

3. PEPEROMIA Ruiz & Pavon, Fl. Peruv. Prodr. 8: 8. 1794

草胡椒属 cao hu jiao shu

Herbs annual or, usually perennial, (Chinese species) rooting from nodes toward base of stem and with erect or ascending flowering shoots. Stems usually dwarf, fleshy; vascular bundles free, scattered. Prophylls absent. Leaves alternate, opposite, or whorled, main lateral veins all basal; reticulate veins inconspicuous. Flowers bisexual, very small, often within depressions in rachis, sessile. Inflorescence a spike, usually erect, terminal or axillary, rarely leaf-opposed, solitary, paired, or clustered; rachis as thick or slightly thicker than peduncle; bracts ± orbicular, peltate (sometimes oblong and/or not peltate). Stamens 2; filaments short, thecae ± globose, ellipsoid, or cylindrical. Ovary 1-loculed; ovule 1; stigma 1, rarely 2-cleft, globose, apex obtuse or acute, beaked or brushlike, lateral or terminal. Fruit a very small, sticky nutlet, often partly enclosed in pit in rachis, sometimes distinctly curved. About 1000 species: widely distributed in tropical and subtropical regions; seven species (two endemic, one introduced) in China, mostly growing on trees or moss-covered rocks.

- 1a. Leaves alternate, base of blade cordate; erect or ascending; annuals 7. *P. pellucida*
- 1b. Leaves opposite or in whorls of 3–5, base of blade cuneate to rounded; stoloniferous perennials.
 - 2a. Rachis of inflorescence densely pubescent; dried stems deeply sulcate; leaves usually thick and wrinkled when dried 1. *P. tetraphylla*
 - 2b. Rachis of inflorescence glabrous; dried stems flat or irregularly wrinkled; leaves thin and flat when dried.
 - 3a. Leaf apex deeply notched; plants completely glabrous 6. *P. nakaharai*
 - 3b. Leaf apex mostly rounded, rarely shallowly emarginate; stems hairy.
 - 4a. Leaves persistently uniformly pubescent to shortly hispid on both surfaces.
 - 5a. Leaves 1(–3)-veined; petiole 1.5–3 mm 2. *P. cavaleriei*
 - 5b. Leaves 3–5-veined; petiole 5–18 mm 3. *P. blanda*
 - 4b. Leaves glabrous or rapidly glabrescent, or ciliolate only at apex and margin.
 - 6a. Leaves elliptic to oblanceolate, 1(–3)-veined; spikes 1 per flowering shoot, rarely more, less than 2 cm; fruit ellipsoid, curved 4. *P. heyneana*
 - 6b. Leaves obovate, 3-veined; spikes several per flowering stem, 2–4.5 cm; fruit broadly ovoid, straight 5. *P. rubrivenosa*

1. *Peperomia tetraphylla* (G. Forster) Hooker & Arnott, Bot. Beechey Voy. 97. 1832.

豆瓣绿 dou ban lu

Piper tetraphyllum G. Forster, Prodr. Fl. Ins. Austr. 5: 5. 1786; *Peperomia reflexa* (Linnaeus f.) A. Dietrich (1831), not *P. reflexa* Kunth (1815); *P. reflexa* (Linnaeus f.) A. Dietrich f. *sinensis* C. de Candolle; *P. tetraphylla* var. *sinensis* (C. de Candolle) P. S. Chen & P. C. Zhu; *Piper reflexum* Linnaeus f.

Herbs perennial, fleshy, forming clumps, usually glabrous except for rachis and bases of bracts. Stolons present. Stems many branched, 10–30 cm, internodes thickly ridged. Leaves dense, ± uniform in size; petiole 1–2 mm, glabrous or pubescent; leaf blade broadly elliptic or suborbicular, 0.9–1.2 cm × 5–9 mm, fleshy, pale and usually wrinkled when dried, pellucid dotted, glabrous or sparsely pubescent, rarely densely pubescent, base and apex rounded, slightly revolute; veins 3, slender, usually inconspicuous. Spike terminal and axillary, solitary, 2–4.5 cm; peduncle sparsely pubescent to ± glabrous; bracts suborbicular, stalk short. Filaments short, thecae rounded-“D”-shaped. Ovary

ovoid, inserted within excavations of rachis; stigmas capitate, pubescent. Nutlet subovoid, ca. 1 mm. Fl. Feb–Apr, Sep–Dec.

