

## 2. SCHISANDRA Michaux, Fl. Bor.-Amer. 2: 218. 1803, nom. cons.

五味子属 wu wei zi shu

Vines, woody, glabrous or with trichomes, dioecious or monoecious. Leaf blade elliptic, ovate, or obovate, papery to leathery, base cuneate to broadly cuneate and often decurrent on petiole, margin denticulate or entire, apex acute to acuminate. Flowers unisexual, axillary to bracts or leaves, generally solitary (sometimes paired or clustered in *Schisandra propinqua* and *S. plena*). Tepals 5–20. Staminate flowers: stamens 4–60, ± distinct or partially to fully connate to form a fleshy synandrium; pollen 3- or 6-colpate, distally syncolpate. Pistillate flowers: carpels 12–120, distinct; stigmatic crest forming a subulate “pseudostyle,” lacking “pseudostigma”; ovary with 2(or 3) ventrally attached ovules. Fruit aggregates of apocarps; receptacle elongate; apocarps ripening red or rarely blackish, ellipsoid to obovoid. Seeds (1 or)2(or 3), smooth to rugulose.

Twenty-two species: E and SE Asia, one species in North America; 19 species (12 endemic) in China.

Most of the species of this genus are medicinal. The fibers are used to make rope. The stems, leaves, and fruit are used to extract volatile oil.

- 1a. Leaf blade abaxially pubescent or tomentose at least on primary and secondary veins.
  - 2a. Leaf blade abaxially with trichomes extending across entire surface; petioles and peduncles pubescent or tomentose.
    - 3a. Abaxial surface of leaf blades, petioles, and peduncles tomentose; perianth lacking red pigmentation; tepals 5–7 ..... 9. *S. tomentella*
    - 3b. Abaxial surface of leaf blades, petioles, and peduncles pubescent; perianth with red pigmentation; tepals 7 or 8 ..... 10. *S. pubescens*
  - 2b. Leaf blade abaxially with trichomes restricted to primary and secondary veins; petioles and peduncles glabrous.
    - 4a. Largest tepals 2–5 mm wide; staminate flowers with (4 or)5(–7) stamens; flower peduncle 0.6–2.8 cm (staminate), 0.7–3.5 cm (pistillate) ..... 16. *S. chinensis*
    - 4b. Largest tepals 6–10.5 mm wide; staminate flowers with 14–28 stamens; flower peduncle 2.3–5.2 cm (staminate), 5–7.1 cm (pistillate).
      - 5a. Young branches lacking wings; leaf blade abaxially not glaucous; staminate flowers with 14–19 stamens; seeds smooth to ± rugulose ..... 11. *S. pubinervis*
      - 5b. Young branches narrowly winged; leaf blade abaxially variably glaucescent; staminate flowers with 18–28 stamens; seeds tuberculate to very tuberculate ..... 15. *S. longipes*
- 1b. Leaf blade abaxially without trichomes.
  - 6a. Flowers solitary, paired, or in clusters; stamens connate into an androecial mass.
    - 7a. Leaf blade venation adaxially not prominent; fused androecium subglobose to globose; thecae borne on distinct connectives arising from cavities on surface of fused androecium; fruit torus 2–6.5 cm; apocarps 4.5–9 × 4–8.5 mm ..... 18. *S. propinqua*
    - 7b. Leaf blade venation adaxially prominent; fused androecium elongate; thecae sessile, located on opposing sides of cavities on surface of fused androecium; fruit torus 5–17 cm; apocarps ca. 10 × 12 mm .... 19. *S. plena*
  - 6b. Flowers solitary; stamens essentially distinct but apical stamens occasionally connate.
    - 8a. Staminate flowers with 5 stamens radiating horizontally outward from a broad floral apex (forming a 5-merous staminal “shield”) ..... 17. *S. bicolor*
    - 8b. Staminate flowers with (4 or)5–70 stamens ± spirally arranged around an elongate floral axis.
      - 9a. Largest tepals 0.6–2.3 cm; pollen 3-colpate; pistillate flowers with (35–)50–120 carpels; pseudostyle large and broad.
        - 10a. Leaf blade 3.5–8(–12.5) × 1.5–3(–6.5) cm; stamens partially adnate with broad floral axis, only uppermost free with short distinct filaments ..... 4. *S. sphaerandra*
        - 10b. Leaf blade 5.5–15 × 2–5.5(–7.5) cm; stamens distinct.
          - 11a. Perianth deep purplish red to deep red ..... 2. *S. rubriflora*
          - 11b. Perianth cream, white, or flesh-pink.
            - 12a. Perianth cream or white; fruit torus 13–18(–25) cm ..... 1. *S. grandiflora*
            - 12b. Perianth flesh-pink; fruit torus 5–11 cm ..... 3. *S. incarnata*
      - 9b. Largest tepals 0.3–1.3 cm; pollen 6-colpate; pistillate flowers with 14–65 carpels; pseudostyle small or narrow.
        - 13a. Young branches narrowly or conspicuously winged ..... 14. *S. henryi*
        - 13b. Young branches lacking wings.
          - 14a. Staminate flowers with (4 or)5(–7) stamens; apical stamens not connate ..... 16. *S. chinensis*
          - 14b. Staminate flowers with 7–40 stamens; apical stamens generally connate.
            - 15a. Largest tepals 3–6.5 mm; pistillate flowers with 14–24 carpels; fruit torus 1.5–6.5 cm.
              - 16a. Leaf blade narrow, 2–3.7 × as long as wide; fruit torus 3–6.5 cm ..... 12. *S. lancifolia*

