

13. HYPECOUM Linnaeus, Sp. Pl. 1: 124. 1753.

角茴香属 jiao hui xiang shu

Zhang Mingli (张明理); Magnus Lidén

Chiazospermum Bernhardt.

Herbs, annual, low, usually glaucous, glabrous, taprooted, rosulate. Leaves in a basal rosette, lanceolate, oblanceolate, to narrowly obovate in outline, imparipinnate with deeply divided segments. Flowers in long pedunculate dichasia from rosette, bisymmetric. Petals 4, yellow, white, or bluish pink; outer petals flat, shallowly 3-lobed to entire; inner petals deeply 3-lobed; lateral lobes oblong, entire; median lobe with a narrow base and a rounded to oblong limb with a fimbriate or ± denticulate margin, specialized for secondary pollen presentation, initially pressed to stamens/gynoecium. Stamens 4, each with 2 thecae, but median ones with 2 vascular bundles, lateral ones with 1 vascular bundle; filaments flat, ± translucent, with lateral basal nectaries; anthers oblong, extrorse. Style with 2 narrow commissural stigmatic branches. Fruit linear, with many seeds in 1 row, dehiscent with 2 valves or breaking up into 1-seeded units. Seeds flattish, covered with oxalate crystals. Pollen with 2 long colpi, sometimes fused into a synaperture. Chromosome base number = 8.

Eighteen species: Mediterranean region to C Asia and China; four species (one endemic) in China.

See the paper by Dahl, "Infrageneric division of the genus *Hypecoum* L. (Papaveraceae)" (Nordic J. Bot. 10: 129–140. 1992).

- 1a. Ultimate leaf lobes linear to setaceous; petals yellow.
 - 2a. Fruit dehiscent with 2 valves, ± erect; margin of central lobe of inner petals not fimbriate; dry plant not smelling of coumarin; outer petals > 10 mm wide (*H. sect. Chiazospermum* (Bernhardt) Å. E. Dahl) 1. *H. erectum*
 - 2b. Fruit nutant, breaking up into 1-seeded indehiscent units; margin of central lobe of inner petals fimbriate; dry plant smelling of coumarin; outer petals < 5 mm wide (*H. sect. Pendula* Å. E. Dahl) 4. *H. parviflorum*
- 1b. Ultimate leaf lobes obovate-lanceolate; outer petals white, pinkish, or bluish (*H. sect. Leptocarpa* Å. E. Dahl).
 - 3a. Outer petals 6–9 × 4–6 mm; anthers 1–1.5 mm; inner petals pale 2. *H. leptocarpum*
 - 3b. Outer petals 11–12 × 9–10 mm; anthers 3–3.5 mm; inner petals ?orange 3. *H. zhukanum*

1. *Hypecoum erectum* Linnaeus, Sp. Pl. 1: 124. 1753.

角茴香 jiao hui xiang

Chiazospermum erectum (Linnaeus) Bernhardt; *Hypecoum millefolium* H. Léveillé & Vaniot.

Herbs, winter annual, very glaucous. Cotyledons linear. Leaves very numerous; petiole 1–3 cm, vaginate at base; blade oblanceolate, 4–11 × 0.8–2.5 cm, 2 or 3 × pinnate with deeply divided segments; ultimate lobes linear to setaceous, 1–3 mm. Flowering stalks usually several (up to 20) from rosette, usually regular dichasia, but sometimes branched below terminal dichasium, eventually with numerous flowers; first flower produced 5–15 cm from base; whole dichasium (from base to ultimate flower) with widely divergent branches, reaching 10–40 cm when fruiting; bracts/bracteoles paired, lower ones leaf-like, ca. 3 × ternately divided into setaceous lobes, progressively smaller and less divided upward on dichasium. Sepals rather long persistent, ovate, ca. 2 mm, margin entire, apex acuminate. Petals yellow, sometimes with darker spots or streaks; outer petals 10–12 × 10–19 mm, 3-lobed with broad rounded lateral lobes and smaller triangular mid-lobe; inner petals 3-parted to ca. 1/2; lateral lobes broadly oblong; middle lobe elliptic, base truncate, shortly stalked, margin slightly denticulate. Capsule erect, 4–6 cm × ca. 1 mm, slightly flattened, dehiscent with 2 valves. Seeds 30–40, blackish, sharply rectangular, ca. 1 mm, slightly flattened, both sides with a cross-shaped elevation. Fl. and fr. Apr–Oct. 2n = 16.

Slopes, grasslands, riversides, gravel sands; 400–1200(–4500) m. Gansu, Heilongjiang, Hubei, Liaoning, Nei Mongol, Ningxia, Shaanxi,

Shandong, Shanxi, Xinjiang [Mongolia, Russia (Siberia)].

The flowers are wide open in the morning, then closing and slightly nodding in the afternoon.

2. *Hypecoum leptocarpum* J. D. Hooker & Thomson, Fl. Ind. 1: 276. 1855.

细果角茴香 xi guo jiao hui xiang

Hypecoum chinense Franchet.

