

SCHISANDRACEAE

五味子科 wu wei zi ke

Xia Nianhe (夏念和)¹, Liu Yuhu (刘玉壶 Law Yu-wu)¹; Richard M. K. Saunders²

Vines, woody, monoecious or dioecious. Stipules absent. Leaves alternate or ± clustered, simple, petiolate. Flowers axillary to leaves on ultimate branches or in axils of fugacious bracts near base of ultimate shoots, generally solitary but occasionally in pairs or clusters to 8, unisexual, hypogynous, with few to numerous parts generally spirally arranged, pedunculate. Perianth segments not as separate sepals and petals, distinct, outermost and innermost sometimes reduced. Staminate flowers: stamens 4–80, ± distinct, distinct but basally connate, or connate as a fleshy synandrium or tightly compressed; anthers basifixed (except *Schisandra plena*), thecae dehiscing by longitudinal slits. Pistillate flowers: carpels 12 to ca. 300, developmentally conduplicate; stigmatic crest as unvascularized “pseudostyle,” sometimes modified as peltate “pseudostigma”; ovary unilocular; ovules 2–5(–11) per ovary, anatropous, ventrally attached or pendulous, 2-tegmic, crassinucellar. Fruit aggregates of apocarps; receptacle ellipsoid or elongate; apocarps with fleshy pericarp. Seeds 1–5(or more) per apocarp, ventrally attached or pendulous, laterally flattened; endosperm copious, oily.

Two genera and 39 species: mainly in E and SE Asia but one species of *Schisandra* in North America; two genera and 27 species (16 endemic) in China.

Law Yuwu. 1996. Schisandreae. In: Law Yuwu, ed., Fl. Reipubl. Popularis Sin. 30(1): 231–269, 271–273.

Key to specimens with staminate flowers

- 1a. Androecium of distinct stamens not compressed into androecial mass.
 - 2a. Apex of androecium with variable number of staminodes or occasionally staminodes absent; pollen 6-colpate 1. *Kadsura*
 - 2b. Apex of androecium without staminodes; pollen 3-colpate 2. *Schisandra*
- 1b. Androecium of distinct but highly compressed stamens or of connate stamens in a fleshy androecial mass.
 - 3a. Stamens distinct but highly compressed 1. *Kadsura*
 - 3b. Stamens connate into a fleshy androecial mass 2. *Schisandra*

Key to specimens with pistillate flowers or fruit

- 1a. Floral torus obovoid, subclavate, or ellipsoid, not elongated in fruit; aggregate fruit globose or ellipsoid 1. *Kadsura*
- 1b. Floral torus cylindrical or conical-terete, obviously elongated in fruit; aggregate fruit a long spike 2. *Schisandra*

1. KADSURA Jussieu, Ann. Mus. Natl. Hist. Nat. 16: 340. 1810.

南五味子属 nan wu wei zi shu

Vines, woody, glabrous (except *Kadsura induta*), dioecious or monoecious. Leaf blade elliptic, ovate, or obovate, papery to leathery, base cuneate (especially when young), broadly cuneate, truncate, or subcordate, margin denticulate to entire, apex acute to acuminate. Flowers unisexual, in axils of leaves or fugacious bracts or occasionally cauliflorous, generally solitary or sometimes in clusters of 2–4. Tepals 7–24. Staminate flowers: stamens 13–80, ± distinct but basally connate or sometimes tightly aggregated into a subglobose mass; pollen 6-colpate, distally syncolpate. Pistillate flowers: carpels 17 to ca. 300, distinct; stigmatic crest forming subulate or laterally flattened “pseudostyle” or modified as subpeltate or irregular “pseudostigma”; ovary with 1–5(–11) pendulous or ventrally attached ovules. Fruit aggregates of apocarps; receptacle ellipsoid or clavate; apocarps ripening red or yellow, subglobose, obovoid, or elongate-obovoid. Seeds 1–5(–11) per apocarp, smooth.

Sixteen species: mainly in E and SE Asia; eight species (four endemic) in China.