- 16b. Leaf blade broad, 1–1.9(–2.5) × as long as wide; fruit torus 1.5–3.5 cm ..... 13. *S. micrantha*
- 15b. Largest tepals 4–12 mm; pistillate flowers with 20–56 carpels; fruit torus 2–15.5(–22) cm.
- 17a. Leaf blade abaxially conspicuously glaucous ..... 8. *S. glaucescens*
- 17b. Leaf blade abaxially not glaucous.
  - 18a. Leaf blade secondary and lower order veins not prominent abaxially or adaxially; seed testa smooth ..... 6. *S. sphenanthera*
  - 18b. Leaf blade secondary and lower order veins prominent abaxially and often adaxially; seed testa smooth, rugulose, or rarely tuberculate.
    - 19a. Leaf blade venation dark after drying ..... 5. *S. neglecta*
    - 19b. Leaf blade venation pale after drying ..... 7. *S. arisanensis*

**1. *Schisandra grandiflora*** (Wallich) J. D. Hooker & Thomson in J. D. Hooker, Fl. Brit. India 1: 44. 1872.

大花五味子 da hua wu wei zi

*Kadsura grandiflora* Wallich, Tent. Fl. Nepal. 10. 1824.

Plants glabrous throughout. Young branches lacking wings; leaf-bearing branches elongated. Petiole 1.1–3 cm; leaf blade ± elliptic, 6.5–13 × 2–5 cm, papery, not glaucous, secondary veins (4 or)5 or 6(–8) on each side of midvein, base cuneate, attenuate, or rarely broadly cuneate, margin denticulate to rarely subentire, apex shortly to long acuminate. Flowers axillary to

fugacious bracts at base of young shoots, solitary; peduncle 1.2–3.6 cm (staminate), 2–4.7 cm (pistillate). Tepals 6–9, white, cream-white, or sometimes pink-tinged, largest 0.7–1.5(–2.3) × 0.7–1.5 cm. Staminate flowers: stamens 30–50, ± distinct; pollen 3-colpate. Pistillate flowers: carpels 67–120; pseudostyle broad. Fruit peduncle 4–7 cm; torus 13–18(–25) cm; apocarps red, 4.5–10.5 × 4–7.5 mm. Seed testa smooth. Fl. Apr–Jun, fr. Jun–Oct. *2n* = 14.

Broad-leaved forests, coniferous forests, mixed forests, thickets; (1800–)2100–3300(–4000) m. S Xizang [Bhutan, N India, Nepal]. This species is a horticultural plant with edible fruit.

**2. *Schisandra rubriflora*** Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 412. 1913.

红花五味子 hong hua wu wei zi

Plants glabrous throughout. Young branches lacking wings; leaf-bearing branches elongated. Petiole 1–3 cm; leaf blade obovate-elliptic to elliptic, 5.5–11.5(–15) × 2.5–5.5(–7.5) cm, papery, not glaucous, secondary veins (4 or)5–7(or 8) on each side of midvein, base cuneate, attenuate, or rarely broadly cuneate, margin denticulate to serrulate, apex shortly acuminate to acuminate. Flowers axillary to fugacious bracts at base of young shoots, solitary; peduncle 1–5 cm (staminate), 1.8–3.2 cm (pistillate). Tepals 6–9, deep purplish red to deep red, largest 0.7–1.6 × 0.7–1.3 cm. Staminate flowers: stamens 34–66, ± distinct; pollen 3-colpate. Pistillate flowers: carpels 50–70; pseudostyle broad. Fruit peduncle 4–8 cm; torus 6–15 cm; apocarps dark purplish red to dark red, 4–11 × 3–9 mm. Seed testa smooth. Fl. May–Jul, fr. Jul–Oct.

Forests; (1500–)2500–3000(–3600) m. W Sichuan, N Yunnan [NE India, N Myanmar].

This species is a horticultural plant and is used medicinally.

**3. *Schisandra incarnata*** Stapf, Bot. Mag. 152: t. 9146. 1928.

兴山五味子 xing shan wu wei zi

Plants glabrous throughout. Young branches lacking wings; leaf-bearing branches elongated. Petiole 1.2–3.5 cm; leaf blade elliptic to obovate, 7–12.5 × 3.5–5.5 cm, papery, not glaucous, secondary veins (4 or)5 or 6(or 7) on each side of midvein, base cuneate to attenuate, margin denticulate to serrulate, apex shortly acuminate to rarely acuminate. Flowers axillary to fugacious bracts at base of young shoots, solitary; peduncle 1.6–3.5 cm (both sexes). Tepals 7 or 8, flesh-pink to deep flesh-pink, largest 1–1.7 × 0.6–1.2 cm. Staminate flowers: sta-

mens 28, ± distinct; pollen 3-colpate. Pistillate flowers: carpels ca. 70; pseudostyle broad. Fruit peduncle 3.5–5 cm; torus 5–11 cm; apocarps red, 8–10.5 × 5.5–8.5 mm. Seed testa smooth. Fl. May–Jun, fr. Aug–Sep.