Herbs, summer annual, ± glaucous. Cotyledons lanceolate. Leaves numerous; petiole 1.5–8 cm, shortly and broadly vaginate at base; blade narrowly oblanceolate, 5–20 × 1–3 cm, pinnate; primary leaflets 4–9 pairs, broadly ovate, 0.4–2 cm, almost sessile, pinnatifid; lobules lanceolate, ovate, or narrowly elliptic to obovate, 2–4 mm, apex acute. Flowering stems few to many, 5–40 cm, dichotomously branched; bracts paired, 0.5–3 cm, lower ones biternate to sub-bipinnate, gradually smaller and less divided upward, uppermost linear. Sepals green, ovate or ovate-lanceolate, 2–3(–4) × 1–1.5(–2) mm, margin membranous, entire, rarely toothed. Petals white or pale lavender, apically green (in type description *Hypecoum chinense* said to have yellowish flowers); outer petals obovate, 6–9 × 4–6 mm, entire; inner petals 3-parted to less than 1/2; lateral lobes broadly oblong, apex obtuse; middle lobe spatulate-orbicular, ca. 2 mm, shortly stalked or sessile, margin incurved, almost entire or slightly denticulate. Stamens with obscure nectaries; anthers 1–1.5 mm. Ovary with up to ?20 ovules. Capsule erect, linear, 3–4 cm × 1–1.5 mm, breaking up into 15–18 segments when mature, each segment with 1 seed. Seeds flattened, D-

shaped. Fl. and fr. Jun–Sep. $2n = 42$.

Slopes, grasslands, valleys, river sands, gravel slopes, sandstone; (1700–)2700–5000 m. Gansu, NW Hebei, Nei Mongol, Qinghai, Shaanxi, Shanxi, W Sichuan, Xinjiang, Xizang, NW Yunnan [Afghanistan, Bhutan, India, Mongolia, Nepal, Tajikistan].

The specimen *Harry Smith 4371* (Sichuan: Barkam Xian, Matang, 31°53'N, 102°43'E, 3400 m, 17 Sep 1922, UPS) deviates considerably in its less divided leaves with very broad serrate leaflets and possibly represents an undescribed taxon.

Hypecoum alpinum C. H. An (Fl. Xinjiang. 2(2): 373. 1995: type not recoverable, possibly lost) has, according to the description, leaves and flowers like *H. leptocarpum* but differs in being very dwarf, perennial, fleshy, and in having a very short capsule and smooth seeds.

3. *Hypecoum zhukanum* Lidén, Nordic J. Bot. 25: 33. 2008.

芒康角茴香 mang kang jiao hui xiang

Herbs, annual, ± glaucous. Leaves numerous; petiole 2–6 cm, shortly and broadly vaginate at base; blade narrowly oblanceolate, 5–10 × 1.5–2.5 cm, pinnate; primary leaflets in 4–6 pairs, almost sessile, broadly ovate, 0.4–2 cm, pinnatifid; lobules lanceolate, ovate, or narrowly elliptic to obovate, 3–4 mm, apex acute. Flowering stems several, 10–23 cm, dichotomously branched; bracts paired, 0.5–2 cm, lower ones biternate to subbipinnatisect, gradually smaller and less divided upward. Sepals green, ovate or ovate-lanceolate, 3–4 × 2–3 mm, margin membranous, subtire. Outer petals white, with tip of keel greenish, 11–12 × 9–10 mm, very shallowly 3-lobed; inner petals orange, 3-parted to less than 1/2; lateral lobes not divergent, broadly oblong, apex obtuse; middle lobe broadly elliptic, ca. 4 mm, sessile, almost entire. Stamens with prominent nectaries at base; anthers 3–3.5 mm. Ovary with 24 ovules. Fruit and seeds unknown. Fl. Jul.

- Open slopes; ca. 3600 m. E Xizang (Markam).

4. *Hypecoum parviflorum* Karelin & Kirilov, Bull. Soc. Imp. Naturalistes Moscou 15: 141. 1842.

小花角茴香 xiao hua jiao hui xiang

Hypecoum pendulum Linnaeus var. *parviflorum* (Karelin & Kirilov) Krylov.

Herbs, annual, glaucous. Cotyledons linear. Radical leaves many; petiole flat, vaginate at base; blade narrowly obovate, 5–7 cm, bipinnate; lobules linear, 3–10 × ca. 1 mm, apex acute. Flowering stems many, terete, 1–1.5 mm in diam., dichotomously branched. Flowers small, forming dichotomous cymes; bracts narrowly lobed, sessile. Pedicel 5–15 mm, nutant after flowering. Sepals early falling, broadly ovate, 1–1.5 mm. Corolla yellow, often with dark spots on inner petals; outer petals broadly elliptic, ca. 5 mm, entire; inner petals 3-parted to ca. 1/2; lateral lobes slightly divergent, shorter than median one; median lobe clearly stalked with fimbriate margin. Capsule nutant, 4–5 cm, angular in cross section, eventually breaking up into 1-seeded units, epidermis often persistent as a membranous

sheath. Seeds pale brown, D-shaped, ca. 2 mm. Fl. and fr. May–Aug.

Plains, deserts, stony slopes. N and S Xinjiang [Afghanistan, Kashmir, Kazakhstan, Kyrgyzstan, Pakistan, Russia (Gorno-Altai), Tajikistan, Turkmenistan, Uzbekistan; SW Asia (Iran)].

This is possibly better treated as a variety of *Hypecoum pendulum* Linnaeus.

Hypecoum ferrugineomaculatum C. H. An (Fl. Xinjiang. 2(2): 373. 1995; type not recoverable, possibly lost) is said to differ from *H. parviflorum* by brownish spots on the inner petals. However, this is not uncommon in *H. parviflorum* and other species of *H. sect. Pendulae*.

