

### 43. AGRIMONIA Linnaeus, Sp. Pl. 1: 448. 1753.

龙芽草属 long ya cao shu

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Herbs perennial, tall, with creeping rhizome. Leaves stipulate, imparipinnate. Flowers usually in terminal, spikelike racemes, bisexual, rather small. Hypanthium turbinate, sulcate, with hooked prickles or 5 teeth below limb abaxially, constricted at throat. Sepals 5, imbricate, persistent. Petals 5, larger than sepals. Disk lining hypanthium, margin thickened, annular, glandular. Stamens 5–15 or more, inserted at mouth of hypanthium, 1-seriate. Carpels usually 2, included in hypanthium, sessile; ovule pendulous; style terminal, exerted, filiform; stigma dilated. Achenes 1 or 2, included in closed hypanthium, distally with hooked prickles. Seed pendulous; testa membranous.  $x = 7$ .

About ten species: N temperate zone, alpine regions of tropics; four species in China.

- 1a. Flowers 12–13 mm in diam.; fruiting hypanthium 8–10 × ca. 5 mm including prickles, outer prickles recurved, innermost ones spreading ..... 4. *A. eupatoria*
- 1b. Flowers 4–10 mm in diam.; fruiting hypanthium 5–8 × 2–4 mm including prickles, prickles spreading, erect, or connivent.
  - 2a. Stipules flabellate or broadly ovate, margin obtusely dentate; stamens 17–24 ..... 3. *A. coreana*
  - 2b. Stipules falcate or semiorbicular, margin acutely serrate; stamens 5–15.
    - 3a. Flowers 6–9 mm in diam.; fruiting hypanthium 7–8 × 3–4 mm including prickles, prickles erect when young, connivent when old; leaflets obovate to obovate-lanceolate, abaxially appressed pubescent on veins ..... 1. *A. pilosa*
    - 3b. Flowers 4–5 mm in diam.; fruiting hypanthium 4–5 × 2–2.5 mm including prickles, prickles spreading; leaflets rhombic-elliptic or elliptic, usually widest at middle, abaxially sparsely spreading hirsute on veins ..... 2. *A. nipponica*

**1. Agrimonia pilosa** Ledebour, Index Seminum Hort. Dorpat., Suppl. 1. 1823.

龙芽草 long ya cao

Herbs 30–120 cm tall. Rhizome short, usually tuberous, with many lateral roots and 1 to several underground buds. Stems sparsely pilose and pubescent, or densely rigidly hairy (rarely sparsely hirsute) in lower part. Stipules green, falcate, rarely ovate or ovate-lanceolate, herbaceous, margin sharply serrate or lobed, rarely entire, apex acute or acuminate; petiole sparsely pilose or pubescent; leaf blade interrupted imparipinnate with (2 or)3 or 4 pairs of leaflets, reduced to 3 leaflets on upper leaves; leaflets sessile or shortly petiolulate, obovate, obovate-elliptic, or obovate-lanceolate, 1.5–5 × 1–2.5 cm, abaxially appressed pilose on veins, or densely pubescent or tomentose-pubescent between veins, rarely glabrescent, markedly or sparsely glandular punctate, adaxially pilose, or hirsute or hirtellous on veins, rarely glabrescent, base cuneate to broadly so, margin acutely to obtusely serrate, apex rounded to acute, rarely acuminate. Inflorescence terminal, spicate-racemose, branched or not; rachis pilose. Flowers 6–9 mm in diam.; pedicel 1–5 mm, pilose; bract usually 3-parted with segments linear; bracteoles in 1 pair, ovate, margin entire or lobed. Sepals 5, triangular-ovate. Petals yellow, oblong. Stamens (5–)8–15. Style filiform; stigma capitate. Fruiting hypanthium obovoid-conic, 7–8 × 3–4 mm including prickles, abaxially 10-ribbed, pilose, with a multiseriate crown of prickles; prickles erect when young, connivent at maturity. Fl. and fr. May–Dec.

