

130. ALYSICARPUS Necker ex Desvaux, J. Bot. Agric. 1: 120. 1813, nom. cons.

链荚豆属 *lian jia dou shu*

Huang Puhua (黄普华 *Huang Pu-hwa*); Hiroyoshi Ohashi

Herbs, perennial. Stems erect or diffuse, branched. Leaves 1-foliolate, rarely pinnately 3-foliolate, stipulate and stipellate; stipules scarious or nearly leathery, free or connate. Racemes axillary or terminal; flowers small, mostly ca. 5 mm, usually binate at each node of rachis; bracts scarious, early deciduous. Calyx 4-lobed; lobes dry, rigid, nearly equal, upper lobe 2-toothed at apex. Corolla not or slightly longer than calyx; standard broad, obovate or nearly orbicular; keel obtuse, adherent to wings. Stamens diadelphous (9+1); anthers uniform. Ovary sessile or nearly so, many ovuled; style linear, incurved; stigma capitate. Legume cylindric, swollen, many jointed, 1-seeded per article, indehiscent.

About 30 species: tropical Africa, Asia, Australia, and tropical America; five species (one endemic, one introduced) in China.

- 1a. Corolla pale yellow or yellow with green or white; calyx longer than first article of legume; legume glabrous.
 - 2a. Lobes of calyx not ciliate; corolla pale yellow or yellow with green; leaflets linear to linear-lanceolate 4. *A. bupleurifolius*
 - 2b. Lobes of calyx densely yellow ciliate; corolla white; leaflets oblong, rarely orbicular or linear-lanceolate 5. *A. rugosus*
- 1b. Corolla purplish blue or pinkish purple; calyx shorter than first article of legume or slightly longer; legume pubescent.
 - 3a. Whole leaflets oblong or nearly orbicular; legume cylindric-moniliform, constricted between articles, without raised linear ridges 3. *A. yunnanensis*
 - 3b. Upper leaflets usually ovate-oblong or lanceolate, lower ones nearly orbicular to ovate; legume compressed cylindric, not constricted between articles, with raised linear ridges.
 - 4a. Leaflets usually uniform but variable in size, ovate, oblong, or oblong-elliptic, reticulate veinlets prominent on both surfaces; inflorescences laxly flowered; loment with septa inside and with furrows at joint; prostrate or spreading perennial herbs 1. *A. vaginalis*
 - 4b. Leaflets distinctly dimorphic, lower ones orbicular to broadly oblong, upper ones lanceolate, reticulate veinlets obscure on both surfaces; inflorescences densely flowered; loment without septa inside and with ridges at joint; erect or spreading annual herbs 2. *A. ovalifolius*

1. *Alysicarpus vaginalis* (Linnaeus) Candolle, Prodr. 2: 353. 1825.

链荚豆 *lian jia dou*

Herbs, perennial. Stem erect or procumbent, 30–90 cm tall, glabrous or slightly pubescent. Leaves 1-foliolate; petiole 5–14 mm, glabrous; blade often ovate-oblong or oblong-lanceolate to lanceolate, to 6.5 × 1–2 cm on upper stem, cordate, nearly orbicular, or ovate, 1–3 × ca. 1 cm on lower stem, abaxially slightly pubescent, adaxially glabrous. Racemes axillary or terminal, 1.5–7 cm, 6–12-flowered, binate at each node; internodes 2–5 mm. Pedicel 3–4 mm. Calyx 5–6 mm, slightly longer than first article of legume. Corolla red, reddish purple, purplish blue, or yellow, slightly longer than calyx, ca. 5 mm; standard obovate. Ovary pubescent, 4–7-ovuled. Legume compressed, cylindric, 1.5–2.5 cm × 2–2.5 mm, pubescent, 4–7-jointed, not constricted between articles, with raised linear ridges. Seeds ellipsoidal, slightly compressed. Fl. Sep, fr. Sep–Nov. $2n = 14, 16$.

Open grassy slopes, roadsides, sandy seashores, grasslands in parks; 100–700 m. Fujian, Guangdong, Guangxi, Hainan, Taiwan, Yunnan [Cambodia, India, Indonesia, Japan, Laos, Malaysia, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; E and W Africa, throughout Old World tropics; introduced in the Neotropics].

It is grown for green manure and used as a forage. The whole plant is used medicinally for treating sword wounds and bone fractures.

1a. Corolla red, reddish purple, or purplish

blue 1a. var. *vaginalis*

1b. Corolla yellow 1b. var. *taiwanianus*

1a. *Alysicarpus vaginalis* var. *vaginalis*

链荚豆(原变种) *lian jia dou* (*yuan bian zhong*)

Hedysarum vaginale Linnaeus, Sp. Pl. 2: 746. 1753; *Alysicarpus vaginalis* var. *diversifolius* Chun.

Corolla red, reddish purple, or purplish blue; keel oblong, 0.5–0.6 cm.

Open grassy slopes, roadsides, sandy seashores; 100–700 m. Fujian, Guangdong, Guangxi, Hainan, Taiwan, Yunnan [Cambodia, India, Indonesia, Japan, Laos, Malaysia, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; E and W Africa, throughout Old World tropics; introduced in South America].

1b. *Alysicarpus vaginalis* var. *taiwanianus* S. S. Ying, Coloured Ill. Fl. Taiwan 2: 378. 1987.

台湾链荚豆 *tai wan lian jia dou*

Corolla yellow; keel oblong, 1.5–2 cm.

• Grasslands in parks, possibly naturalized. NE Taiwan.

2. *Alysicarpus ovalifolius* (Schumacher) J. Léonard, Bull. Jard. Bot. État Bruxelles 24: 88. 1954.

