

# 1. HUMULUS Linnaeus, Sp. Pl. 2: 1028. 1753.

葎草属 lü cao shu

*Humulopsis* Grudzinskaja.

Herbs, perennial or annual, twining, dioecious. Stems, branchlets, and petioles with rigid 2-armed stalked hairs. Stems coarse, 6-ridged or winged. Leaves opposite, well developed leaves ± cordate and 3-7(-9)-lobed, terminal leaves sometimes ± ovate and simple, abaxially with yellowish brown resinous glands and dots. Male inflorescences laxly paniculate. Male flowers: filaments straight in bud; female inflorescences a conelike spicate cyme; bracts imbricate, persistent and enlarged in fruit, margin entire. Female flowers: calyx thinly membranous, appressed to ovary, margin entire; ovary ± surrounded by appressed calyx; styles 2-branched; branches caducous. Achene broadly ovoid; calyx persistent, appressed to achene; pericarp crustaceous; embryo spirally involute; cotyledons narrow.

Three species: Asia, Europe, North America; three species (one endemic) in China.

- 1a. Leaf blade abaxially without rigid spinulose hairs on veins, adaxially with few or no cystolith hairs marginally when young; flowers 2 per bract at least in middle of inflorescence ..... 1. *H. lupulus*
- 1b. Leaf blade abaxially with rigid spinulose hairs on veins, adaxially with cystolith hairs marginally when young; flowers 1 per bract.
  - 2a. Well developed leaves with 3 or 5 lobes but sometimes simple, adaxially usually densely pubescent; infructescences 2-9 cm; bracts and bracteoles 1.5-3 cm, lacking spinulose hairs ..... 2. *H. yunnanensis*
  - 2b. Well developed leaves with (3 or)5-9 lobes, adaxially pubescent but not densely so; infructescences 0.5-1.5(-2) cm; bracts and bracteoles less than 1 cm, spinulose ..... 3. *H. scandens*

## 1. *Humulus lupulus* Linnaeus, Sp. Pl. 2: 1028. 1753.

啤酒花 pi jiu hua

Plants perennial. Petiole usually shorter than leaf blade; leaf blade 3-5(-7)-lobed, sometimes simple, 4-11 × 4-8 cm, abaxially glabrous or with scattered soft pubescence but without rigid spinulose hairs on veins, adaxially with few or no cystolith hairs marginally when young, base cordate, margin coarsely serrate, apex acute. Female flowers 2 per bract at least in middle of inflorescence; bracts imbricated into a globose spike. Infructescences globose, 3-4 cm in diam.; bracts ovoid, 1.5-2 cm, dry, membranous, apex acute. Achenes flat, included in bracts. Fl. autumn.

rigid spinulose hairs on veins, adaxially densely pubescent, base cordate, apex narrowly acuminate. Female inflorescences spicate, globose, 2-7 cm; bracts and bracteoles narrowly ovate, 1.5-3 cm, membranous, subglabrous, abaxially veins prominent. Flowers 1 per bract. Infructescences 2-9 cm. Achenes flat, included in bracts. Fl. autumn.

- Forests; 1200-2800. Yunnan.

**3. *Humulus scandens*** (Loureiro) Merrill, Trans. Amer. Philos. Soc., n.s., 24(2): 138. 1935.

Gansu, N Sichuan, Xinjiang [N Africa, N and NE Asia, Europe, E North America].

A number of different varieties is usually recognized (Small, Syst. Bot. 3: 37-76. 1978), with the populations in China represented by at least both *H. lupulus* var. *lupulus*, a predominantly European to C and SW Asian variety, and var. *cordifolius* (Miquel) Maximowicz, a predominantly Japanese variety. In addition, the populations in S Gansu and N Sichuan may possibly be another, distinct variety. Further study is needed to sort out the pattern of varietal occurrence in China, which is complicated by the introduction and escape of cultivated var. *lupulus* for commercial production of hops for beer.

This species is cultivated throughout China, especially in E Shandong (Qingdao) and Xinjiang. The flowers and infructescences are important ingredients for beer making. The female flowers and bracts are used medicinally.

## 2. *Humulus yunnanensis* Hu, Bull. Fan Mem. Inst. Biol. Bot. 7: 211. 1936.

滇葎草 dian lü cao

Plants perennials. Petiole 3-11 cm; leaf blade palmately 3- or 5-lobed, sometimes simple, 5-14 × 4-13 cm, abaxially with

葎草 lü cao

*Antidesma scandens* Loureiro, Fl. Cochinch. 1: 157. 1790; *Humulopsis scandens* (Loureiro) Grudzinskaja; *Humulus japonicus* Siebold & Zuccarini.

Plants annual. Petiole 5–10 cm; leaf blade palmately (3 or)5–9-lobed, sometimes simple, 7–10 × 7–10 cm, papery, abaxially with rigid spinulose hairs on veins, adaxially pubescent but not densely so, base cordate; lobes ovate-triangular, margin serrate. Male inflorescences 15–25 cm. Male flowers: yellowish green. Female inflorescences ca. 0.5 in diam.; bracts ovoid, 7–10 mm, papery, spinulose, apex acuminate. Female flowers: 1 per bract inflorescence; ovary included by bracts; styles exerted from bracts. Infructescences 0.5–1.5(–2) cm. Achenes exerted from bracts when mature. Fl. spring to summer, fr. autumn.

Forest margins, wastelands, along streams. Anhui, Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Japan, Korea, Vietnam; naturalized in Europe and E North America].

No type specimen could be found of *Antidesma scandens*. Merrill's transfer of this species to *Humulus* is based on Loureiro's cryptic description, and this synonymy has not been universally accepted. For this reason the species has been variously recognized as *H. scandens* or *H. japonicus* in recent treatments.

The whole plant is used medicinally and the seed oil is used to make soap.

CANNABACEAE