

## 16. KAEMPFERIA Linnaeus, Sp. Pl. 1: 2. 1753.

山柰属 shan nai shu

Rhizomes fleshy, tuberous; roots often bearing small tubers. Pseudostem short or obsolete. Leaves 1 to few; ligule usually small or absent; petiole short; leaf blade suborbicular to filiform, sometimes variegated or abaxially purple. Inflorescences terminal on pseudostems or on separate shoots arising from rhizomes (when appearing before pseudostems), capitate, spirally few to many flowered; bracts 1-flowered; bracteoles small, apically 2-lobed or sometimes 2-cleft to base. Calyx tubular, split on 1 side, apex unequally 2- or 3-toothed. Corolla tube equaling or much longer than calyx; lobes spreading or reflexed, lanceolate, subequal. Lateral staminodes petaloid. Labellum usually white or lilac, sometimes marked with different color near base, showy, apically 2-lobed to 2-cleft to base. Filament very short or absent; connective extended into crest exerted from throat of flower, entire or 2-cleft. Ovary 3-lobed. Capsule globose or ellipsoid; pericarp thin. Seeds subglobose to ellipsoid; aril lacerate.

About 50 species: tropical Asia; six species (one endemic) in China.

- 1a. Inflorescences on separate shoots arising from rhizomes, appearing before pseudostems.
  - 2a. Labellum wholly lilac, apically 2-cleft to base, lobes without yellow lines at center ..... 1. *K. rotunda*
  - 2b. Labellum white or purple, apically 2-lobed for 1/3–1/2 its length, lobes with yellow lines at center.
    - 3a. Labellum white, apically 2-lobed for ca. 1/3 its length; calyx ca. 2.5 cm ..... 2. *K. candida*
    - 3b. Labellum purple, more deeply colored at center, apically 2-lobed for ca. 1/2 its length; calyx 3–6 cm .... 3. *K. simaoensis*
- 1b. Inflorescences terminal on pseudostems.
  - 4a. Leaves erect, leaf blade oblong or elliptic ..... 4. *K. elegans*
  - 4b. Leaves spreading flat on ground, leaf blade suborbicular.
    - 5a. Leaf blade margin usually white; labellum with purple markings at base ..... 5. *K. galanga*
    - 5b. Leaf blade margin purple brown; labellum with longitudinal, purple bands at center ..... 6. *K. marginata*

### 1. *Kaempferia rotunda* Linnaeus, Sp. Pl. 1: 3. 1753.

海南三七 hai nan san qi

Rhizomes with tuberous roots. Leaves 2–4, erect; ligule broadly triangular, 3–4 mm; petiole 1–2 cm, channeled; leaf blade adaxially usually variegated dark and pale green on both sides of midvein, abaxially tinged purple, lanceolate-oblong, 17–27 × 7.5–9.5 cm, base cuneate. Inflorescences on separate shoots arising from rhizomes, appearing before pseudostems, sessile or shortly pedunculate, 4–6-flowered; bracts purple-brown; bracteoles ca. 2.3 cm, apex 2-toothed. Calyx 4.5–7 cm, split on 1 side, apex 3-toothed. Corolla tube equaling calyx; lobes spreading, white, linear, ca. 5 cm. Lateral staminodes erect, white, lanceolate, ca. 5 × 1.7 cm, apex acute. Labellum lilac, suborbicular, apically 2-cleft to base; lobes downcurved, ca. 3.5 × 2 cm, apex acute. Anther connective appendage erect, 2-cleft, fishtail-like. Ovary 4–6 mm, hairy. Fl. Apr.  $2n = 33, 54$ .

Open grasslands, also cultivated. Guangdong, Guangxi, Hainan, Taiwan, Yunnan [India, Indonesia, Malaysia, Myanmar, Sri Lanka, Thailand].

Medicinal.

### 2. *Kaempferia candida* Wallich, Pl. Asiat. Rar. 1: 47. 1830.

白花山柰 bai hua shan nai

Rhizomes and roots tuberous. Leaves not seen. Inflorescences on separate shoots arising from rhizomes, appearing before pseudostems, 6–8-flowered; bracts white, elliptic, 5–7 cm, apex tinged with red. Calyx ca. 2.5 cm, apex 3-toothed. Corolla tube ca. 2 × as long as calyx; lobes lanceolate, ca. 2.5 cm, central one cucullate, apex apiculate. Lateral staminodes erect, white, yellow at base, obovate, ca. 3.5 cm. Labellum reflexed, white, with 2 yellow lines at center, orbicular-cuneate, ca. 4 cm, apically 2-lobed for ca. 1/3 its length. Anther connective ap-

pendage 2-cleft. Fl. May.  $2n = 22$ .

Mountains; ca. 1100 m. SW Yunnan (Lancang Lahu Zu Zizhixian) [Cambodia, Myanmar].

