

15. CHAMAEGASTRODIA Makino & F. Maekawa, Bot. Mag. (Tokyo) 49: 596. 1935.

叠鞘兰属 die qiao lan shu

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Herbs, small, holomycotrophic. Rhizome coralloid, fleshy, sometimes branching. Stem ascending or erect, yellow to pale brownish red, tinged purplish red, glabrous, leafless, with overlapping sheathing scales. Inflorescence erect, terminal, racemose, glabrous, several to many flowered; floral bracts membranous, glabrous. Flowers erect, not resupinate, small; ovary fusiform, not twisted, glabrous. Sepals free, ± similar, glabrous; dorsal sepal ovate, usually connivent with petals; lateral sepals enclosing base of lip. Petals oblong to ligulate-lanceolate, nearly as long as dorsal sepal, much narrower than sepals, membranous; lip usually 3-partite and T-shaped, or rarely entire, ovate with unlobed apex; hypochile concave-saccate, containing 2 fleshy calli toward base (1 on either side of midvein); mesochile subtubular, sometimes with narrow lamellate flanges along external lateral margins; epichile bilobed. Column stout, ventrally with 2 triangular-falcate appendages (wings) toward apex; anther ovoid, 2-locular, sessile or rarely attached to column via a slender filament; pollinia 2, each longitudinally parted, granular-farinaceous, sectile, attenuate into slender stalk and attached to a solitary viscidium; rostellum long or short, remnant entire to shortly bifid; stigma lobes confluent to narrowly separated, small to relatively large, raised, placed toward apex of column beneath lower margin of rostellum.

About three species: China, India, Japan, Myanmar, Thailand, Vietnam; three species (one endemic) in China.

Despite the leafless, mycotrophic habit, the shape of the lip and the structure of the column indicate that *Chamaegastrodia* is closely related to *Odontochilus*. Indeed, taxa previously included here (see Seidenfaden, Nordic J. Bot. 14: 293–301. 1994) that were first described in the now defunct genus *Evrardia* have been transferred recently to *Odontochilus* (see Pridgeon et al., Gen. Orchid. 3: 74. 2003). The shape and placement of the column wings in the remaining three species of *Chamaegastrodia* are thought to distinguish them from the rest of *Odontochilus*, though more detailed study, including molecular data, may reveal this distinction to be artificial.

- 1a. Lip narrowly ovate to ovate-oblong, 3–3.5 mm, apex acute to acuminate 1. *C. vaginata*
- 1b. Lip T-shaped, 5–7 mm, with a dilated, 2-lobed epichile.
 - 2a. Lip mesochile with external flanges; anther lacking basal lobes, attached to column via a short filament 2. *C. shikokiana*
 - 2b. Lip mesochile lacking external flanges; anther with 2 narrowly triangular-lanceolate lobes at base, sessile 3. *C. inverta*

1. *Chamaegastrodia vaginata* (J. D. Hooker) Seidenfaden, Nordic J. Bot. 14: 294. 1994.

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Aphyllorchis vaginata J. D. Hooker, Fl. Brit. India 6: 117. 1890; *Chamaegastrodia exigua* (Rolfe) F. Maekawa ex Ormerod; *Evrardianthe exigua* (Rolfe) Rauschert; *Hetaeria exigua* (Rolfe) Schlechter; *Spiranthes exigua* Rolfe.

Plants 4–6 cm tall. Rhizome stout, fleshy. Stem erect, deep red, somewhat slender, with several dark red sheathing scales. Inflorescence 4-flowered; rachis 2–3 cm; floral bracts dark red, oblong-lanceolate, ca. 8 mm, slightly exceeding to subequal in length to ovary, apex subacute. Flowers deep red; ovary and pedicel brownish red, cylindric-fusiform, 6–8 mm. Dorsal sepal connivent with petals, ovate, concave, ca. 3 × 1.6 mm, 1-veined, apex subobtuse; lateral sepals ovate, oblique, ca. 3.2 × 1.6 mm, 1-veined, apex subobtuse. Petals narrowly oblong to oblong-lanceolate, ca. 3 × 0.8–1 mm, 1-veined, apex obtuse-acute; lip narrowly ovate to ovate-oblong, 3–3.5 × ca. 1.2 mm, base concave and with 2 sessile, elliptic calli, apex unlobed, acute to acuminate. Column stout, with 2 narrowly lanceolate wings toward apex; anther broadly ovoid, sessile; pollinia 2, attached to a narrowly oblong viscidium; rostellum subulate, curved slightly backward, remnant shortly bifid. Fl. Aug.