- Thickets, forests; 1600–2300 m. SW and W Hubei.

This species is used medicinally. The fruit is edible.

**4. *Schisandra sphaerandra*** Stapf, Bot. Mag. 152: t. 9146. 1928.

球蕊五味子 qiu rui wu wei zi

*Schisandra grandiflora* (Wallich) J. D. Hooker & Thomson var. *cathayensis* C. K. Schneider; *S. sphaerandra* f. *pallida* A. C. Smith.

Plants glabrous throughout. Young branches lacking wings; leaf-bearing branches elongated. Petiole 0.6–3.3 cm; leaf blade obovate-elliptic, elliptic, or rarely ovate-elliptic, 3.5–8(–12.5) × 1.5–3(–6.5) cm, papery to rarely subleathery, not glaucous, secondary veins (4 or)5–7(–9) on each side of midvein, base cuneate to rarely broadly cuneate, margin denticulate to serrulate, apex shortly acuminate to acuminate. Flowers axillary to fugacious bracts at base of young shoots, solitary; peduncle 0.5–2.4 cm (staminate), 0.6–4.4 cm (pistillate). Tepals 5–9, white, yellowish, pink, crimson, dark red, or purplish, largest 6–12.5(–17.5) × 4–11 mm. Staminate flowers: stamens 22–42(–70), ± distinct; pollen 3-colpate. Pistillate flowers: carpels (35–)70–100; pseudostyle ± broad. Fruit peduncle 1.5–6.5 cm; torus 2.5–15 cm; apocarps scarlet to deep red, 6–12 × 4–9 mm. Seed testa ± smooth. Fl. May–Aug, fr. Aug–Oct.

- Mixed broad-leaved and coniferous forests, *Picea* and *Abies* forests; (1000–)2700–3600(–3800) m. S Sichuan, N Yunnan.

This species is a horticultural plant and is used medicinally.

**5. *Schisandra neglecta*** A. C. Smith, Sargentia 7: 127. 1947.

滇藏五味子 dian zang wu wei zi

Plants glabrous throughout. Young branches lacking wings; leaf-bearing branches elongated. Petiole 0.7–3 cm; leaf blade elliptic to ovate, 5–11 × 2–4.5(–6.5) cm, papery to rarely subleathery, not glaucous, venation dark after drying, secondary veins 4–7 on each side of midvein, base cuneate to broadly cuneate, margin denticulate to serrulate, apex shortly acuminate to acuminate. Flowers axillary to fugacious bracts at base of young shoots or axillary to leaves, solitary; peduncle 1.3–4.9 cm (staminate), 2.1–6.5 cm (pistillate). Tepals 6–10, white, yellow, orange, or pink, largest 5–9 × 4.5–7.5 mm. Staminate flowers: stamens 12–40, ± distinct; pollen 6-colpate. Pistillate flowers: carpels 20–45; pseudostyle narrow. Fruit peduncle 3.5–7.5 cm; torus 2–10.5 cm; apocarps red, 3–8.5 × 3–7.5 mm. Seed testa ± smooth, rugulose, or rarely ± tuberculate. Fl. May–Jul, fr. Jul–Nov.

- Forests, thickets, often by rivers; (1300–)1700–2900(–3600) m. Yunnan [Bhutan, NE India, Myanmar, Nepal].

This species is used medicinally.

**6. *Schisandra sphenanthera*** Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 414. 1913.

华中五味子 hua zhong wu wei zi

*Schisandra chinensis* (Turczaninow) Baillon var. *rubriflora* Franchet; *S. flaccidiramosa* C. R. Sun; *S. grandiflora* (Wallich) J. D. Hooker & Thomson var. *rubriflora* (Franchet) C. K. Schneider.

Plants glabrous throughout. Young branches lacking wings; leaf-bearing branches elongated. Petiole 1.5–3.5 cm; leaf blade elliptic, ovate, or rarely obovate, 4–11(–13.5) × 2–6(–8) cm, papery, not glaucous, secondary veins (3 or)4 or 5(–8) on each side of midvein, base cuneate, broadly cuneate, or truncate, margin denticulate, serrulate, or rarely subentire or entire, apex shortly to long acuminate. Flowers axillary to fugacious bracts at base of young shoots, solitary; peduncle 0.8–5.4 cm (staminate), 1.8–6.4 cm (pistillate). Tepals 5–9, yellow, orange, or red, largest 6–11.5 × 3.5–8.5 mm. Staminate flowers: stamens 11–25, ± distinct; pollen 6-colpate. Pistillate flowers: carpels 25–45; pseudostyle small. Fruit peduncle 2–10 cm; torus 2.5–14(–22) cm; apocarps red, 5.5–9 × 4–8 mm. Seed testa ± smooth. Fl. Apr–Jul, fr. Jun–Oct.

- Forests, thickets; (200–)700–2000(–5100) m. Anhui, Gansu, Guizhou, Henan, Hubei, Hunan, Jiangsu, Shaanxi, Shanxi, Sichuan, NE Yunnan, Zhejiang.

This species is a horticultural plant with edible fruit. It is used medicinally, as well as in wine and vinegar preparation and soap and lubricant manufacture.

