zhu

Annual or biennial, rarely perennial, herbs, 10–170 cm tall or long, erect or prostrate, glabrous throughout; stem simple, base woody, or slightly so and yellowish, straw yellow, or brownish, branched, terete, green at upper part, leaves reduced to lanceolate or triangular scales. Leaves distichous; stipules linear or linear-lanceolate, green; petioles ca. 0.5 mm; leaf blade oblong or elliptic-oblong, 3–8 × 2–4.5 mm, membranous or thinly papery, base rounded, apex obtuse or rounded and often apiculate; lateral veins 4–7 pairs, slightly conspicuous abaxially, obscure adaxially. Plants monoecious. Flower fascicles along lower part of leafy shoots usually male, those in middle usually often bisexual with 1 female and 1 male flower, those toward branchlet apex often female. Male flowers: pedicel 0.5–1 mm; sepals 5, elliptic or ovate, ca. 0.5 × 0.2 mm, yellowish green, margin membranous, apex abruptly acute; disk glands 5, orbicular or obovate, or spatulate, apex truncate or retuse, ca. 0.1 mm in diam., entire; stamens (2 or)3; filaments completely connate into a column, 0.2–0.3 mm high; anthers sessile, 1 often reduced to a single anther sac (or sometimes only 2 functional anthers present), anther sacs divergent, slits completely confluent, dehiscence oblique to less commonly horizontal. Female flowers: pedicels 0.6–1 mm; sepals 5, obovate-oblong or ovate, 0.8–1 × 0.4–6 mm, margin membranous, apex obtuse or acute; disk flat or subulate, deeply 5-lobed; ovary globose-triangular, ca. 0.5 × 0.5 mm, smooth; styles free, erect or ascending, apex shallowly bifid. Fruiting pedicels 1–1.5 mm, dilated at apex; capsules smooth. Seed sharply 3-angled, 0.9–1 × 0.7–0.8 mm, light brown or yellowish brown, radially and with 5 or 6 straight parallel longitudinal ribs on back, minutely transversely striate with hygroscopic cells which project as hyaline setae with a pronounced notching of lumen. Fl. and fr. throughout year.

Dry fields, roadsides, wastelands, forest margin, scrubby woods; below 100–600 m. Guangdong, Guangxi, Hainan, Taiwan, Yunnan [pantropical weed possibly originating in the Americas].

- 1a. Herbs annual, erect, to 50 cm tall; branches alternate; male disk orbicular, not glandular, flattened, connate at base; female disk as in male 20a. subsp. *amarus*
1b. Herbs biennial or perennial, erect to trailing or prostrate, to 170 cm tall; branches fascicled at upper part of stem; male disk glands obovate; female disk glands subulate 20b. subsp. *sanyaensis*

20a. *Phyllanthus amarus* subsp. *amarus*

苦味叶下珠(原亚种) *ku wei ye xia zhu* (*yuan ya zhong*)

Phyllanthus nanus J. D. Hooker; *P. swartzii* Kosteletsky.

Herbs annual, erect, up to 50 cm tall; branches alternate. Male and female disk orbicular, not glandular, flattened, connate at base. Pollen grains ellipsoid, not smooth, finely reticulate. Fl. and fr. throughout year.

Dry fields, roadsides, wastelands, forest margins, scrubby woods; below 100–600 m. Guangdong, Guangxi, Hainan, Taiwan, Yunnan [pantropical weed possibly originating in the Americas].

Phyllanthus amarus was initially misidentified as *P. niruri* Lin-

naeus (P. T. Li, Fl. Reipubl. Popularis Sin. 44(1): 101. 1994); it has also been confused with *P. urinaria* Linnaeus.

All parts are used as medicine for hepatitis.

20b. *Phyllanthus amarus* subsp. *sanyaensis* P. T. Li & Y. T. Zhu, J. S. China Agric. Univ. 17(3): 118. 1996.