- 1a. Stamens essentially distinct with filaments only basally connate; staminate flowers generally with staminodes but occasionally staminodes absent; seeds 10–18 × 7–11 mm 1. *K. coccinea*
- 1b. Stamens tightly aggregated into a compact subglobose head with filaments ± connate but anthers distinct; staminate flowers without staminodes; seeds 2.5–8.5 × 3–8.5 mm.
 - 2a. Young shoots, petioles, and abaxial surface of leaf blades pubescent-tomentose 3. *K. induta*
 - 2b. Entire plant glabrous.
 - 3a. Fruit large, with individual apocarps 7–22 × 6–15 mm; seeds pyriform, discoid, or reniform, 4–8.5 × 4.5–8.5 mm; pistillate flowers with 28–80 carpels.
 - 4a. Leaf blade broad, 1.6–3.2 × as long as wide; apex of torus in staminate flowers generally lacking stamens and with a short extension; seeds pyriform, discoid, or reniform 2. *K. heteroclita*
 - 4b. Leaf blade narrow, 2.2–5.2 × as long as wide; apex of torus in staminate flowers covered with stamens; seeds discoid.

¹ South China Botanical Garden, Chinese Academy of Sciences, 723 Xingke Road, Tianhe District, Guangzhou 510650, People's Republic of China. (Liu Yuhu died on 18 May 2004.)

² Division of Ecology & Biodiversity, School of Biological Sciences, The University of Hong Kong, Pokfulam Road, Hong Kong, People's Republic of China.

- 5a. Leaf blade elliptic, papery to subleathery, with slightly arcuate secondary veins 4. *K. angustifolia*
 5b. Leaf blade elliptic to oblong, papery, with strongly arcuate secondary veins 5. *K. rechangiana*
 3b. Fruit small, with individual apocarps 3.5–11(–15) × 3.5–7(–11) mm; seeds reniform, 2.5–4.5 × 3–6 mm; pistillate flowers with 20–58 carpels.
 6a. Flower peduncle 1.2–4(–6.4) cm (staminate), (1–)3–5(–16) cm (pistillate); tepals 10–15(–20) 6. *K. longipedunculata*
 6b. Flower peduncle 0.8–2.6 cm (staminate), 1–4 cm (pistillate); tepals 8–13.
 7a. Leaf blade 2.5–5(–6.5) cm wide; apocarps 5.5–7.5 mm wide; seeds 4.5–5.5 mm wide 7. *K. japonica*
 7b. Leaf blade 2–3 cm wide; apocarps 3.5–4.5 mm wide; seeds 3–4.5 mm wide 8. *K. oblongifolia*

1. *Kadsura coccinea* (Lemaire) A. C. Smith, *Sargentia* 7: 166. 1947.

黑老虎 hei lao hu

Cosbaea coccinea Lemaire, Ill. Hort. 2: 71. 1855; *Kadsura ananosma* Kerr; *K. cavaleriei* H. Léveillé; *K. chinensis* Hance ex Benth; *K. coccinea* var. *sichuanensis* Y. W. Law; *K. hainanensis* Merrill; *Schisandra hanceana* Baillon.

Plants glabrous throughout. Petiole 0.9–3(–4.1) cm; leaf blade elliptic to rarely ovate, 7–19 × 2.5–10 cm, papery to leathery, secondary veins 3–8(–12) on each side of midvein, base cuneate, broadly cuneate, or rarely truncate, margin entire or rarely denticulate, apex acute, shortly acuminate, or rarely obtuse. Flower peduncle 0.4–2(–3.1) cm (staminate), 0.7–3.8 cm (pistillate). Tepals 8–16(–24), white, red, purplish red, or occasionally yellowish, largest (0.8–)1.2–2.3 × 0.6–1.2(–1.5) cm. Staminate flowers: stamens 10–50; staminodes generally present at apex of torus. Pistillate flowers: carpels 20–68. Fruit peduncle 2.6–4.9 cm; apocarps red to purplish red, 1.4–2.4 × 0.7–1.7 cm. Seeds 1 or 2 per apocarp, pyriform, 1–1.8 × 0.7–1.1 cm. Fl. May–Jul, fr. Oct–Dec.

Semi-open shrublands and forests; (200–)400–1400(–1900) m. Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Sichuan, Yunnan [Myanmar, Vietnam].

This species is used medicinally. The fruit is edible.

2. *Kadsura heteroclita* (Roxburgh) Craib, *Fl. Siam.* 1: 28. 1925.

异形南五味子 yi xing nan wu wei zi

Uvaria heteroclita Roxburgh, *Fl. Ind.*, ed. 1832, 2: 455. 1832; *Kadsura championii* C. B. Clarke; *K. interior* A. C. Smith; *K. polysperma* Y. C. Yang; *K. roxburghiana* Arnott; *K. watti* C. B. Clarke; *K. wightiana* Arnott.

