

30. REHMANNIA Liboschitz ex Fischer & C. A. Meyer, Index Sem. Hort. Petrop. 1: 36. 1835.

地黄属 di huang shu

Herbs, perennial. Rhizomes present. Stems erect, simple or branched from base. Basal leaves rosulate, stem leaves alternate and petiolate; leaf blade varying in shape, often hairy, margin toothed or lobed. Inflorescences sometimes scapose. Flowers axillary and solitary or in terminal racemes, pedicellate. Bracteoles present or absent. Calyx 5(–7)-lobed. Corolla purple-red or yellow, tubular; tube slightly curved or straight, ± dorsiventrally compressed, with 2 plaits from tube base to throat; limb ± 2-lipped, 5-lobed. Stamens 4, didynamous, rarely 5 and 1 smaller than other 4, included; anthers coherent in pairs, locules fertile. Ovary base with a disc, 2-loculed, rarely 1-loculed; ovules numerous. Stigma 2-lamellate. Capsule with persistent calyx, loculicidal. Seeds minute; seed coat reticulate.

• Six species: endemic to China.

1a. Flowers with 1 or 2 bracteoles.

2a. Bracteoles narrowly elliptic, pinnately lobed 5. *R. piasezkii*

2b. Bracteoles subulate 6. *R. henryi*

1b. Flowers without bracteoles.

3a. Corolla 3–4.5 cm, tube narrow.

4a. Basal leaves persistent; pedicel slender, ascending 1. *R. glutinosa*

4b. Basal leaves caducous; pedicel stout, erect and subparallel to stem 2. *R. solanifolia*

3b. Corolla 5.6–7 cm, tube inflated.

5a. Flower including pedicel longer than bract 3. *R. chingii*

5b. Flower including pedicel equal to or shorter than bract 4. *R. elata*

1. *Rehmannia glutinosa* (Gaertner) Liboschitz ex Fischer & C. A. Meyer, Index Sem. Hort. Petrop. 1: 36. 1835.

地黄 di huang

Digitalis glutinosa Gaertner, Novi Comment. Acad. Sci. Imp. Petrop. 14: 544. 1770; *Rehmannia chinensis* Liboschitz ex Fischer & C. A. Meyer; *R. glutinosa* var. *hemsleyana* Diels; *R. glutinosa* var. *huechingensis* Chao & Shih; *R. glutinosa* f. *huechingensis* (Chao & Shih) P. G. Hsiao, *R. glutinosa* f. *purpurea* Matsuda.

Herbs, 10–30 cm tall, densely villous with glandular and eglandular hairs. Rhizomes to 5.5 cm, fleshy. Stems purple-red. Basal leaves usually rosulate. Stem leaves gradually or abruptly decreasing in size or reduced to bracts upward; leaf blade ovate to narrowly elliptic, 2–13 × 1–6 cm, base tapering, margin irregularly crenate or obtusely serrate to toothed. Flowers axillary or in terminal racemes. Pedicel 0.5–3 cm, slender, ascending. Bracteoles absent. Calyx 1–1.5 cm, 10-veined; lobes 5, oblong-lanceolate, ovate-lanceolate, or subtriangular, 5–6 × 2–3 mm, rarely 2 lower lobes further lobed. Corolla 3–4.5 cm, white villous; tube narrow; lobes outside purple-red, inside yellow-purple, 5–7 × 4–10 mm, apex obtuse to emarginate. Stamens 4; anther locules oblong, ca. 2.5 mm, base divaricate. Ovary 2-loculed when young, 1-loculed with age. Capsule ovoid to narrowly ovoid, 1–1.5 cm. Fl. and fr. Apr–Jul.

• Mountain slopes, trailsides; near sea level to 1100 m. Gansu, Hebei, Henan, Hubei, Jiangsu, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi.

Rehmannia glutinosa is widely cultivated for its rhizomes which are used medicinally.

2. *Rehmannia solanifolia* P. C. Tsoong & T. L. Chin, Fl. Reipubl. Popularis Sin. 67(2): 401. 1979.

茄叶地黄 qie ye di huang

Herbs, 20–50 cm tall, villous, with few glandular hairs. Stems erect, unbranched. Basal leaves caducous. Stem leaves gradually decreasing in size upward; petiole 2–3 cm; leaf blade elliptic, 8–10 × 4–5 cm, abaxially pilose, adaxially subglabrous, base cuneate and tapering, margin coarsely triangular-toothed, coarsely serrate, or rarely undulate-toothed, veins raised. Pedicel stout, erect, subparallel to stem, to 7 cm in fruit, villous. Bracteoles absent. Calyx campanulate, 1.5–2 cm, villous; lobes 5–7, ovate-triangular, 5–7 × 3–4 mm, unequal, apex acute. Corolla purple-red, 4–4.5 cm, outside white villous with glandular and eglandular hairs; tube narrow; lower lip lobes oblong, subequal, ca. 12 × 1 cm, middle lobe sometimes further 2-lobed; upper lip broadly oblong, ca. 1 × 2 mm, 2-lobed to middle. Stamens 4 or 5. Ovary glabrous, stout. Stigma subglobose. Fl. and fr. Apr–May.

• Grassland; ca. 1300 m. Sichuan (Chengkou Xian).

3. *Rehmannia chingii* H. L. Li, Taiwaniana 1: 78. 1948.