三亚叶下珠 *san ya ye xia zhu*

Herbs biennial or perennial, erect to trailing or prostrate, up to 170 cm tall; branches alternate, but fascicled at upper part of stem. Male disk glands obovate, female disk glands subulate. Pollen grains prolate, smooth, not reticulate. Fl. Apr–Aug, fr. Jun–Nov.

• Wastelands, dry fields, scrubby woods; below 100–300 m. S Guangdong, Hainan.

21. *Phyllanthus myrtifolius* (Wight) Müller Argoviensis in A. Candolle, Prodr. 15(2): 396. 1866.

瘤腺叶下珠 *liu xian ye xia zhu*

Macraea myrtifolia Wight, Icon. Pl. Ind. Orient. 5: 27. 1852; *Phyllanthus myrtifolius* Moon ex J. D. Hooker.

Shrubs ca. 0.5(–3) m tall; branches terete, upper parts puberulent; branchlets wing-angled, angles scabridulous or hispidulous. Stipules small, ovate, 0.5–0.7 mm; petiole 0.7–1.7 mm; leaf blade oblanceolate, (10–)12–16(–25) × (2–)3.5–4.5(–8) mm, leathery, glabrous, base shallowly cordate, apex acute or obtuse; lateral veins numerous, subhorizontally spreading. Plants monoecious. Inflorescence an axillary several-flowered fascicle; pedicels filamentous, unequal, 3–5 mm. Male flowers ca. 3 mm in diam.; sepals 5, oblong; disk glands 5, orbicular; stamens 3; filaments connate at middle part to base. Female flowers: pedicel 6–8 mm; sepals 6, 0.8–1 × 0.3–0.5 mm; disk cup-shaped, entire; ovary globose, 3-celled; styles 3, short, bifid at apex, recurved. Capsules obovate, ca. 2 × 3 mm, glabrous, valves crustaceous. Seed 3-angled, 1.7–2 mm, brown, reticulate-striated. Fl. May–Aug, fr. Aug–Nov.

Cultivated for medicine. S Guangdong, Hainan (Haikou, Wanning), Taiwan (Taipei) [native to Sri Lanka].

22. *Phyllanthus rheophyticus* M. G. Gilbert & P. T. Li, *sp. nov.*

水油甘 *shui you gan*

Type: China. Hainan: Changjiang Xian, Ngo Ko Shan, near Tsat Cha village, 9 Jun 1933, S. K. Lau 1901 (holotype, BM; isotype, IBSC); Lingshui Xian, Bai Shui Ling, 18°42'15"N, 109°50'12"E, 600 m, 30 Nov 2000, MO-IBSC expedition to Hainan 272 (paratype, BM).

Species Phyllanthi parvifolii Buchanan-Hamilton ex D. Don adhuc inclusa sed caulibus lignosis rigidis erectis vel ascendentibus, caulibus foliis ad apicibus congestibus semper solitaribus, brachyblastis non vidit, foliis majoribus (6–11 × 2–4 mm, non ca. 2 × 4 mm) manifeste differt.

Erect shrubs, up to 2 m tall, glabrous throughout; stem gray-brown; branchlets usually clustered at tips of stems, to 16 cm, transversely compressed, slightly quadrangular, adaxially