**7. *Schisandra arisanensis*** Hayata, Icon. Pl. Formosan. 5: 1. 1915.

阿里山五味子 a li shan wu wei zi

Plants glabrous throughout. Young branches lacking wings; leaf-bearing branches elongated. Petiole 1–3.4 cm; leaf blade elliptic to ovate, 5–10.5(–12.5) × 2.5–7 cm, papery to subleathery, not glaucous, venation pale after drying, secondary veins 4–6 on each side of midvein, base cuneate to broadly cuneate and often ± decurrent on petiole, margin denticulate to serrulate, apex acuminate to long acuminate. Flowers axillary to fugacious bracts at base of young shoots or axillary to leaves, solitary; peduncle 1.8–4.5 cm (staminate), 3.5–4 cm (pistillate). Tepals 5–8(–13), pale yellow, yellow, orange, reddish orange, or red, largest 4–12 × 3.5–8.5 mm. Staminate flowers: stamens 8–30, ± distinct; pollen 6-colpate. Pistillate flowers: carpels 22–56; pseudostyle short, narrow. Fruit peduncle 4–8 cm; torus 3.5–15.5 cm; apocarps red, 5–11 × 3.5–7.5 mm. Seed testa ± smooth, rugulose, or rarely ± tuberculate. Fl. Apr–Jun, fr. Jun–Sep.

- Forests, shrublands; 200–2300 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Taiwan, Zhejiang.

This species is used medicinally. The fruit is edible.

- 1a. Carpels 40–56; outermost tepals 7.5–11.5 × 5–8 mm ..... 7a. subsp. *arisanensis*
- 1b. Carpels 22–29; outermost tepals 2–6.5 × 1–6 mm ..... 7b. subsp. *viridis*

**7a. *Schisandra arisanensis* subsp. *arisanensis***

阿里山五味子(原亚种) a li shan wu wei zi (yuan ya zhong)

Tepals yellow to reddish orange, outermost 7.5–11.5 × 5–8 mm. Pistillate flowers with gynoecium of 40–56 carpels. Fl. Apr–May, fr. Aug–Sep.

- Deciduous forests; 1600–2300 m. Taiwan.

**7b. *Schisandra arisanensis* subsp. *viridis* (A. C. Smith) R. M. K. Saunders, Syst. Bot. Monogr. 58: 72. 2000.**

绿叶五味子 lü ye wu wei zi

*Schisandra viridis* A. C. Smith, Sargentia 7: 129. 1947.

Tepals pale yellow, yellow, to rarely red, outermost 2–6.5 × 1–6 mm. Pistillate flowers with gynoecium of 22–29 carpels. Fl. Apr–Jun, fr. Jun–Sep.

- Forests, shrublands; 200–1300 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Zhejiang.

**8. *Schisandra glaucescens* Diels, Bot. Jahrb. Syst. 29: 323. 1900.**

金山五味子 jin shan wu wei zi

Plants glabrous throughout. Young branches lacking wings; leaf-bearing branches elongated. Petiole 0.9–2.6 cm; leaf blade elliptic to obovate, 6–9 × 2.5–5 cm, papery to rarely sub-leathery, abaxially conspicuously glaucous, secondary veins 4 or 5(–8) on each side of midvein, base cuneate to broadly cuneate and often ± decurrent on petiole, margin denticulate to serrulate, apex shortly acuminate. Flowers axillary to fugacious bracts at base of young shoots, solitary; peduncle 2.4–3.3 cm (staminate), 3.7–4 cm (pistillate). Tepals 6–8, white to yellow, largest 6.5–10 × 4–7.5 mm. Staminate flowers: stamens 18–24, ± distinct; pollen 6-colpate. Pistillate flowers: carpels 42–50; pseudostyle small. Fruit peduncle 4.5–7 cm; torus 3–12 cm; apocarps red, 5–11 × 4–8.5 mm. Seed testa ± smooth. Fl. May–Jun, fr. Jul–Oct.

- Forests, thickets; 1500–2600 m. Chongqing, W Hubei.

This species is a horticultural plant with edible fruit. It is used medicinally.

**9. *Schisandra tomentella* A. C. Smith, Sargentia 7: 119. 1947.**

柔毛五味子 rou mao wu wei zi

Young branches lacking wings; leaf-bearing branches elongated. Petiole 1–2.7 cm, tomentose; leaf blade obovate-elliptic to elliptic, 6–10.5 × 4–6 cm, papery, not glaucous, abaxially densely tomentose, secondary veins (4 or)5(–7) on each side of midvein, base cuneate to broadly cuneate and decurrent on petiole, margin denticulate, apex shortly to long acuminate. Flowers axillary to fugacious bracts at base of young shoots or axillary to leaves, solitary; peduncle 2.4–4.3 cm (staminate), 2–4.5 cm (pistillate), tomentose. Tepals 5–7, yellow, largest 5.5–10 × 4.5–6.5 mm, outermost abaxially tomentose. Staminate flowers: stamens 16–22, ± distinct; pollen 6-colpate. Pistillate flowers: carpels 45–70; pseudostyle small. Fruit peduncle ca. 5.5 cm, tomentose; torus ca. 4.5 cm; apocarps red, 3–4 × 4–5 mm. Seed testa smooth. Fl. May, fr. Aug.