Wet rocks and dead trees, along streams; 600–3100 m. Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Sichuan, Taiwan, S Xizang, Yunnan [Bhutan, India, Indonesia, Malaysia, Philippines, Sikkim, Sri Lanka, Thailand; Africa, Central and South America, Oceania]. Some plants from Guizhou and S Yunnan are much more densely hairy than the typical form of *Peperomia tetraphylla* and can be separated as var. *sinensis*.

Used for medicinal and ornamental purposes.

2. *Peperomia cavaleriei* C. de Candolle, Nouv. Ann. Mus. Hist. Nat. 3: 41. 1914.

硬毛草胡椒 ying mao cao hu jiao

Herbs 15–30 cm high. Stolons present. Stems fleshy, branched, densely hispid. Petiole 1.5–3 mm, densely hispid; leaf blade broadly elliptic to long obovate, 1.5–2.5 × 1–1.5 cm, papery, glandular, both surfaces hispid, base cuneate, apex rounded; vein(s) 1(–3), usually hidden by hairs. Spikes terminal and axillary, much longer than leaf blades, 3–5 cm, flowers ± dense, sunken into rachis; peduncle 1.1–1.5 cm, sparsely pubescent; bracts suborbicular, ca. 0.5 mm wide, stalk

short. Filaments slender; anthers globose. Ovary ellipsoid, dotted, apex \pm acute, scabrous. Fl. May–Jul.

• Forests, wet rocks. Guangxi, Guizhou, Yunnan.

This species might prove to be a depauperate form of the widespread and variable *Peperomia blanda*.

3. *Peperomia blanda* (Jacquin) Kunth, Nov. Gen. Sp. 1: 67. 1816.

石蝉草 shi chan cao

Piper blandum Jacquin, Collectanea 3: 211. 1789;
Peperomia arabica Decaisne ex Miquel var. *floribunda* Miquel; *P. blanda* var. *floribunda* (Miquel) Hüber; *P. dindygulensis* Miquel; *P. esquirolii* H. Léveillé; *P. fauriei* C. de Candolle; *P. formosana* C. de Candolle; *P. japonica* Makino; *P. laticaulis* C. de Candolle; *P. leptostachya* Hooker & Arnott; *P. leptostachya f. cambodiana* C. de Candolle; *P. leptostachya var. cambodiana* (C. de Candolle) Merrill; *P. sui* Lin & Lu. Herbs perennial, usually terrestrial, (10–)20–45(–50) cm high, all parts pubescent. Stolons present, slender, leafless. Stems often very fleshy, often reddish. Petiole (0.5–)1–1.5 cm; leaf blades elliptic-obovate, those at base of stem sometimes suborbicular, abaxially often reddish, 2–4(–6.5) \times 1–2(–4) cm, \pm membranous when dried, glandular, both surfaces pubescent, base tapered to cuneate, apex rounded to subacute; veins 3(–5). Spikes terminal and from axils of apical leaves, sometimes fascicled, (3.5–)5–8(–12) cm, flowers lax; peduncle 0.5–1.5(–2) cm; rachis 2.5–10 cm \times (0.5–)1–2 mm; bracts \pm orbicular, ca. 0.8 mm wide, gland dotted. Filaments short, thecae rounded-“D”-shaped. Ovary obovoid, apex obtuse to emarginate. Nutlet sometimes borne on shortly conical false pedicel when fully ripe, globose to broadly ellipsoid, 0.5–0.8(–1.2) mm, obscurely papillate. Fl. Apr–Dec.

Forests, shady, wet rock crevices; 100–1900 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Taiwan, Yunnan [Bangladesh, Cambodia, India, Japan, Malaysia, Myanmar, Sri Lanka, Thailand, N Vietnam; Africa, SW Asia, South America].

A very wide view has been taken of this taxon, which is treated as a pantropical species. The extremes are certainly very distinct: robust, green plants with large whorls of blunt tipped leaves (“*Peperomia japonica*”), contrasting with more slender plants, often with reddish stems and abaxial leaf surfaces, and with pairs of acutely tipped leaves (“*P. dindygulensis*”), but these are connected through intermediates, and it does not seem practicable to separate taxa. A possible exception is the recently described *P. sui*, from Taiwan, which is very clearly differentiated from other collections from that island (which mostly fall comfortably within *P. japonica sensu stricto*) by the minutely papillate abaxial leaf epidermis. This feature is very difficult to see in herbarium material and needs investigating more widely. The “pseudopedicels” (minute, domed swellings of the rachis that raise up the mature fruit), which are supposed to provide a distinction between *P. blanda* and *P. leptostachya* (present in the former, absent in the latter), occur very irregularly throughout the range of this species and are probably of uncertain significance.