flattened to grooved. Stipules ovate-triangular, ca. 1 mm, brownish red; petiole ca. 1 mm, transversely wrinkled abaxially; leaf blade oblong or elliptic, 6–11 × 2–4 mm, thinly leathery, glossy dark green when fresh, drying gray-green, slightly paler abaxially, base slightly obliquely cuneate to rounded, margin revolute, apex acute with brown-reddish mucro; lateral veins 4–7 pairs, abaxially raised in dried material. Plants monoecious. Inflorescence an axillary fascicle, usually bisexual with 2–4 male flowers and 1 female flower. Male flowers: pedicels 1–2 mm; sepals 6, ovate-lanceolate or obovate, 1–2 mm, yellow-white or white-green, margins membranous; disk glands 6, globose; stamens 3; filaments connate for ca. half length; anthers oblong, ca. 0.2 mm, thecae parallel, longitudinally dehiscent, connectives slightly mucronate. Female flowers: pedicels ca. 2 mm; sepals as in male, ca. 1.2 × 0.8–1 mm, thickened and persistent in fruit; disk annular, thin, shallowly 6-lobed, dark and reflexed in fruit; ovary globose, ca. 1 mm in diam., 3-locular; styles 3, connate at base, bifid at apex, lobes slightly revolute. Capsule globose, ca. 3 mm in diam. Seeds brown, segmentiform, ca. 1.5 mm, initially yellowish buff becoming light brown minutely speckled red. Fl. Jun–Sep, fr. Aug–Nov.

• Among rocks in riverbeds, open forests, scrub on moist slopes; 300–600 m. Guangdong, Hainan.

Material of this species, which is locally abundant along some rivers, has been named as the Himalayan species *Phyllanthus parvifolius* Buchanan-Hamilton ex D. Don. It differs most obviously by the habit, with the leafy branchlets congested toward the apices of the stiffly erect or ascending long shoots, whereas in *P. parvifolius* leafy stems are produced along the length of the more slender and spreading long shoots and mostly in groups from short shoots. Other differences are the larger leaves (nearly always ca. 4 × 2 mm in *P. parvifolius*) and the broader stipules. No material available shows both good flowers and mature fruits. The holotype, *S. K. Lau 1901* (BM), has the best flowers, whereas the paratype, *MO-IBSC expedition to Hainan 272* (BM), has the best fruits. Michael Gilbert has not seen any material from Guangdong. Records of *P. parvifolius* from Yunnan seem better placed in *P. cochinchinensis*.

23. *Phyllanthus pachyphyllus* Müller Argoviensis in A. Candolle, Prodr. 15(2): 353. 1866.

崖县叶下珠 ya xian ye xia zhu

Phyllanthus annamensis Beille; *P. campanulatus* Ridley; *P. coriaceus* Wallich ex J. D. Hooker; *P. frondosus* Wallich ex Müller Argoviensis var. *rigidus* Ridley; *P. klossii* Ridley; *P. sciadiostylus* Airy Shaw.

Erect shrubs up to 4 m tall, glabrous throughout; stem gray-brown; branchlets sharply 4-angled. Stipules ovate-triangular, ca. 1 mm; petiole 2–3 mm; leaf blade ovate-lanceolate or rhombic, 3–14 × 1.5–3.5 cm, thinly leathery, base broadly cuneate, margin revolute when dry, apex acuminate, slightly caudate; lateral veins (4–)6–8 pairs. Plants monoecious. Inflorescence a bisexual fascicle, axillary or along specialized leafless branchlets, 2–10 cm, usually with 1–3 female and 2–6 male flowers, with many 2–3 mm scaly bracts. Male flowers ca. 4 mm in diam.; pedicels 1–2(–3) mm; sepals 6, obovate, subequal, ca.

1.5 mm, apex obtuse or acute, margin membranous; stamens 3; filaments connate, ca. 1 mm; thecae parallel, longitudinally dehiscent; pollen grain spherical or oblate-spherical, 6-colporate, rarely 4- or 5-colporate or forate-colpate; disk glands 6. Female flowers ca. 4 mm in diam.; pedicels 1–3.5 mm; sepals 6, obovate, ca. 1.5 × 1.5 mm, margin membranous, persistent in fruit; disk cup-shaped, membranous, slightly lacerate at apex; ovary ovoid, ca. 1.3 mm in diam., 3-celled; styles 3, ca. 1 mm, connate at base, bifid at apex, lobes recurved and slightly appressed to apex of ovary. Fruiting pedicel ca. 4 mm; capsule globose, ca. 4 mm in diam., red. Seed red, ca. 2 mm in diam. Fl. Mar–Jun, fr. May–Sep.