### 3. *Kaempferia simaoensis* Y. Y. Qian, Acta Bot. Austro Sin. 10: 65. 1995.

思茅山柰 si mao shan nai

Plants 10–40 cm tall. Rhizomes and roots tuberous. Leaves 4–7; leaf sheath 1.5–1.7 cm, villous; ligule 2-cleft, membranous, villous; petiole 0.2–6 cm; leaf blade adaxially deep green, abaxially grayish green, rarely purple on both sides of midvein, ovate or elliptic, rarely oblanceolate, 7–27 × 2.5–9.5 cm, glabrous, base cuneate, apex acute. Inflorescences on separate shoots arising from rhizomes, appearing before pseudostems, capitate, 4–9-flowered; peduncle 1–2 cm; bracts white with fine, purple dots adaxially, ovate or ovate-lanceolate, 1–1.6 cm; bracteoles ovate, 9–10 × 3–5 mm, apex becoming 2-lobed after anthesis. Calyx white proximally, pale purple distally, narrowly tubular, 3–6 cm. Corolla tube 4–7 cm; lobes white, lanceolate, 3–4.5 cm. Lateral staminodes white proximally, pale purple distally, obovate, 3–3.5 × 0.9–1.2 cm. Labellum purple, more deeply colored at center, apically 2-lobed for ca. 1/2 its length; lobes with yellowish midvein, ca. 1.5 cm. Filament 3–4 mm; anther yellowish, 7–10 mm; connective appendage white with purple veins, lanceolate, entire or 2-cleft, 8–10 mm. Ovary cylindrical, 4–5 mm. Capsule ellipsoid. Fl. Apr–May, fr. Jul–Aug.

• Forests; ca. 900 m. S Yunnan (Simao Xian).

### 4. *Kaempferia elegans* (Wallich) Baker in J. D. Hooker, Fl. Brit. India 6: 222. 1890.

紫花山柰 zi hua shan nai

*Monolophus elegans* Wallich, Pl. Asiat. Rar. 1: 24. 1830.

Rhizomes with fibrous roots bearing globose tubers. Leaves 2–4; petiole to 10 cm; leaf blade adaxially green, abaxially pale green, oblong or elliptic, 13–15 × 5–8 cm, base rounded, apex acute. Inflorescences terminal on pseudostems, several flowered; peduncle short; bracts green, oblong-lanceolate, ca. 5 cm. Flowers pale purple. Calyx ca. 2.5 cm. Corolla tube slender, ca. 5 cm; lobes lanceolate, 1.7–2 cm. Lateral staminodes obovate-cuneate, ca. 1.2 cm. Labellum apically 2-cleft to base; lobes obovate, 2–2.5 cm. Filament very short; anther ca. 3 mm; connective appendage suborbicular, entire, ca. 6 mm in diam.  $2n = 22^*$ .

Sichuan [India, Malaysia, Myanmar, Philippines, Thailand].

**5. *Kaempferia galanga*** Linnaeus, Sp. Pl. 1: 2. 1753.

山柰 shan nai

Rhizomes pale green or greenish white inside, tuberous, fragrant. Leaves usually 2, spreading flat on ground, subsessile; leaf sheath 2–3 cm; leaf blade green, orbicular, 7–20 × 3–17 cm, glabrous on both surfaces or villous abaxially, margin usually white, apex mucronate or acute. Inflorescences terminal on pseudostems, enclosed by imbricate leaf sheaths, sessile, few to many flowered; bracts lanceolate, ca. 2.5 cm. Calyx equaling bracts. Corolla tube 2–2.5 cm; lobes white, linear, ca. 1.2 cm. Lateral staminodes obovate-cuneate, ca. 1.2 cm. Labellum ca. 2.5 × 2 cm, apex slightly 2-lobed or deeply 2-cleft; lobes white with purple markings at base. Anther sessile; connective appendage strongly reflexed, rectangular, 2-lobed. Fl. Aug–Sep.

Open areas. Guangdong, Guangxi, Taiwan, Yunnan [?Cambodia, India; widely cultivated in SE Asia].

- 1a. Leaves 7–13 × 4–9 cm, glabrous on both surfaces or sparsely villous abaxially; labellum deeply 2-cleft at apex ..... 5a. var. *galanga*
- 1b. Leaves 13–20 × 3–17 cm, villous abaxially; labellum slightly 2-lobed at apex ..... 5b. var. *latifolia*

**5a. *Kaempferia galanga* var. *galanga***

山柰(原变种) shan nai (yuan bian zhong)

Leaves 7–13 × 4–9 cm, glabrous on both surfaces or sparsely villous abaxially. Labellum deeply 2-cleft at apex.  $2n = 22$ .

Open areas. Guangdong, Guangxi, Taiwan, Yunnan [native to India; widely cultivated in SE Asia].

Cultivated for medicine and spice.

**5b. *Kaempferia galanga* var. *latifolia*** Donn ex Gagnepain in Lecomte, Fl. Indo-Chine 6: 49. 1908.

大叶山柰 da ye shan nai

Leaves 13–20 × 3–17 cm, villous abaxially. Labellum slightly 2-lobed at apex.

• S Yunnan [?Cambodia].

Medicinal.

**6. *Kaempferia marginata*** Carey ex Roscoe, Monandr. Pl. Scitam. t. 93. 1824.

苦山柰 ku shan nai

Rhizomes tuberous, yellow (toxic) or white (non-toxic) inside. Leaves usually 2, spreading flat on ground, sessile; ligule triangular; leaf blade purple-brown, adaxially green, abaxially purple, or green variegated purple, or rarely green, suborbicular, 8–11 × 6–9 cm, base cordate or rounded, margin thickened. Inflorescences terminal on pseudostems, enclosed by 2 leaf sheaths, 15–30-flowered; bracts greenish white, lanceolate, ca. 3.8 cm. Flowers slightly purple. Calyx ca. 2.5 cm, apex 2-cleft. Corolla tube ca. 4 cm; lobes linear, ca. 2.5 cm, central one hooked at apex. Lateral staminodes white, suborbicular. Labellum white with longitudinal, purple bands at center, oblate, 1.2–1.8 × 2–2.8 cm, apically 2-cleft to base; lobes suborbicular. Filament ca. 1 mm; anther ca. 4 mm; connective appendage oblong, 2-cleft.

Scrub, open grasslands. Yunnan [India, Myanmar, Thailand].

Flora of China 24: 368–370. 2000.