- Forests, thickets; 1300–2200 m. S Sichuan.

**10. *Schisandra pubescens* Hemsley & E. H. Wilson, Bull. Misc. Inform. Kew 1906: 150. 1906.**

毛叶五味子 mao ye wu wei zi

*Schisandra vestita* Pax & K. Hoffmann.

Young branches lacking wings; leaf-bearing branches elongated. Petiole 1.5–4.3 cm, pubescent; leaf blade elliptic to ovate, 7–11.5 × 3.5–8.5 cm, papery, not glaucous, abaxially sparsely pubescent, secondary veins (4 or)5 or 6(–8) on each side of midvein, base broadly cuneate to truncate, margin denticulate, apex shortly to long acuminate. Flowers axillary to fugacious bracts at base of young shoots, solitary; peduncle 2–3 cm (staminate), 1.8–6.2 cm (pistillate), pubescent. Tepals 7 or 8, cream, yellow, orange, or red, largest 7–10 × 6.5–10 mm, outermost abaxially pubescent. Staminate flowers: stamens 14–24, ± distinct; pollen 6-colpate. Pistillate flowers: carpels 40–62; pseudostyle narrow. Fruit peduncle 4–6 cm, pubescent; torus 5–11 cm; apocarps red, 4.5–8 × 3–7 mm. Seed testa smooth. Fl. May–Jul, fr. Jun–Sep.  $2n = 28^*$ .

- Forests, thickets; 1000–1900(–2400) m. Chongqing, W Hubei, Sichuan.

This species is used medicinally.

**11. *Schisandra pubinervis* (Rehder & E. H. Wilson) R. M. K. Saunders, Syst. Bot. Monogr. 58: 81. 2000.**

毛脉五味子 mao mai wu wei zi

*Schisandra sphenanthera* Rehder & E. H. Wilson var. *pubinervis* Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 415. 1913; *S. pubescens* Hemsley & E. H. Wilson var. *pubinervis* (Rehder & E. H. Wilson) A. C. Smith.

Young branches lacking wings; leaf-bearing branches elongated. Petiole 1–4 cm, glabrous; leaf blade elliptic to ovate, 5–11(–13.5) × 3–7 cm, papery, not glaucous, abaxially glabrous except for pubescent primary and secondary veins, secondary veins (3 or)4 or 5(or 6) on each side of midvein, base cuneate, broadly cuneate, or truncate, margin denticulate to serrulate, apex shortly to long acuminate. Flowers axillary to fugacious bracts at base of young shoots or axillary to leaves, solitary; peduncle 2.8–5.2 cm (staminate), 5–6 cm (pistillate), glabrous. Tepals 7–10, yellow, largest 6.5–10 × 6.5–9 mm, glabrous. Staminate flowers: stamens 14–19, ± distinct; pollen 6-colpate. Pistillate flowers: carpels 36–50; pseudostyle narrow. Fruit peduncle 4.5–10 cm, glabrous; torus 2–15.5 cm; apocarps red, 4–6 × 3–5 mm. Seed testa smooth to ± rugulose. Fl. Jun–Jul, fr. Jul–Aug.  $2n = 28^*$ .

- Forests, thickets; 1000–2000(–2600) m. Hubei, Sichuan.

**12. *Schisandra lancifolia* (Rehder & E. H. Wilson) A. C. Smith, Sargentia 7: 133. 1947.**

狭叶五味子 xia ye wu wei zi

*Schisandra sphenanthera* Rehder & E. H. Wilson var. *lancifolia* Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 415. 1913.

Plants glabrous throughout. Young branches lacking wings; leaf-bearing branches elongated. Petiole 3–15 mm; leaf blade elliptic to ovate, 3.5–7.5(–10) × 1.5–4 cm, papery, not glaucous, secondary veins 4–6(or 7) on each side of midvein, base cuneate to broadly cuneate, margin denticulate to serrulate, apex acute, shortly acuminate, or acuminate. Flowers axillary to fugacious bracts at base of young shoots, solitary; peduncle 0.9–3.6 cm (staminate), 2.4–5.6 cm (pistillate). Tepals 6–8, white, yellow, orange, red, or pink, largest 3.5–6 × 3–5 mm. Staminate flowers: stamens 8–19, ± distinct; pollen 6-colpate. Pistillate flowers: carpels 14–24; pseudostyle narrow. Fruit peduncle 3–5.5 cm; torus 3–6.5 cm; apocarps red, 4.5–9.5 × 4–7 mm. Seed testa ± smooth to ± rugulose. Fl. Apr–Jul, fr. Oct–Nov.

• Forests, thickets, often near rivers; 1300–2900 m. SC Sichuan, NW and W Yunnan.

This species is used medicinally. The fruit is edible.

**13. *Schisandra micrantha*** A. C. Smith, *Sargentia* 7: 135. 1947.

小花五味子 xiao hua wu wei zi

*Schisandra elongata* Baillon var. *dentata* Finet & Gagnepain; *S. gracilis* A. C. Smith.