Plants glabrous throughout. Petiole 0.7–2.9 cm; leaf blade ovate-elliptic to elliptic, 6.5–13.5(–16) × 2.5–6.5(–9.5) cm, ± papery to subleathery, secondary veins 5–9(–16) on each side of midvein, base cuneate to broadly cuneate and often shortly decurrent on petiole, margin entire or denticulate, apex acute to acuminate. Flower peduncle 0.1–2(–3.5) cm (staminate), 0.4–3.3 cm (pistillate). Tepals 10–17(–25), white, cream, or yellow, largest 4.5–20.5 × 3.5–12(–15) mm. Staminate flowers: stamens 40–74; staminodes absent. Pistillate flowers: carpels 28–72. Fruit peduncle 1.4–4.6 cm; apocarps red, 0.7–2.2 × 0.6–1.5 cm. Seeds 1 or 2(–11) per apocarp, pyriform, discoid, or reniform, 4–5.5(–7.5) × 4.5–7 mm. Fl. Jun–Oct, fr. Oct–Dec.

Forests; 800–2000 m. Fujian, Guangdong, Guangxi, Guizhou,

Hainan, Hunan, Shaanxi, Sichuan, Yunnan [Bangladesh, Bhutan, India, Indonesia (Borneo, Java, Sumatra), Laos, Malaysia (peninsular), Myanmar, Sri Lanka, Thailand, Vietnam].

This species is used medicinally.

3. *Kadsura induta* A. C. Smith, *Sargentia* 7: 173. 1947.

毛南五味子 mao nan wu wei zi

Plants with young shoots pubescent-tomentose. Petiole 1.7–2.6 cm, pubescent-tomentose; leaf blade elliptic, 11–15.5 × 5–7 cm, ± papery, abaxially pubescent-tomentose, secondary veins 7–9 on each side of midvein, base cuneate, broadly cuneate, or truncate, margin entire or denticulate, apex shortly acuminate. Flower peduncle 1.1–1.8 cm. Tepals 17–19, largest 10–12 × 6–7 mm. Staminate flowers: stamens 66–72; staminodes absent. Pistillate flowers not seen. Fruit peduncle ca. 4 cm; apocarps red, 1.8–2.2 × 1.4–1.6 cm. Seeds 3 or 4 per apocarp, reniform to pyriform, 6.5–8.5 × 6.5–8 mm. Fl. Jul, fr. Nov.

• Dense forests; 700–1500 m. W Guangxi, SE Yunnan.

4. *Kadsura angustifolia* A. C. Smith, *Sargentia* 7: 177. 1947.

狭叶南五味子 xia ye nan wu wei zi

Kadsura guangxiensis S. F. Lan.

Plants glabrous throughout. Petiole 1–1.7 cm; leaf blade narrowly elliptic, 9.5–14 × 2.5–4.5 cm, papery to subleathery, secondary veins 7–13 on each side of midvein, base cuneate, margin subentire, denticulate, serrulate, or serrate, apex acuminate to long acuminate. Flower peduncle 9–10 mm (staminate), 1–1.2 cm (pistillate). Tepals 9–15, whitish, largest 7.5–8.5 × 5–6 mm. Staminate flowers: stamens ca. 50; staminodes absent. Pistillate flowers: carpels ca. 80. Fruit peduncle ca. 4 cm; apocarps 9–10.5 × 8–9.5 mm. Seed 1 per apocarp, discoid, 6–7.5 × 6.5–7 mm. Fl. Jun, fr. Sep.

Forests; 900–1800 m. Guangxi [Vietnam].

This species is used medicinally.

5. *Kadsura rechangiana* S. F. Lan, *Acta Sci. Nat. Univ. Sunyatseni* 1983(2): 120. 1983.

仁昌南五味子 ren chang nan wu wei zi

Plants glabrous throughout. Petiole 1–2.5 cm; leaf blade elliptic to oblong, 10–15.5 × 2.5–5.5 cm, papery, secondary veins 7–9 on each side of midvein, base cuneate to broadly cuneate, margin subentire, denticulate, lobed-serrulate, or serrulate, apex long acuminate to rarely shortly acuminate. Flower peduncle 2.9–4 cm (staminate), to 11 cm (pistillate). Tepals 9–15, yellow, largest 9.5–10.5 × 7.5–9.5 mm. Staminate flowers:

stamens 42–50; staminodes absent. Pistillate flowers: carpels 42–70. Fruit peduncle (2–)10–16.5 cm; apocarps red to black, 1–1.5(–2) × 0.8–1.5 cm. Seed 1 per apocarp, discoid, 6.5–8.5 × 6.5–8.5 mm. Fl. Jun–Jul, fr. Sep–Nov.

- Dense forests; 900–1300 m. NE Guangxi, Guizhou.

