

## PHYTOLACCACEAE

商陆科 shang lu ke

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Herbs or shrubs, rarely trees, erect, rarely scandent, mostly glabrous, rarely dioecious. Leaves simple, alternate, entire; stipules absent or tiny. Inflorescences terminal, axillary, or leaf-opposed, racemose, cymose, paniced, or spicate. Flowers small, bisexual or rarely unisexual, actinomorphic, rarely zygomorphic. Tepals 4 or 5, persistent, free or connate at base, equal or unequal, imbricate in bud, green or sometimes other colored. Stamens 4 to many, inserted on a fleshy disk; filaments usually persistent, free or slightly connate at base; anthers 2-loculed, dorsifixed, longitudinally dehiscent. Ovary superior, globose; carpels 1 to many, free or connate; ovule solitary in each carpel, basal, campylotropous. Styles persistent, short or absent, erect or curved, as many as carpels. Fruit fleshy, a berry or drupe, rarely a capsule. Seeds reniform or oblate, small; testa membranous or hard and fragile, smooth or wrinkly; embryo large, curved, surrounding copious mealy endosperm.

Seventeen genera and ca. 70 species: widespread in tropical and temperate regions, especially in the neotropics and S Africa; two genera (one introduced) and five species (one endemic, two introduced) in China.

Lu Dequan. 1996. Phytolaccaceae. *In*: Tang Changlin, ed., *Fl. Reipubl. Popularis Sin.* 29: 14–20.

- 1a. Tepals 5; stamens 6–33; carpels 5–16; fruit black or dark red ..... 1. *Phytolacca*
- 1b. Tepals 4; stamens 4, carpel 1; fruit red or orange ..... 2. *Rivina*

### 1. PHYTOLACCA Linnaeus, Sp. Pl. 1: 441. 1753.

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Herbs or shrubs, rarely trees, erect, rarely scandent. Root usually thick, fleshy. Stems and branches terete, sulcate or angular, glabrous or young shoot and inflorescence pubescent. Leaves petiolate, rarely sessile; leaf blade ovate, elliptic, or lanceolate, apex acute or obtuse. Flowers pedicellate or sessile, in racemes, cymose panicles, or spikes, terminal or leaf-opposed. Tepals 5, persistent, spreading or reflexed, oblong to ovate, herbaceous or membranous, apex obtuse. Stamens 6–33, inserted at base of tepals; filaments subulate or linear, free or connate at base, included or exerted. Ovary subglobose, carpels 5–16, free or connate. Styles subulate. Fruit a fleshy berry, oblate. Seeds black, shiny, reniform, compressed; testa hard and fragile, smooth; tegument membranous.

About 25 species: nearly cosmopolitan, mostly native to South America, a few species in Africa and Asia; four species (one endemic, one introduced) in China.

- 1a. Inflorescence arching or pendulous; flowers loosely spaced; infructescence pendent ..... 4. *P. americana*
- 1b. Inflorescence erect; flowers densely spaced; infructescence erect.
  - 2a. Seeds with slender concentric striations; carpels 6–10, connate ..... 3. *P. japonica*
  - 2b. Seeds smooth; carpels usually 8, distinct or connate.
    - 3a. Carpels distinct; stamens 8–10; carpels usually green or white ..... 1. *P. acinosa*
    - 3b. Carpels connate; stamens 12–16; carpels usually pink ..... 2. *P. polyandra*

**1. *Phytolacca acinosa*** Roxburgh, *Fl. Ind.*, ed. 1832, 2: 458. 1832.

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*Phytolacca esculenta* Van Houtte; *P. pekinensis* Hance.

Herbs perennial, glabrous, 0.5–1.5 m tall. Roots obconic, thick, fleshy. Stems erect, green or reddish purple, terete, longitudinally grooved, fleshy, branched. Petiole 1.5–3 cm; leaf blade elliptic or lanceolate-elliptic, 10–30 × 4.5–15 cm, papery, base cuneate, apex acuminate or sharply pointed. Racemes erect, terete, usually shorter than leaves, densely flowered; peduncle 1–4 cm. Pedicel 6–10(–13) mm. Flowers bisexual, ca. 8 mm in diam. Tepals 5, white or yellowish green, elliptic, ovate, or oblong, 3–4 × ca. 2 mm, equal, after anthesis reflexed. Stamens 8–10, ca. as long as tepals; filaments persistent, white, subulate, base broad; anthers pink, elliptic. Carpels usually 8, distinct. Styles erect, short, apex curved. Infructescence erect.

Berry purplish black when mature, oblate, ca. 7 mm in diam. Seeds reniform, ca. 3 mm, 3-angulate, smooth. Fl. May–Aug, fr. Jun–Oct.  $2n = 18, 36^*, 72$ .

Valleys, hillsides, forest understories, forest margins, roadsides, cultivated beside houses, moist fertile lands, or a weed; 500–3400 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Jiangsu, Liaoning, Shaanxi, Shandong, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, India, Japan, Korea, Myanmar, Sikkim, Vietnam].

This species is used medicinally.