Plants glabrous throughout. Young branches lacking wings; leaf-bearing branches elongated. Petiole 0.5–2.2 cm; leaf blade elliptic to ovate, 3–7.5 × 2.5–4(–6) cm, thinly papery to subleathery, not glaucous, secondary veins (3 or)4 or 5(–7) on each side of midvein, base cuneate, broadly cuneate, or truncate, margin denticulate to serrulate, apex acute, shortly acuminate, or acuminate. Flowers axillary to fugacious bracts at base of young shoots, solitary; peduncle 1.2–3.8 cm (staminate), 1.4–6.1 cm (pistillate). Tepals 5–9, yellow and sometimes tinged pink or orange, largest 3–6.5 × 3–6.5 mm. Staminate flowers: stamens 7–14, ± distinct; pollen 6-colpate. Pistillate flowers: carpels 14–22; pseudostyle narrow. Fruit peduncle 3–5.5 cm; torus 1.5–3.5 cm; apocarps red, 4.5–7.5 × 3.5–7 mm. Seed testa ± tuberculate. Fl. May–Jul, fr. Aug–Sep.

Forests, often near rivers; 1200–2900 m. Yunnan [N India, Myanmar].

This species is used medicinally.

**14. *Schisandra henryi*** C. B. Clarke, *Gard. Chron.*, ser. 3, 38: 162. 1905.

翼梗五味子 yi geng wu wei zi

Plants glabrous throughout. Young branches narrowly to conspicuously winged; leaf-bearing branches elongated. Petiole 1.2–4(–6.2) cm; leaf blade elliptic to ovate, (5.5–)7.5–11.5(–14) × 3–9 cm, thinly papery, papery, or rarely subleathery, abaxially ± glaucous, secondary veins 4–6 on each side of midvein, base cuneate, broadly cuneate, or truncate and often ± decurrent on petiole, margin denticulate, serrulate, or rarely subentire or entire, apex shortly to long acuminate. Flowers axillary to semi-persistent or persistent leaf-bud scales at base of young shoots or axillary to leaves, solitary; peduncle 1.7–6.2 cm (staminate),

3.2–4.7 cm (pistillate). Tepals 6–10, yellow to orange but inner ones often red, largest 5.5–13 × 3.5–13 mm. Staminate flowers: stamens 12–46, ± distinct; pollen 6-colpate. Pistillate flowers: carpels 28–65; pseudostyle narrow. Fruit peduncle 3.5–14.5 cm; torus 1.5–11 cm; apocarps red, 4.5–9.5 × 3–7.5 mm. Seed testa rugulose to very tuberculate. Fl. Apr–Aug, fr. Jul–Oct.

• Forests, thickets, shrublands; 500–2100(–2300) m. Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, Sichuan, Yunnan, Zhejiang.

This species is a horticultural plant with edible fruit. It is used medicinally.

- 1a. Leaf blade not glaucous; tepals orange or yellow and red; staminate flowers with 8–10 tepals ..... 14b. subsp. *yunnanensis*
- 1b. Leaf blade abaxially variably glaucous; tepals yellow, without red pigmentation; staminate flowers with 6–8 tepals.
  - 2a. Branches conspicuously winged; staminate flowers with 23–46 stamens ..... 14a. subsp. *henryi*
  - 2b. Branches narrowly winged; staminate flowers with 12–19 stamens ..... 14c. subsp. *marginalis*

**14a. *Schisandra henryi* subsp. *henryi***

翼梗五味子(原亚种) yi geng wu wei zi (yuan ya zhong)

*Schisandra elongata* Baillon var. *longissima* Dunn; *S. hypoglauca* H. Léveillé.

Young branches conspicuously winged, with large leaf-bud scales persistent at least until fruiting stage. Leaf blade abaxially variably glaucous. Staminate flowers: tepals 6–8, yellow; stamens 23–46. Fl. Apr–Aug, fr. Aug–Oct.  $2n = 28^*$ .

• Evergreen or mixed forests, thickets; 500–2100 m. Chongqing, Guangxi, Guizhou, S Henan, Hubei, Hunan, Jiangxi, C Sichuan, SE Yunnan.

**14b. *Schisandra henryi* subsp. *yunnanensis*** (A. C. Smith) R. M. K. Saunders, *Syst. Bot. Monogr.* 58: 89. 2000.

滇五味子 dian wu wei zi

*Schisandra henryi* var. *yunnanensis* A. C. Smith, *Sargentia* 7: 116. 1947.

Young branches angled or narrowly winged, with medium-sized leaf-bud scales variably persistent. Leaf blade not glaucous. Staminate flowers: tepals 8–10, yellow (outer ones) and red (inner ones) or orange; stamens 24–34. Fl. May–Jun, fr. Jul–Oct.

• Forests, thickets; 1100–1800(–2300) m. S and SE Yunnan.

**14c. *Schisandra henryi* subsp. *marginalis*** (A. C. Smith) R. M. K. Saunders, *Syst. Bot. Monogr.* 58: 90. 2000.

东南五味子 dong nan wu wei zi

*Schisandra henryi* var. *marginalis* A. C. Smith, *Sargentia*

7: 115. 1947.

Young branches angled or narrowly winged, with medium-sized leaf-bud scales variably persistent. Leaf blade abaxially variably glaucescent. Staminate flowers: tepals 6 or 7, yellow; stamens 12–19. Fl. Apr–May, fr. Jul–Oct.

• Forests, shrublands; 600–1500(–1800). Fujian, Guangdong, Guangxi, Hunan, Zhejiang.