卵叶链荚豆 *luan ye lian jia dou*

Hedysarum ovalifolium Schumacher, Beskr. Guin. Pl. 359. 1827.

Herbs, annual. Stem erect or spreading, sometimes woody at base, 10–60 cm tall, puberulent, glabrescent. Leaflets usually dimorphic, elliptic or oblong in lower part and lanceolate in upper part, 1–10 × 0.6–3 cm. Inflorescences terminal or leaf-opposed, laxly flowered; bracteoles absent. Pedicel 1–2 mm, with spreading hooked hairs. Calyx glumaceous, scarious, persistent, 4-lobed, with minute spreading hooked hairs and sparsely ciliate straight hairs; lobes not imbricate, subequal, narrowly triangular-ovate, 3–4 mm, ciliate, apex acuminate. Petals pink or reddish purple, subequal with calyx at anthesis. Legume (1–)4–6(–8)-jointed, (0.5–)1.5–2.2 cm × 1.8–2.3 mm, indehiscent, with dense minute hooked hairs, mostly without septa inside and with ridges at joint. Fl. Sep–Oct, fr. Sep–Dec.

Introduced; open places, sunny grasslands along roads, riverbanks, seashores; sea level to 500 m. Taiwan [Afghanistan, India, Japan (Ryukyu Islands, introduced); tropical Africa, SW Asia, Madagascar].

3. *Alysicarpus yunnanensis* Y. C. Yang & P. H. Huang, Bull. Bot. Lab. N. E. Forest. Inst., Harbin 1980(8): 8. 1980.

云南链荚豆 *yun nan lian jia dou*

Herbs, perennial, caespitose. Stem diffuse, ca. 22 cm tall, uncinately pubescent and spreading hirsute. Leaves 1-foliolate; petiole 3–5 mm, glabrous; blade oblong or nearly orbicular, 4–13 × 3–9 mm, both surfaces puberulent, abaxially sparsely setose on veins, both ends rounded or base slightly cordate. Racemes axillary or terminal, 1.5–3 cm, 4–10-flowered, binate at each node; internodes 3–7 mm. Pedicel ca. 1 mm. Calyx ca. 4 mm, nearly as long as first article of legume. Corolla pinkish purple, ca. 5 mm; standard obovate. Ovary 2.5–3 mm (style 3–5.5 mm), uncinately pubescent, (3–)5–7-ovuled. Legume cylindrical-moniliform, 1–2 × ca. 0.2 cm, (3–)5–7-jointed, constricted between articles, without raised linear ridges, not reticulate veined, uncinately pubescent. Fl. and fr. Aug–Sep.

• Rocky riverbanks; ca. 1300 m. NW Yunnan.

4. *Alysicarpus bupleurifolius* (Linnaeus) Candolle, Prodr. 2: 352. 1825.

柴胡链荚豆 *chai hu lian jia dou*

Hedysarum bupleurifolium Linnaeus, Sp. Pl. 2: 745. 1753.

Herbs, perennial. Stem erect or diffuse, much branched, 25–120 cm tall, glabrous or subglabrous. Leaves 1-foliolate; petiole ca. 2 mm or leaves subsessile; blade linear to linear-lanceolate, 4–7 × 0.4–0.5 cm, abaxially sparsely pubescent on midvein, adaxially glabrous, base rounded or cuneate, apex acute. Racemes terminal, 3–18 cm, 20–40-flowered, binate at each node; internodes 8–10 mm. Pedicel ca. 1 mm or flowers subsessile. Calyx 6–8 mm, longer than first article of legume; lobes lanceolate, ca. 2 × as long as tube. Corolla pale yellow or yellowish green, ca. 5 mm. Legume brown at maturity, 0.6–1.5 cm × ca. 1.8 mm, higher than calyx, 3–6-jointed, constricted between articles, glabrous. Fl. and fr. Sep–Nov. $2n = 16$.

Wastelands, grasslands, field margins, sunny places in valleys; 100–1000 m. Guangdong, SW Guangxi, S Taiwan, S Yunnan [India, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam; Australia, Indian Ocean islands (Mauritius), Pacific islands, South America (Bolivia)].

5. *Alysicarpus rugosus* (Willdenow) Candolle, Prodr. 2: 353. 1825.

皱缩链荚豆 *zhou suo lian jia dou*

Hedysarum rugosum Willdenow, Sp. Pl. 3: 1172. 1802; *Alysicarpus bracteus* X. F. Gao.

Herbs, perennial. Stem erect, to 1.5 m tall, glabrous or pilose. Leaves 1-foliolate; petiole 3–9 mm, glabrous or pilose; blade oblong, rarely orbicular or linear-lanceolate, 2–6 × 0.2–1 cm, abaxially pilose and villous on veins, adaxially glabrous, base rounded, margin entire, ciliate, apex acute. Racemes terminal and axillary, 2–5 cm, 10–24-flowered, binate at each node. Pedicel 2–3 mm, pubescent. Calyx glabrous, 4–10 mm, longer than first article of legume. Corolla white, ca. 4 mm; standard obovate. Ovary glabrous, 3–5-ovuled. Legume moniliform, swollen, glabrous, 3–5-jointed; article broader than long, prominently transversely ridged, articles enclosed in calyx or slightly exerted. Fl. Sep, fr. Sep–Nov. $2n = 16^*$.

Moist places in dense valley forests, wasteland; 600–1200 m. ?Taiwan, NC and S Yunnan [India, Laos, Malaysia, Myanmar, Nepal, Thailand, Vietnam; throughout Old World tropics].