Used medicinally.

4. *Peperomia heyneana* Miquel, Syst. Piperac. 123. 1843.

蒙自草胡椒 meng zi cao hu jiao

Peperomia duclouxii C. de Candolle.

Herbs perennial, forming clumps, 5–15 cm or slightly higher. Stolons present. Stems branched, glabrous or sparsely pubescent. Petiole 1–8 mm, usually glabrous; middle and leaf blades toward base of stem usually small, obovate-oblong or obovate-cuneate, rarely suborbicular, 0.5–1.5 cm \times 3–8 mm, membranous, dotted, both surfaces glabrous or finely pubescent when young, glabrescent, base cuneate, apex rounded or emarginate, rarely with ciliolate sinus; veins 1 or 3. Spikes terminal, rarely axillary, usually solitary, rarely fascicled, 1–4.5 cm; peduncle 0.5–1.5 cm; rachis glabrous, 1–2 mm thick; bracts \pm orbicular, ca. 0.5 mm wide, stalk short. Filaments slightly longer than anthers; anthers \pm globose. Ovary ovoid, oblique, very small, papillate-pilose; stigmas glabrous. Nutlet ovoid to ovoid-oblong, ca. 0.8 \times 0.4 mm. Fl. Apr–Oct.

Forests, ravines, wet, moss-covered rocks; 800–2000 m. W Guangxi, Guizhou, S Sichuan, Xizang, Yunnan [Bhutan, India, Myanmar, Nepal, Sikkim].

5. *Peperomia rubrivenosa* C. de Candolle, Philipp. J. Sci., C. 5: 409. 1910.

兰屿椒草 lan yu jiao cao

Peperomia kotoensis Yamamoto.

Herbs perennial, 3–9 cm high, most parts sparsely pilose. Stems with a few hairs. Petiole 3–9 mm; leaf blade obovate, orbicular, ovate-rhombic, or ovate, 1.2–2.5 \times 1.2–1.5 cm, papery, base cuneate to rounded, apex rounded, margin sparsely hairy when young; veins 3. Spikes both terminal and from axils of apical leaves, sometimes up to 3 together, several per flowering shoot, to ca. 4 cm \times 1 mm; peduncle to 1.1 cm; rachis to 3 cm; flowers sparse; bracts orbicular, ca. 0.5 mm wide. Filaments very short; anthers orbicular. Nutlet broadly ovoid, ca. 0.6 \times 0.4 mm.

Wet, evergreen forests, on moss-covered rocks and trees; 300–400 m. Taiwan (Lan Yu opposite SE coast) [Philippines].

6. *Peperomia nakaharai* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 25: 188. 1908.

山椒草 shan jiao cao

Herbs perennial, ca. 9 cm high, glabrous throughout. Stolons present. Stems prostrate, with many ascending branchlets. Petiole 0.5–3 mm; leaf blade obovate-cuneate, 3–11 \times 2–6 mm, \pm membranous, abaxially glaucous, base cuneate to rounded, apex deeply notched; vein 1. Spikes terminal, ca. 1.5 cm; rachis 0.5–2 cm; bracts gland dotted. Ovary sessile, ovoid. Nutlet ca. 0.5 mm. Fl. Jun–Nov.

• Forests; 700–2500 m. SC Taiwan.

7. *Peperomia pellucida* (Linnaeus) Kunth, Nov. Gen. Sp. 1: 64. 1816.

草胡椒 cao hu jiao

Piper pellucidum Linnaeus, Sp. Pl. 1: 30. 1753.

Herbs annual, fleshy, 20–40 cm high, all parts glabrous. Stems erect or ascending, branched, glabrous. Petiole

Flora of China 4: 129–131. 1999.

1–2 cm; leaf blade broadly ovate or ovate-triangular, length \pm equal to width, 1–3.5 cm, membranous, both surfaces glabrous, translucent, base cordate, apex acute or obtuse; veins 5–7. Spikes terminal or leaf-opposed, slender, 2–6 cm, glabrous, flowers lax; bracts suborbicular, ca. 0.5 mm wide, stalk short. Anthers subglobose. Ovary ellipsoid; stigmas pubescent. Nutlet globose, ca. 0.5 mm in diam. Fl. Apr–Jul.

Wet places within forests, rock crevices, bases of cliffs, sometimes a weed of cultivation; near sea level to 200 m. Fujian, Guangdong, Guangxi, Hainan, Yunnan [native to tropical North and South America].

Flora of China 4: 129–131. 1999.