**15. *Schisandra longipes*** (Merrill & Chun) R. M. K. Saunders, Syst. Bot. Monogr. 58: 90. 2000.

长柄五味子 chang bing wu wei zi

*Schisandra sphenanthera* Rehder & E. H. Wilson var. *longipes* Merrill & Chun, Sunyatsenia 2: 5. 1934; *S. henryi* C. B. Clarke var. *longipes* (Merrill & Chun) A. C. Smith.

Young branches narrowly winged; leaf-bearing branches elongated. Petiole 1.9–6 cm, glabrous; leaf blade elliptic to ovate, 7.5–13 × 3.5–7.5 cm, thinly papery, papery, or rarely subleathery, variably glaucescent, abaxially glabrous except for pubescent primary and secondary veins, secondary veins (4 or) 5 or 6(or) 7 on each side of midvein, base cuneate, broadly cuneate, or truncate, margin denticulate, apex acuminate. Flowers axillary to semi-persistent or persistent leaf-bud scales at base of young shoots or axillary to leaves, solitary; peduncle 2.3–4.8 cm (staminate), 5.4–7.1 cm (pistillate), glabrous. Tepals 6–8, pale yellow, largest 7.5–11 × 6–10.5 mm, glabrous. Staminate flowers: stamens 18–28, ± distinct; pollen 6-colpate. Pistillate flowers: carpels 36–55; pseudostyle elongated, narrow. Fruit peduncle 7.5–13.5 cm, glabrous; torus 7.5–10.5 cm; apocarps red, 2.5–6 × 2.5–4.5 mm. Seed testa tuberculate to very tuberculate. Fl. Apr–May, fr. Jul–Aug.

• Forests, often near rivers; 500–1400 m. N Guangdong, N Guangxi.

**16. *Schisandra chinensis*** (Turczaninow) Baillon, Hist. Pl. 1: 148. 1868.

五味子 wu wei zi

*Kadsura chinensis* Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 7: 149. 1837; *Maximowiczia amurensis* Ruprecht; *M. chinensis* (Turczaninow) Ruprecht ex Maximowicz; *Schisandra chinensis* var. *leucocarpa* P. H. Huang & L. H. Zhou.

Young branches lacking wings; leaf-bearing branches elongated. Petiole 0.9–4 cm, glabrous; leaf blade elliptic to obovate, 4.5–8(–10.5) × 2.5–6.5 cm, thinly papery to papery, not glaucous, venation glabrous or rarely adaxially sparsely pubescent, secondary veins (3 or) 4–6(or) 7 on each side of midvein, base cuneate, attenuate, or rarely broadly cuneate, margin denticulate to serrulate, apex shortly acuminate. Flowers axillary to fugacious bracts at base of young shoots, solitary; peduncle 0.6–2.8 cm (staminate), 0.7–3.5 cm (pistillate), glabrous. Tepals 5–9, white to yellow, largest 6.5–11 × 2–5 mm, glabrous. Staminate flowers: stamens (4 or) 5(–7), ± distinct; pollen 6-colpate. Pistillate flowers: carpels 14–40; pseudostyle narrow to ± broadened. Fruit peduncle 2–7.5 cm, glabrous; torus 1.5–9.5 cm; apocarps pinkish red to red, 5–7.5 × 4–6 mm. Seed testa

smooth. Fl. May–Jul, fr. Jul–Sep.  $2n = 28$ .

Ravines, slopes, along rivers; 1200–1700 m. Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Shanxi [N Japan, Korea, Russia (Far East)].

This species is a horticultural plant with edible fruit. It is used medicinally and for making rope.

**17. *Schisandra bicolor*** W. C. Cheng, Contr. Biol. Lab. Sci. Soc. China, Bot. Ser. 8: 137. 1932.

二色五味子 er se wu wei zi

*Schisandra bicolor* var. *tuberculata* (Y. W. Law) Y. W. Law; *S. tuberculata* Y. W. Law; *S. wilsoniana* A. C. Smith.

Plants glabrous throughout. Young branches lacking wings; leaf-bearing branches short. Petiole 1.3–6.7 cm; leaf blade elliptic, ovate-elliptic, or obovate-elliptic, 7–12 × 3.5–8 cm, thinly papery, papery, or rarely subleathery, not glaucous, secondary veins 4–6 on each side of midvein, base cuneate to broadly cuneate, margin entire or denticulate, apex shortly acuminate. Flowers axillary to fugacious bracts at base of young shoots, solitary; peduncle 1.7–4.2 cm (staminate), 5–5.5 cm (pistillate). Tepals 6–11, greenish white to yellow (outer) or reddish purple (inner), largest 4–8.5 × 3.5–6 mm. Staminate flowers: stamens 5, sessile, radiating horizontally outward from a broad floral apex; pollen 6-colpate. Pistillate flowers: carpels 52–75; pseudostyle narrow. Fruit peduncle 2.5–6.5 cm; torus 3.5–15 cm; apocarps red, 1–1.6 × 1–1.6 cm. Seed testa tuberculate. Fl. May–Jul, fr. Aug–Nov.  $2n = 28^*$ .

• Forests; 700–1300 m. Guangxi, Hunan, Yunnan, Zhejiang.

This species is used medicinally.