Open montane forests, disturbed scrub, riversides; 100–600 m. S Hainan (Sanya) [Malaysia, Thailand, Vietnam].

24. *Phyllanthus cochinchinensis* (Loureiro) Sprengel, Syst. Veg. 3: 21. 1826.

越南叶下珠 yue nan ye xia zhu

Cathetus cochinchinensis Loureiro, Fl. Cochinch. 2: 608. 1790; *Phyllanthus cinerascens* Hooker & Arnott; *P. embergeri* Haicour & Rossignol; *P. fasciculatus* Müller Argoviensis; *P. roeperianus* Müller Argoviensis; *P. urinaria* Linnaeus subsp. *nudicarpus* Rossignol & Haicour.

Shrubs up to 3 m tall; stem yellowish brown or gray-brown; branchlets 10–30 cm, yellowish brown pubescent when young, glabrescent. Leaves spirally arranged or 3–5-fascicled on cushion-shaped short branches; stipules reddish brown, ovate-triangular, ca. 2 mm, base cordate, margin ciliate, apex caudate-acuminate, persistent; petiole 1–2 mm, velvety-papillate [pubescent to glabrous]; leaf blade obovate, oblong-obovate, or spatulate, 1–2 × 0.6–1.3 cm, leathery, base attenuate, margin narrowly revolute when dry, apex obtuse or rounded, rarely retuse; midrib slightly raised on both surfaces, lateral veins obscure. Plants dioecious or monoecious. Inflorescence a 1(or 2)-flowered axillary fascicle; bracts many, membranous, densely yellow-brown hairy, margins fimbriate. Male flowers: pedicels ca. 3 mm; sepals 6, obovate or spatulate, ca. 1.3 × 1–1.2 mm, thicker at base, margin membranous; disk glands 6, obconical, ± confluent into ring; stamens 3; filaments connate to middle; thecae parallel, longitudinally dehiscent. Female flowers: pedicels 2–3 mm; sepals 6, ovate or ovate-rhombic, 1.5–1.8 × ca. 1.5 mm, margin membranous, thicker at base; disk suburceolate; ovary globose, ca. 1.2 mm in diam., 3-celled; styles 3, ca. 1.1 mm, connate at middle to base, bifid at apex, recurved. Capsules globose, ca. 5 mm in diam. Seeds ovoid-segmentiform, ca. 2 × 2 mm; testa thin, cells with prominent dark, domed centers. Fl. and fr. Jun–Dec.

Montane sparse forests, forest margins, scrub on slopes, wastelands; 500–800(–3000) m. Fujian, Guangdong, Guangxi, Hainan, Sichuan, Xizang, Yunnan [Cambodia, India, Laos, Vietnam].

Phyllanthus cochinchinensis has been confused with *P. acidus* (Linnaeus) Skeels. The gathering *G. Forrest 11181* is tentatively placed here but is only up to 30 cm high, grows at 3000 m, and has purple-black fruits.

25. *Phyllanthus tsarongensis* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 13: 177. 1921.

西南叶下珠 xi nan ye xia zhu

Shrubs up to 3 m tall; branches robust, gray-brown; branchlets slender, 5–10 cm, angular, green, puberulent when young, glabrescent. Stipules linear-lanceolate, ca. 1 mm, persistent; petiole ca. 0.5 mm; leaf blade oblong or lanceolate, usually largest on flowering branches and middle parts of branchlets, ca. 10 × 5 mm, 2–5 × 1–3 mm at upper and lower parts of branchlets, papery to thickly so, base shallowly cordate, margin revolute, apex obtuse and mucronulate; midrib and lateral veins flattened adaxially, raised abaxially, lateral veins 5 or 6 pairs. Plants monoecious. Inflorescence a 4–6-flowered axillary fascicle; pedicels ca. 1 mm, with scaly bracteoles at base. Male flowers: sepals 6, oblong, ca. 1 mm, yellowish, entire; disk glands 6, round; stamens 3, nearly as long as sepals; filaments connate; anthers oblong, thecae longitudinally dehiscent. Female flowers: sepals 6, as in male; disk disk-shaped, slightly fleshy, entire; ovary oblate, smooth, 3-celled; styles 3, free, enlarged and shallowly bifid at apex, lobes revolute. Capsules oblate, ca. 2.5 × 3.5 mm, smooth. Seed triangular, 1.5–2 mm, yellowish, smooth. Fl. Jul–Oct, fr. Oct–Dec.