Along valleys and in damp places in evergreen broad-leaved forests; 1000–1600 m. Hubei, Sichuan [NE India].

The shape of the lip suggests that this entity is probably a semipaloric form. Seidenfaden (Nordic J. Bot. 14: 293–301. 1994) provides

commentary that suggests that its closest relative is *Chamaegastrodia asraoa* (J. Joseph & Abbareddy) Seidenfaden & A. N. Rao, an Indian species now regarded as a member of *Odontochilus*; if so, the validity of *Chamaegastrodia* as an independent genus is questionable.

2. *Chamaegastrodia shikokiana* Makino & F. Maekawa, Bot. Mag. (Tokyo) 49: 596. 1935.

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Hetaeria shikokiana (Makino & F. Maekawa) Tuyama.

Plants 5–18 cm tall. Rhizome 1.2–1.4 cm, stout, 2.5–3.5 mm in diam. Stem erect, yellow to pale brownish red, with a few membranous sheathing scales. Inflorescence few to more than 10-flowered; rachis 3–5 cm; floral bracts yellow to pale brownish red, narrowly ovate-elliptic, 5–8 mm, shorter than ovary, membranous, apex acute. Flowers yellowish brown; ovary and pedicel yellow to pale brownish red, cylindric-fusiform, 8–10 mm. Sepals 1-veined; dorsal sepal connivent with

petals, ovate, concave, ca. 3×1.6 mm, apex obtuse; lateral sepals ovate, oblique, $3\text{--}3.5 \times 1.8\text{--}2$ mm, apex obtuse. Petals linear, ca. 3×0.6 mm, 1-veined, apex obtuse; lip T-shaped, ca. 4.5 mm, 3-partite; hypochile slightly dilated, concave-saccate, ca. 0.8 mm, containing 2 sessile, subglobose calli at base; mesochile ca. 2 mm, with external flanges; flanges narrow, margin irregularly incised-crenulate; epichile transversely dilated, suboblong, ca. 2×5 mm, 2-lobed; lobes suboblong, diverging at right angles to axis of lip, ca. 1.5×2 mm, margin entire or slightly crenulate, apex truncate or occasionally slightly apiculate. Column short, with 2 triangular, falcate wings toward apex; anther ovoid, attached to column via a short linear filament; rostellum very small. Fl. Jul–Aug.

Damp places in evergreen broad-leaved forests; 2500–2800 m. SW Sichuan, E Xizang [NE India, Japan].

“*Gastrodia shikokiana*” (Makino, Bot. Mag. (Tokyo) 6: 48. 1892) is a nomen nudum and was therefore not validly published.

3. *Chamaegastrodia inverta* (W. W. Smith) Seidenfaden, Nordic J. Bot. 14: 297. 1994.

川滇叠鞘兰 chuan dian die qiao lan

Zeuxine inverta W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 13: 222. 1921; *Evrardianthe inverta* (W. W. Smith) Rauschert; *Hetaeria inverta* (W. W. Smith) Schlechter.

Plants 5–15 cm tall. Rhizome stout, fleshy. Stem erect, pale brownish yellow, with a few brownish yellow sheathing scales. Inflorescence few to more than 10-flowered; rachis 2.5–5.5 cm; floral bracts ovate-lanceolate, 7–9 mm, slightly shorter than ovary, glabrous, apex acute. Flowers orange-yellow; ovary and pedicel brownish yellow, fusiform, 8–10 mm. Dorsal sepal connivent with petals, narrowly oblong, concave, ca. 4×1.2 mm, 1-veined, apex obtuse; lateral sepals ovate, oblique, falcate, ca. 4.5×1.8 mm, 1-veined, apex subacute. Petals linear to linear-lanceolate, falcate, ca. 4×0.5 mm, 1-veined, apex acute; lip T-shaped, 5–6 mm, 3-partite; hypochile slightly dilated, concave-saccate, ca. 1.5 mm, containing 2 domed calli near base; mesochile 2.5–3 mm, lacking external flanges; epichile transversely dilated, suboblong, $1.2\text{--}1.6 \times$ ca. 4 mm, 2-lobed; lobes subquadrate, diverging at right angles to axis of lip, ca. 1.5×1.5 mm, margin minutely erose, apex truncate. Column short, with 2 triangular-falcate wings; anther ovoid, with 2 narrowly triangular-lanceolate lamellate lobes at base; rostellum erect, remnant bifid. Fl. Jul–Aug.

• Damp places in forests, along valleys; 1200–2600 m. SW Sichuan, C and W Yunnan.