**18. *Schisandra propinqua*** (Wallich) Baillon, Hist. Pl. 1: 148. 1868.

合蕊五味子 he rui wu wei zi

Plants glabrous throughout. Young branches lacking wings; leaf-bearing branches elongated. Petiole 0.4–2.7 cm; leaf blade elliptic to ovate, (5–)7–11.5(–20) × 1–4(–8.5) cm, papery to leathery, not glaucous, secondary veins (4 or) 5 or 6(–9) on each side of midvein, base cuneate, broadly cuneate, or truncate, margin entire, subentire, denticulate-serrulate, or rarely serrate, apex shortly acuminate. Flowers axillary to fugacious bracts at base of young shoots or axillary to leaves, solitary or in clusters; peduncle 2–17 mm (staminate), 3–14 mm (pistillate). Tepals 7–17, cream, yellow, orange, pink, or purplish, largest 3–12.5 × 2.5–10 mm. Staminate flowers: stamens (4–)8–18, connate into an androecial mass; anthers on conspicuous connectives; pollen 6-colpate. Pistillate flowers: carpels 18–52; pseudostyle flat and subulate. Fruit peduncle 0.5–3 cm; torus 2–6.5 cm; apocarps red to purple, 4.5–9 × 4–8.5 mm. Seed testa ± smooth. Fl. Mar–Sep, fr. Aug–Dec.

Mixed forests, open scrub; 400–3100 m. Gansu, Guizhou, Henan, Hubei, Hunan, Shanxi, Sichuan, Xizang, Yunnan [N India, Indonesia (Bali, Java), E Myanmar, Nepal, N Thailand].

This species is a horticultural plant with edible fruit. It is used medicinally.

*Schisandra propinqua* subsp. *propinqua* (*Kadsura propinqua*

Wallich, Tent. Fl. Nepal. 11. 1824) occurs in NW India and Nepal.

- 1a. Flowers solitary or rarely paired;  
staminate flowers with 10–16 stamens;  
largest tepals 6–11 × 5.5–6.5 mm  
(pistillate flowers); fruit peduncle  
0.7–1.2 cm ..... 18a. subsp. *intermedia*
- 1b. Flowers solitary or in clusters;  
staminate flowers with 4–11 stamens;  
largest tepals 4.5–6 × 3.5–5 mm  
(pistillate flowers); fruit peduncle  
1.4–3 cm ..... 18b. subsp. *sinensis*

**18a. *Schisandra propinqua* subsp. *intermedia*** (A. C. Smith)  
R. M. K. Saunders, Edinburgh J. Bot. 54: 278. 1997.

中间五味子 *zhong jian wu wei zi*

*Schisandra propinqua* var. *intermedia* A. C. Smith, Sargentia 7: 152. 1947.

Flowers solitary or rarely with secondary flower in axil of prophyll. Staminate flowers: stamens 10–16, connate into a mass 2.6–2.8 mm in diam. Pistillate flowers: tepals 9–12, largest 6–11 × 5.5–6.5 mm. Fruit peduncle 7–12 mm. Fl. May–Jul, fr. Sep.

Mixed forests, open scrub; (800–)1100–2100 m. Yunnan [NE India, E Myanmar, N Thailand].

**18b. *Schisandra propinqua* subsp. *sinensis*** (Oliver) R. M. K. Saunders, Edinburgh J. Bot. 54: 280. 1997.

铁箍散 *tie gu san*

*Schisandra propinqua* var. *sinensis* Oliver, Hooker's Icon. Pl. 18: t. 1715. 1887; *Embelia valbrayi* H. Léveillé; *S. propinqua* var. *linearis* Finet & Gagnepain.

Flowers solitary or in clusters. Staminate flowers: stamens 4–11, connate into a mass 1.8–2.4 mm in diam. Pistillate flowers: tepals 8–15, largest 4.5–6 × 3.5–5 mm. Fruit peduncle 1.4–3 cm. Fl. May–Sep, fr. Aug–Dec.

• Forests; 400–2600(–3100) m. S Gansu, Guizhou, Henan, Hubei, Hunan, Shanxi, Sichuan, Xizang, Yunnan.

**19. *Schisandra plena*** A. C. Smith, Sargentia 7: 154. 1947.

重瓣五味子 *chong ban wu wei zi*

Plants glabrous throughout. Young branches lacking wings; leaf-bearing branches elongated. Petiole 1.3–1.9 cm; leaf blade ovate-elliptic to elliptic, 8–14 × 3.5–5 cm, papery to subleathery, not glaucous, secondary veins 5–7 on each side of midvein, base cuneate to broadly cuneate, margin entire, apex shortly acuminate to acuminate. Flowers axillary to leaves, solitary or in clusters; peduncle 0.7–1.5 cm (staminate). Tepals 12–17, white to pale yellow but red at base, largest 8.5–10 × 4–4.5 mm. Staminate flowers: stamens 8, connate into an androecial mass; anthers sessile; pollen 6-colpate. Pistillate flowers: carpels ca. 31; pseudostyle subulate. Fruit peduncle 1–1.5 cm; torus 5–17 cm; apocarps orangish red to red, ca. 1 × 1.2 cm. Seed testa ± smooth. Fl. Apr–May, fr. Aug–Sep.

Dense forests; 600–1500 m. S and SW Yunnan [NE India].