Thinned forests, forest margins, thickets, meadows, stream banks, roadsides; 100–3800 m. Throughout China [Bhutan, N India, Japan, N Laos, Korea, Mongolia, Myanmar, Nepal, Russia, Sikkim, N Thailand, N Vietnam; E Europe].

- 1a. Stems sparsely pilose and pubescent, rarely sparsely hirsute in lower part; leaflets abaxially usually appressed pilose on veins, rarely glabrescent, markedly glandular punctate, adaxially pilose, rarely glabrescent ..... 1a. var. *pilosa*
- 1b. Stems densely rigidly hairy in lower part; leaflets abaxially densely pubescent or tomentose-pubescent between veins, sparsely glandular punctate, adaxially hirsute or hirtellous on veins ..... 1b. var. *nepalensis*

#### 1a. Agrimonia pilosa var. pilosa

龙芽草(原变种) long ya cao (yuan bian zhong)

*Agrimonia eupatoria* Linnaeus var. *japonica* (Miquel) Masamune; *A. japonica* (Miquel) Koidzumi; *A. obtusifolia* A. I. Baranov & Skvortsov; *A. pilosa* subsp. *japonica* (Miquel) H. Hara; *A. pilosa* var. *japonica* (Miquel) Nakai; *A. pilosa* var. *viscidula* (Bunge) Komarov; *A. viscidula* Bunge; *A. viscidula* var. *japonica* Miquel.

Stems sparsely pilose and pubescent, rarely sparsely hirsute in lower part. Leaflets abaxially usually appressed pilose on veins, rarely glabrescent, markedly glandular punctate, adaxially pilose, rarely glabrescent. Fl. and fr. May–Dec.  $2n = 56$ .

Thinned forests, forest margins, thickets, meadows, stream banks, roadsides; 100–3800 m. Throughout China [Japan, Korea, Mongolia, Russia, N Vietnam; E Europe].

**1b. Agrimonia pilosa var. nepalensis** (D. Don) Nakai, Bot. Mag. (Tokyo) 47: 247. 1933.

黄龙尾 huang long wei

*Agrimonia nepalensis* D. Don, Prodr. Fl. Nepal. 229. 1825; *A. eupatoria* Linnaeus var. *nepalensis* (D. Don) O. Kuntze.

Stems densely rigidly hairy in lower part. Leaflets abaxially densely pubescent or tomentose-pubescent between veins, sparsely glandular punctate, adaxially hirsute or hirtellous on veins.

Thinned forests, meadows on mountain slopes, stream banks; 100–3500 m. Anhui, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Shanxi, Sichuan, Xizang, Yunnan, Zhejiang [Bhutan, N India, N Laos, Myanmar, Nepal, Sikkim, N Thailand, N Vietnam].

This species is used medicinally.

**2. *Agrimonia nipponica* Koidzumi var. *occidentalis* Skalický** ex J. E. Vidal in Aubréville, Fl. Cambodge Laos Vietnam 6: 133. 1968.

小花龙芽草 xiao hua long ya cao

Herbs 30–90 cm tall. Rhizome long, with many slender lateral roots and usually 1 to several underground buds. Stems densely yellow hirsute in lower part, densely pubescent in upper part. Stipules falcate or semiorbicular, rarely oblong, margin acutely serrate, on stipules of lower part of stem usually entire; petiole sparsely pilose and pubescent; leaf blade interrupted imparipinnate, on lower leaves usually with 3 pairs of leaflets, rarely 2 pairs with basal pair very small, on middle leaves with 2 pairs, on uppermost leaves with 1 or 2 pairs; leaflets sessile or shortly petiolulate, elliptic or rhombic-elliptic, 1.5–4 × 1–2 cm, widest at or near middle, abaxially sparsely spreading hirsute on veins, sparsely glandular punctate or inconspicuously so, adaxially appressed pilose, base broadly cuneate, margin crenate, apex usually obtuse or acute. Inflorescence usually branched, with slender branches. Flowers 4–5 mm in diam.; pedicel 1–3 mm; bract small, 3-parted; bracteoles in 1 pair, ovate, margin entire or shallowly lobed, apex shortly acuminate. Stamens 5(–10). Carpels 2, usually 1 well developed; stigma capitate. Fruiting hypanthium campanulate, 4–5 × 2–2.5 mm including prickles, abaxially 10-ribbed, sparsely pilose, with a multiseriate crown of prickles; prickles spreading. Fl. and fr. Aug–Nov.