**2. *Phytolacca polyandra*** Batalin, *Trudy Imp. S.-Peterburgsk. Bot. Sada* 13: 99. 1893.

多药商陆 duo yao shang lu

*Phytolacca clavigera* W. W. Smith.

Herbs (0.5–)1–1.5 m tall. Petiole 1–2 cm; leaf blade

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elliptic-lanceolate or elliptic, 9–27 × 5–10.5 cm, glabrous, base cuneate, attenuate, apex acute or acuminate, with glandular sharp point. Racemes erect, terete, 5–32 × 1.8–4.5 cm; peduncle 1.5–6 cm. Pedicel 1–1.8 cm. Tepals 5, pink, oblong, 4–6 × ca. 2.5 mm. Stamens 12–16, bicyclic; filaments broadened at base; anthers white. Carpels (6–)8(or 9), connate. Styles erect or apex slightly curved, ca. 2.5 × as long as ovary. Berry ca. 7 mm in diam., becoming membranous, appressed to seeds. Fl. May–Aug, fr. Jun–Sep.

• Hillsides, forest understories, gullies, riversides, roadsides; 1100–3000 m. Gansu, Guangxi, Guizhou, Sichuan, Yunnan.

**3. *Phytolacca japonica*** Makino, Bot. Mag. (Tokyo) 6: 49. 1892.

日本商陆 ri ben shang lu

*Phytolacca humanensis* Handel-Mazzetti; *P. zhejiangensis* W. T. Fan.

Herbs perennial, ca. 1 m tall. Leaf blade oblong to ovate-oblong, 15–32 × 5–10 cm, base cuneate, apex acuminate or acute. Racemes erect. Tepals reddish. Stamens ca. 10. Carpels 6–10, connate. Inflorescence 4.5–11 × 2–3.5 cm. Berry oblate,

ca. 8 mm in diam. Seeds reniform-orbicular, ca. 3 mm in diam., with slender concentric striations. Fl. and fr. Jun–Aug.  $2n = 72$ .

Valleys, forest understories, riversides; 300–1100 m. Anhui, Fujian, Guangdong, Hunan, Jiangxi, Shandong, Taiwan, Zhejiang [Japan].

**4. *Phytolacca americana*** Linnaeus, Sp. Pl. 1: 441. 1753.

垂序商陆 chui xu shang lu

*Phytolacca decandra* Linnaeus.

Herbs perennial, 1–2 m tall. Root obconic, thick. Stems erect, sometimes reddish purple, terete. Petiole 1–4 cm; leaf blade elliptic-ovate or ovate-lanceolate, 9–18 × 5–10 cm, base cuneate, apex acute. Racemes terminal or lateral, 5–20 cm. Pedicel 6–8 mm. Flowers ca. 6 mm in diam. Tepals 5, white, slightly red. Stamens, carpels, and styles 10; carpels connate. Inflorescence pendent. Berry purple-black when mature, oblate. Seeds reniform-auricular, ca. 3 mm. Fl. Jun–Aug, fr. Aug–Oct.  $2n = 18^*$ ,  $36^*$ .

Cultivated. Anhui, Fujian, Guangdong, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang [native to North America; widely naturalized in Asia and Europe].

This species is used medicinally.

## 2. RIVINA Linnaeus, Sp. Pl. 1: 121. 1753.

数珠珊瑚属 shu zhu shan hu shu

Herbs or subshrubs. Stems erect, dichotomous, angulate, glabrous or pubescent. Leaves long petiolate; leaf blade ovate, base rounded or attenuate, apex acuminate. Racemes terminal or axillary, erect or curved, slender. Flowers bisexual, small. Tepals 4, persistent. Stamens 4. Ovary superior, ovoid, 1-carpelled, 1-loculed. Style shorter than ovary, slightly curved; stigma capitate. Berry red or orange.

One species: tropical and subtropical America; introduced in tropical regions elsewhere.

**1. *Rivina humilis*** Linnaeus, Sp. Pl. 1: 121. 1753.

数珠珊瑚 shu zhu shan hu

Plants 30–100 cm tall. Branches spreading, pubescent when young. Leaves rather remote; petiole 1–3.5 cm, pubescent; leaf blade ovate or ovate-lanceolate, 4–12 × 1.5–4 cm, abaxially pubescent along midvein, adaxially glabrous, base attenuate, margin slightly serrulate, apex long acuminate. Racemes 4–10 cm (including peduncle), pubescent. Pedicel slen-

der, with a bract and a pair of bracteoles. Tepals white or pink, elliptic or obovate-oblong, 2–2.5 mm, in fruit 3–3.5 mm, green, reflexed. Stamens shorter than and alternate with tepals. Berry globose or pyriform, 3–4 mm. Seeds ca. 2 mm.  $2n = 126$ .

Cultivated, possibly escaped as a weed around houses or rubbish heaps. Fujian (Fuzhou), Guangdong (Guangzhou), Zhejiang (Hangzhou) [probably native to tropical America; now widespread in tropics and subtropics].

This species is cultivated as an ornamental.

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