• Open montane forests or scrub; 1500–4000 m. Sichuan, Xizang, Yunnan.

All parts are used as medicine for urolithiasis.

26. *Phyllanthus tsiangii* P. T. Li, Acta Phytotax. Sin. 25: 375. 1987.

红叶下珠 hong ye xia zhu

Nymphanthus ruber Loureiro, Fl. Cochinch. 2: 544. 1790 [“*rubra*”]; *Phyllanthus ruber* (Loureiro) Sprengel (1826), not Noroña (1790).

Shrubs or treelets, 1–3(–6) m tall, monoecious; stem brown-reddish, usually branching at apex; branchlets 10–20 cm, with anchor-shaped hairs. Stipules triangular, ca. 2 mm, brown-reddish; petiole 2–3 mm, with anchor-shaped hairs; leaf blade elliptic, ovate, or ovate-lanceolate, 2.5–7.5 × 1–3.5 cm, papery, glabrous except for pubescent base of midrib, base broadly cuneate or obtuse, sometimes oblique, margin revolute when dry, apex acuminate or caudate-acuminate; lateral veins 5 or 6 pairs. Plants monoecious. Inflorescence an axillary fascicle, male usually 2–6-flowered along proximal part of branchlets. Male flowers: pedicels filamentous, 3–6 mm; sepals 4, elliptic or ovate, subequal, 2–2.5 × ca. 1.2 mm, yellow-green, adaxially keeled; disk glands 4, spherical; stamens 2; filaments connate into column; anthers connivent, divergent at base, longitudinally dehiscent. Female flowers ca. 4 mm; pedicels 18–25 mm, thicker at apex; sepals 6, as in male, persistent in fruit; disk cup-shaped, thickened, crenate at apex, base with 6 triangular glands, alternating with sepals; ovary globose, ca. 2.5 mm, 4–6-celled; styles 4–6, free, erect, 1–1.5 mm, bifid at apex. Capsules globose, ca. 6 mm in diam., reddish brown, with 4–6 longitudinal grooves. Seeds yellowish brown, ca. 2 × 1 mm. Fl. Apr–Oct, fr. Jul–Apr.

Open montane forests, valley scrub; 200–600 m. S Hainan [Vietnam].

27. *Phyllanthus ussuriensis* Ruprecht & Maximowicz, Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg 15: 222.

1856.

蜜柑草 mi gan cao

Phyllanthus matsumurae Hayata; *P. simplex* Retzius var. *chinensis* Müller Argoviensis; *P. simplex* var. *ussuriensis* (Ruprecht & Maximowicz) Müller Argoviensis; *P. wilfordii* Croizat & F. P. Metcalf.

Annual herbs, up to 60 cm tall, monoecious, glabrous throughout; stem erect, usually branched at base; branches delicate; branchlets angular. Stipules ovate-lanceolate; petiole very short to almost absent; leaf blade elliptic to oblong, 5–15 × 3–6 mm, papery, abaxially white-green, base rounded, apex acute to obtuse; lateral veins 5 or 6 pairs. Inflorescence an axillary fascicle, 1- to several flowered; pedicels ca. 2 mm, filamentous, with several bracteoles. Male flowers: sepals 4, broadly ovate; disk glands 4, free; stamens 2; filaments free; thecae longitudinally dehiscent. Female flowers: sepals 6, oblong-elliptic, reflexed in fruit; disk glands 6, oblong; ovary ovate, 3-celled; styles 3, bifid at apex. Fruiting pedicels short; capsules oblate, ca. 2.5 mm in diam., smooth. Seeds ca. 1.2 mm, tawny, brown tuberculate. Fl. Apr–Jul, fr. Jul–Oct.