6. *Kadsura longipedunculata* Finet & Gagnepain, Bull. Soc. Bot. France 52(Mém. 4): 53. 1906.

南五味子 nan wu wei zi

Kadsura discigera Finet & Gagnepain; *K. omeiensis* S. F. Lan; *K. peltigera* Rehder & E. H. Wilson.

Plants glabrous throughout. Petiole 0.6–1.7(–3) cm; leaf blade elliptic to rarely ovate-elliptic or obovate-elliptic, 5.5–12(–15) × 2–4.5(–6.5) cm, papery to leathery, secondary veins 4–8 on each side of midvein, base cuneate to rarely broadly cuneate, margin subentire, denticulate, serrulate, or serrate, apex shortly to long acuminate. Flower peduncle 1.2–4(–6.4) cm (staminate), (1–)3–5(–16) cm (pistillate). Tepals 10–15(–20), pale yellow, yellow, or occasionally reddish, largest 4–7(–13) × 3–6(–10) mm. Staminate flowers: stamens 26–54; staminodes absent. Pistillate flowers: carpels 20–58. Fruit peduncle 2.5–9.5 cm; apocarps red, purple, or rarely black, 6.5–11.5(–15) × 4.5–6.5(–11) mm. Seeds 1–3 per apocarp, reniform, 3.5–4.5 × 4.5–6 mm. Fl. Jun–Sep, fr. Sep–Dec. $2n = 28^*$.

- Forests, especially near rivers; 100–1300(–1700) m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Yunnan, Zhejiang.

This species is used medicinally. The fruit is edible.

7. *Kadsura japonica* (Linnaeus) Dunal, Monogr. Anonac. 57. 1817.

日本南五味子 ri ben nan wu wei zi

Uvaria japonica Linnaeus, Sp. Pl. 1: 536. 1753; *Kadsura matsudae* Hayata.

Plants glabrous throughout. Petiole 0.6–2.3 cm; leaf blade elliptic to rarely ovate-elliptic or obovate-elliptic, 6–10.5(–12.5) × 2.5–5(–6.5) cm, papery to subleathery, secondary veins 5–8 on each side of midvein, base cuneate to broadly cuneate, margin subentire, denticulate, lobed-serrulate, serrulate, or serrate, apex shortly acuminate to acuminate. Flower peduncle 1.1–2.6 cm (staminate), 1.3–3.9 cm (pistillate). Tepals 8–12, yellow, largest 6–9(–12) × 4–7.5 mm. Staminate flowers: stamens 28–50; staminodes absent. Pistillate flowers: carpels 30–48. Fruit peduncle (2–)2.6–4(–6.1) cm; apocarps red to purple, 5.5–10 × 5.5–7.5 mm. Seeds 1–3 per apocarp, reniform, 3–4 × 4.5–5.5 mm. Fl. Apr–Oct, fr. Oct–Dec. $2n = 28$.

Forests, often near rivers; near sea level to 2000 m. Taiwan [Japan, Korea].

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

8. *Kadsura oblongifolia* Merrill, Philipp. J. Sci., Bot. 23: 241. 1923.

冷饭藤 leng fan teng

Plants glabrous throughout. Petiole 5–14 mm; leaf blade oblong-elliptic to elliptic, 6–10 × 2–3 cm, papery to subleathery, secondary veins 4–6 on each side of midvein, base cuneate to rarely broadly cuneate, margin entire, subentire, or rarely denticulate, apex rounded, acute, or shortly acuminate. Flower peduncle 0.8–1.5 cm (staminate), 1–3 cm (pistillate). Tepals 11–13, yellow to pink, largest 4.5–8 × 3.5–5.5 mm. Staminate flowers: stamens 24 or 25; staminodes absent. Pistillate flowers: carpels 30–50. Fruit peduncle 2–3.2(–3.7) cm; apocarps red, 3.5–8 × 3.5–4.5 mm. Seeds 1 or 2 per apocarp, reniform, 2.5–4 × 3–4.5 mm. Fl. Jul–Nov, fr. Oct–Nov.

- Forests over dry soils; 100–900 m. Guangdong, Guangxi, Hainan.

This species is used medicinally. The fruit is edible.

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: stamens 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 sub-leathery, 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 glaucescent; tepals orange or yellow and red; staminate flowers with 8–10 tepals 14b. subsp. *yunnanensis*
- 1b. Leaf blade abaxially variably glaucescent; 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. hypoglaucous* H. Léveillé.

Young branches conspicuously winged, with large leaf-bud scales persistent at least until fruiting stage. Leaf blade abaxially variably glaucescent. 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 glaucescent. 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 paper, 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].