

#### 4. ADOXA Linnaeus, Sp. Pl. 1: 367. 1753.

五福花属 *wu fu hua shu*

Hong Deyuan (洪德元); David E. Boufford

*Moscatella* Adanson; *Moschatellina* Miller; *Tetradoxa* C. Y. Wu.

Herbs, perennial. Rhizomes creeping, filiform, terminated by a tuber; tuber white, giving rise to following year's plant. Stems 1 or 2, glabrous. Basal leaves 1–3, ternate to biternate; cauline leaves 2, opposite, rarely alternate; all leaves petiolate, 3-cleft or compound. Inflorescences cymes, terminal, in headlike clusters, or racemelike. Flowers yellowish green, sessile, 4- or 5-merous. Calyx shallowly cup-shaped; lobes of terminal flower 2, lobes of lateral flowers 3. Corolla rotate; tube short; lobes 3–6 in terminal flower, 4–6 in lateral flowers, lobes papillate adaxially. Fertile stamens 4 or 5, inserted on corolla tube; filaments 2-fid to middle or to base; anthers 1-celled, peltate, extrorse, longitudinally dehiscent; inner stamens reduced to glandular papillae. Ovary inferior to semi-inferior; carpels 4 or 5, locules 4 or 5; styles 4 or 5, connate at base; stigmas capitate. Fruit berrylike, fleshy.  $x = 9$ ,  $2n = 36, 54, 108$ .

Three or four species: circumpolar; three species (two endemic) in China.

- 1a. Inflorescence racemelike; basal leaves simple, 3-cleft; cauline leaves simple, 3-cleft; flowers 3–5, corolla of lateral flowers 4-merous, corolla of terminal flower 5-merous; pedicels 5–10 mm; filaments 2-fid to middle ..... 1. *A. omeiensis*
- 1b. Inflorescence a condensed capitate, several flowered cyme; basal leaves ternate or biternate; cauline leaves simple and 3-cleft or ternate; flowers 3–9, corolla of lateral flowers usually 5-merous, corolla of terminal flower 4-merous, subsessile or shortly pedicellate; filaments bifid to base.
  - 2a. Peduncle in flower and fruit straight, erect, ascending, or arching, held above leaves; corolla lobes broadly ovate to orbicular ..... 2. *A. moschatellina*
  - 2b. Peduncle in flower and fruit recurved or coiled, nearly always held below leaves; corolla lobes lanceolate to ovate ..... 3. *A. xizangensis*

1. *Adoxa omeiensis* H. Hara, J. Jap. Bot. 56: 271. 1981.

四福花 *si fu hua*

*Tetradoxa omeiensis* (H. Hara) C. Y. Wu.

Rhizomes not seen. Stems 10–20 cm tall. Basal leaves 1–3; petiole 3–12 cm; leaf blade ovate or deltoid-ovate, 1–3 × 1–3 cm, 3-cleft; segments narrowly ovate, 2–5-lobed, apex of lobes mucronate. Cauline leaves 2, opposite, similar to those of basal leaves; petiole 0.4–2 cm. Inflorescences racemelike, flowers 3–5; pedicels 0.5–1 cm; flowers yellowish green, 5–8 mm in diam. Calyx discoid, 4-lobed; lobes persistent, narrowly triangular-lanceolate, 2–3 mm. Corolla subrotate, 4- or 5-cleft; lobes narrowly ovate, 2.5–4 mm, inside densely glandular papillate, with papillate glands in center at base, apex acuminate. Outer (fertile) stamens 4, 0.4–1 mm; filaments incurved, divergent and stamens T-shaped apically; anthers ca. 0.6 mm. Styles slightly recurved; stigmas punctiform. Fl. May–Jun, fr. Aug.

• Wet places in forests, sometimes on rocks; ca. 2300 m. Sichuan (Emei Shan, Ya'an).

Donoghue et al. (Harvard Pap. Bot. 6: 459–479. 2001) recognized *Tetradoxa* as a distinct, monospecific genus.

2. *Adoxa moschatellina* Linnaeus, Sp. Pl. 1: 367. 1753.

五福花 *wu fu hua*

*Adoxa inodora* (Falconer ex C. B. Clarke) Nepomnja-szczaja; *A. moschatellina* var. *inodora* Falconer ex C. B. Clarke.

Rhizomes 2.5–25 cm. Stems 8–15 cm tall, glabrous. Basal leaves 1–3; petiole 4–9 cm; leaflets broadly ovate or orbicular, 1–2 cm, 3-cleft; petiolules 0.6–1.2 cm. Cauline leaves 2, oppo-

site, 3-cleft or ternate, segments 3-lobed; petiole ca. 1 cm. Peduncle erect in flowers and fruit, inflorescence held above leaves. Inflorescences compact headlike cymes of 5–9 flowers. Flowers sessile or pedicels 0.5–1.5 mm, yellowish green, 4–7 mm in diam. Calyx lobes rectangular, broadly elliptic to ovate, 1.5–3 × ca. 1 mm, apex obtuse. Corolla lobes broadly ovate to orbicular or rectangular, 1.75–3.25 × 2–2.5 mm, apex rounded to obtuse. Ovary semi-inferior to inferior, 4- or 5-loculed. Fruit not seen. Fl. Apr–Jul, fr. Jul–Aug.  $2n = 36$ .

Rich soils, forests, forest margins, meadows; below 4000 m. Hebei, Heilongjiang, Liaoning, Nei Mongol, Qinghai, Shanxi, Sichuan, Xinjiang, Xizang, Yunnan [India, Japan, Korea, Nepal, Pakistan, Russia; NW Africa, Europe, North America].

3. *Adoxa xizangensis* G. Yao, Acta Phytotax. Sin. 30: 179. 1992.

西藏五福花 *xi zang wu fu hua*

Rhizomes 4–15 cm. Stems 5–10 cm tall, glabrous. Basal leaves 1–3, ternate to biternate; petiole of basal leaves 2–12 cm; leaflets elliptic, ovate, orbicular, or obovate, 1–2.5 × 1–3 cm, 3-cleft; petiolules 0.6–1.2 cm. Cauline leaves 2, opposite, ternate or rarely biternate, 3-cleft, segments 3-lobed, lobes apiculate; petiole 0.5–2 cm. Peduncle coiled in flower and fruit. Inflorescences often held at or below level of leaves, compact headlike cymes of 5–9 flowers. Flowers sessile or subsessile, yellowish green, 2.5–5 mm in diam. Calyx lobes lanceolate to narrowly rectangular, 1.2–2 × ca. 1 mm, apex obtuse. Corolla lobes lanceolate to ovate, ca. 2 × 0.9–1.2 mm. Fruit 5–8 mm in diam. Fl. Jun–Aug, fr. Jul–Sep.

• Stony or rocky limestone soils, forests, forest margins, meadows, shaded slopes; 3400–3900 m. Sichuan, Xizang, Yunnan.

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