Montane slopes, grasslands, wastelands, pathsides. Anhui, Fujian, Guangdong, Guangxi, Heilongjiang, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shandong, Taiwan, Zhejiang [Japan, Korea, Mongolia, SE Russia].

All parts are used medicinally as an astringent or antidiarrheal.

28. *Phyllanthus taxodiifolius* Beille in Lecomte, Fl. Gen. Indo-Chine 5: 605. 1927.

落羽杉叶下珠 luo yu shan ye xia zhu

Shrubs up to 2 m tall, monoecious, glabrous throughout; branches 4-angled, up to 5 cm. Leaves densely distichous; stipules lanceolate, ca. 2 mm; petiole very short; leaf blade linear-oblong, (3–)5–6 × (0.5–)1–2 mm, thickly papery to thinly leathery, base and apex obtuse; lateral veins obscure. Inflorescences axillary, along proximal part of branchlets, 1-flowered. Male flowers: pedicels filamentous, ca. 2 mm; sepals 4, obovate, ca. 1 mm, valvate; disk glands 4, membranous, obovate; stamens 2; filaments ca. 0.1 mm, connate. Female flowers: pedicels ca. 2 mm; sepals 6, ovate, ca. 1.5 mm, entire; disk cup-shaped, surrounding ovary base, apex irregularly sinuate; ovary ovoid; styles 3, bifid at apex. Fruiting pedicel 2.7–3 mm; capsules globose, 4–5 mm in diam., pericarp thin, brownish, 3-locular. Seeds 3-angled, 2.5–2.7 × 1–1.5 mm, papillate. Fl. Jul–Sep, fr. Sep–Dec.

Montane scrub forests or forest margins; 500–800 m. SW Guangxi, S Yunnan [Cambodia, Thailand, Vietnam].

29. *Phyllanthus nanellus* P. T. Li, Acta Phytotax. Sin. 25: 376. 1987.

单花水油甘 dan hua shui you gan

Shrubs up to 1 m tall, monoecious, glabrous throughout; stem terete, gray-brown; branches angular; branchlets alternate or 2–4-fascicled, flattened, 2-winged. Leaves distichous; stipules triangular, margin membranous; petiole very short to

almost absent; leaf blade ovate or oblong-ovate, 4–5 × ca. 2 mm, thinly leathery, base oblique, apex acute; lateral veins 3 pairs, obscure abaxially, slightly conspicuous adaxially. Inflorescences axillary, usually 1-flowered; pedicels ca. 2 mm. Male flowers: sepals 4, rounded, ca. 1 mm, margin membranous; disk glands 4, oblong-ovate; stamens 2; filaments connate into column; anthers parallel, thecae transversely dehiscent. Female flowers: sepals 6, broadly ovate, ca. 1.2 mm, persistent in fruit; disk discoid, surrounding ovary base; ovary globose, 3-celled; styles 3, bifid at apex. Capsule globose, ca. 3 mm in diam., brownish. Fl. and fr. throughout year.

- Montane sparse forests, rivulets, scrub; 300–400 m. S Hainan.

30. *Phyllanthus guangdongensis* P. T. Li, Acta Phytotax. Sin. 25: 375. 1987.