天目地黄 tian mu di huang

Herbs, 30–60 cm tall, villous. Stems simple or branched. Basal leaves subsulate; petiole 2–7 cm, winged; leaf blade elliptic, 6–12 × 3–6 cm, sparsely white villous, base cuneate and gradually attenuate, margin irregularly crenate, coarsely serrate, or crenate. Stem leaves similar to basal leaves, gradually decreasing in size upward. Flowers exceeding bract. Pedicel villous, with eglandular and glandular hairs. Bracteoles absent. Calyx 1–2 cm; lobes lanceolate to ovate-lanceolate, villous with eglandular and glandular hairs; lower 2

lobes 3–7 mm, subequal; upper 3 lobes slightly longer than lower lobes, middle lobe 1–1.2 cm; lateral lobes 5–8 mm. Corolla purple-red, 5.5–7 cm, outside villous; tube inflated; lower lip narrowly elliptic, apex acute to rounded, middle lobe ca. 2×1.4 cm, lateral lobes slightly smaller than other lobes; upper lip lobes ovate, 1.4–1.8 cm, apex subacute to rounded. Stamens 4; filaments basally short glandular hairy. Capsule ovoid, ca. 1.4 cm. Seeds ovoid to narrowly ovoid, ca. 1 mm. Fl. Apr–May, fr. May–Jun.

• Grassland on mountain slopes, trailsides; 100–500 m. Anhui, Jiangxi, Zhejiang.

4. *Rehmannia elata* N. E. Brown ex Prain, Bot. Mag. 136: t. 8302. 1910.

高地黄 gao di huang

Herbs, sparsely villous to villous. Stems 1. Petiole 5–6 cm, winged; leaf blade obovate-oblong to elliptic, papery, abaxially sparsely villous along veins, adaxially subglabrous, base cuneate and tapering, margin with 2–6 pairs of lobes and lobes irregularly triangular and entire or toothed, apex obtuse. Flowers including pedicel equal to or shorter than bracts. Pedicel 3–4 cm, villous. Bracteoles absent. Calyx 2–3 cm, villous; lobes 5, unequal. Corolla purple-red, ca. 6 cm; tube inflated, abaxially subsaccate; throat villous; lower lip lobes oblong to suborbicular, $6\text{--}10 \times 5\text{--}10$ mm; upper lip lobes transversely oblong, $0.6\text{--}1 \times 0.8\text{--}1.2$ cm, subequal. Filaments glabrous. Style slightly longer than stamens. Fl. Jun.

• Hubei.

5. *Rehmannia piasezkii* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 26: 502. 1880.

裂叶地黄 lie ye di huang

Rehmannia angulata (Oliver) Hemsley; *R. glutinosa* Liboschitz ex Fischer & C. A. Meyer var. *angulata* Oliver; *R. glutinosa* var. *piasezkii* (Maximowicz) Diels. Herbs, 30–100 cm tall, villous. Stems simple or branched from base. Petiole ca. 4 cm, decurrent and gradually shorter upward; leaf blade narrowly elliptic, to 15×7 cm, white villous, pinnately parted and lobes subtriangular, lobe margin triangularly toothed. Flowers borne above middle of stem. Pedicel 2–4 cm, villous with eglandular and glandular hairs. Bracteoles 2, similar to leaves in shape, sessile, inserted near base of pedicels. Calyx 1.5–3 cm, villous and glandular hairy, unequally 5-lobed; lower lobes ovate-lanceolate, 0.5–1.5 cm; upper lobes lanceolate, ca. $2.3 \times 2.3\text{--}3$ cm. Corolla purple-red, 5–6 cm; tube 3.5–4 cm, somewhat saccate, outside villous or glabrous, inside long glandular villous on plaits, apex extended; lower lip middle lobe obovate-oblong and $1\text{--}1.6 \times$ ca. 1 cm, lateral lobes suborbicular and $0.8\text{--}1.2 \times 1.1\text{--}1.2$ cm; upper lip lobes transversely oblong, $1\text{--}1.1 \times 1.1\text{--}1.5$ cm. Filaments glabrous or sparsely glandular pilose. Stigma unequally 2-lamellate. Fl. May–Sep.

• Mountain slopes; 800–1500 m. Hubei, Shaanxi.

6. *Rehmannia henryi* N. E. Brown, Bull. Misc. Inform. Kew 1909. 262. 1909.

湖北地黄 hu bei di huang

Herbs, 15–40 cm tall, villous. Basal leaves somewhat crowded; petiole 2–8 cm, winged; leaf blade elliptic-oblong to spatulate, $6\text{--}17 \times 3\text{--}8$ cm, villous, base tapering, margin irregularly crenate, rarely lobed. Stem leaves similar to basal leaves, gradually decreasing in size upward. Pedicel ca. 2.5 cm, lowermost to 5.5 cm. Bracteoles inserted near base of pedicel, yellow-brown, subulate, ca. 3 mm, villous. Calyx yellow-brown, 1.8–2.5 cm, villous; lobes ovate-lanceolate, $8\text{--}12 \times 3\text{--}4$ mm, spreading flat, margin entire or shallowly toothed, apex obtuse. Corolla yellowish, 5–7 cm; tube outside white villous; lower lip lobes oblong, middle lobe ca. 1.8×1.5 cm, lateral lobes ca. 1.5×1.4 cm, equal; upper lip lobes transversely oblong, ca. 1.3×1.5 cm. Filaments basally sparsely and short glandular pubescent. Ovary glabrous. Stigma globose. Fl. Apr–May.

• Trailsides, rock crevices; below 400 m. Hubei.