Thinned forests, forest margins, thickets, grassy mountain slopes, stream banks; 200–1500 m. Anhui, Guangdong, Guangxi, SE Guizhou Jiangxi, Zhejiang [Laos, Vietnam].

*Agrimonia nipponica* var. *nipponica* occurs in Japan and Korea.

**3. *Agrimonia coreana* Nakai, Rep. Veg. Diamond Mount. 71. 1918.**

托叶龙芽草 tuo ye long ya cao

*Agrimonia pilosa* Ledebour var. *coreana* (Nakai) Liou & Cheng; *A. velutina* Juzepczuk.

Herbs 70–100 cm tall. Rhizome horizontal, woody, with many lateral roots, often with 1 to several underground buds. Stems pilose and pubescent. Stipules broadly flabellate or broadly ovate, margin coarsely crenate or lobed; petiole sparsely pilose and pubescent; leaf blade interrupted imparipinnate

with 3 or 4 pairs of leaflets, on upper leaves with 1 or 2 pairs; leaflets sessile, rhombic-elliptic or obovate-elliptic, 2–6 × 1.5–3 cm, abaxially densely pubescent between veins, spreading pilose on veins, adaxially appressed pilose or glabrescent, base cuneate or broadly so, margin coarsely crenate, apex obtuse to acute. Inflorescence rather lax, with 1.5–4 cm intervals between flowers; rachis slender, pubescent and pilose. Flowers 7–9 mm in diam.; pedicel 1–3 mm; bract 3-parted with segments fasciated; bracteoles in 1 pair, ovate, margin serrate or entire. Sepals triangular-ovate. Petals yellow, obovate-oblong. Stamens 17–24. Stigma capitate. Fruiting hypanthium conic-hemispherical, ca. 5 × 4 mm including prickles, abaxially 10-ribbed, pilose, with a multiseriate crown of prickles; prickles spreading. Fl. and fr. Jul–Aug.  $2n = 28$ .

Forest margins, thickets on mountain slopes; 500–800 m. Jilin, Liaoning, Shandong, Zhejiang [Japan, Korea, E Russia].

**4. *Agrimonia eupatoria* Linnaeus subsp. *asiatica* (Juzepczuk) Skalický, Feddes Repert. 79: 35. 1968.**

大花龙芽草 da hua long ya cao

*Agrimonia asiatica* Juzepczuk, Weeds URSS 3: 138. 1934.

Herbs 35–120 cm tall. Rhizome ± short, rather thick. Stems densely hirsute. Stipules semiorbicular, herbaceous, margin coarsely acutely serrate or lobed; petiole pilose and pubescent; leaf blade interrupted imparipinnate with 3–5 pairs of leaflets, on uppermost leaves with 1 or 2 pairs; leaflets sessile or occasionally shortly petiolulate, elliptic, oblong, or obovate-elliptic, 2–7 × 1.5–4 cm, abaxially pubescent and pilose, adaxially appressed pilose, base rounded or broadly cuneate, margin coarsely crenate, apex obtuse or acute. Inflorescence usually simple; rachis thick, pubescent and villous. Flowers 12–13 mm in diam.; pedicel ca. 1 mm; bract 3- or 4-parted with segments fasciated; bracteoles in 1 pair, ovate, margin 3-serrate. Sepals 5, triangular-ovate. Petals yellow, obovate-elliptic. Stamens 11–

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12. Stigma prominently dilated. Fruiting hypanthium campanulate, 8–10 × ca. 5 mm including prickles, abaxially 10-ribbed, pilose, with a multiseriate crown of prickles; outer prickles reflexed, inner ones spreading. Fl. Jun, fr. Jul.

Mountains, river banks; 500–1300 m. Xinjiang [C and SW Asia].

*Agrimonia eupatoria* subsp. *eupatoria* occurs in N and W Africa (including Macaronesia) and Europe.

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