广东叶下珠 *guang dong ye xia zhu*

Shrubs ca. 1 m tall, monoecious, glabrous throughout; stem and branches terete. Stipules broadly ovate, ca. 1 mm; petiole 2–3 mm; leaf blade elliptic or ovate, 3–4.5 × 1.3–1.7 cm, papery, base rounded, apex shortly acuminate; lateral veins 6–9 pairs, usually obscure. Inflorescences axillary, 1- or 2-flowered, male along proximal part of branchlets, female distal. Male flowers: pedicels delicate, 5–7 mm; sepals 4, broadly ovate, ca. 2 × 1.5 mm, red, entire; disk 4-lobed, lobes semiorbicular; stamens 2; filaments connate into short column; thecae longitudinally dehiscent. Female flowers: pedicels 2–5 cm; sepals 6, broadly ovate, ca. 3 × 2 mm, persistent in fruit; disk discoid, surrounding ovary base; ovary globose, 3-celled; styles 3, spreading, adnate to ovary at apex, bifid at apex, lobes revolute. Fruiting pedicels 2.5–5 cm; capsules globose, to 7 mm in diam. Fl. Oct–Nov, fr. Nov–Dec.

- Montane sparse forests; 300–500 m. SW and W Guangdong.

31. *Phyllanthus bodinieri* (H. Léveillé) Rehder, J. Arnold Arbor. 18: 212. 1937.

贵州叶下珠 *gui zhou ye xia zhu*

Sterculia bodinieri H. Léveillé, Fl. Kouy-Tchéou, 406. 1914–1915.

Shrubs up to 1 m tall, monoecious, glabrous throughout; branches grayish, lenticellate; branchlets angular-winged. Leaves distichous; petiole ca. 1 mm; leaf blade ovate-lanceolate, 2–3.5 × 0.8–1.2 cm, thinly leathery, abaxially brownish, adaxially yellowish green, base broadly cuneate, margin revolute when dry; midrib elevated on both surfaces, lateral veins 4 or 5 pairs, obscure. Plants monoecious. Inflorescence an axillary fascicle, ca. 7-flowered. Male flowers ca. 4 mm in diam.; pedicels delicate, 3–8 mm; sepals 4, broadly ovate, purple-red, entire; disk glands 4, broadly elliptic, free, horizontal, middle concave inside; stamens 2, connate; thecae 2, transversely dehiscent. Female flowers 4–4.5 mm in diam.; pedicels 6–10 mm; sepals 6, broadly ovate; disk cup-shaped; ovary globose, 3-celled; styles 3, bifid at apex. Capsules globose. Fl. Sep–Oct, fr. Oct–Nov.

- Montane sparse forests; 500–1000 m. SE Guangxi, SE Guizhou.

The roots and leaves are used as medicine for traumatic injury.

32. *Phyllanthus fangchengensis* P. T. Li, Acta Phytotax. Sin. 25: 377. 1987.

尖叶下珠 *jian ye xia zhu*

Shrubs ca. 1 m tall, glabrous throughout; stem terete, brownish; branchlets gray-green, winged, lenticellate. Leaves distichous; stipules triangular, ca. 2 mm, brown, margin membranous; petiole 1–2 mm; leaf blade lanceolate, 2–6 × 0.7–1.3 cm, papery, abaxially greenish, adaxially dark green, base rounded or obtuse, margin revolute when dry. Plants monoecious. Inflorescence an axillary fascicle, bisexual with 1 male and 2 or 3 female flowers. Male flowers: pedicels delicate, 1–1.5 cm; sepals 4, broadly ovate, ca. 2 × 1.7 mm, whitish, apex rounded; disk glands 4, reniform or semiorbicular, entire; stamens 2; filaments connate; thecae 2-celled, longitudinally dehiscent. Female flowers: pedicels 2–2.3 cm; sepals 6, in 2 series of 3, ovate to broadly so, 2–2.5 × 1.5–2 mm, entire, persistent in fruit; disk discoid, fleshy, apex subentire, surrounding ovary at base; ovary globose, ca. 2 mm in diam., 3-celled; styles 3, free, bifid at apex, lobes linear, infracted. Capsule globose, ca. 5 mm in diam., reddish, 3-valved when mature. Fl. Apr–Jul, fr. Jul–Oct.

- Valleys, rivulets, scrub; 200–400 m. SE Guangxi.

