

22. DICHOCARPUM W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin. 9: 323. 1964.

人字果属 ren zi guo shu

Fu Dezhi (傅德志); Orbélia R. Robinson

Herbs perennial, erect. Rhizomes present. Stem scapoid, unbranched or few branched, with few leaves or leafless. Leaves basal or basal and cauline, pedately compound, 3–13-foliolate, rarely simple; central leaflet entire. Inflorescences cymose, terminal or axillary, 1–8-flowered; bracts usually 3-lobed. Flowers radially symmetric, bisexual, sometimes cleistogamous. Sepals 5, petaloid, usually white, seldom yellowish or pinkish. Petals 5, golden-yellow, much smaller than sepals, clawed. Stamens 5–25; filaments narrowly linear, 1-veined; anthers yellow. Pistils 2, connate at base; ovary narrowly oblong, many ovuled; styles persistent. Follicles 2, divaricate, apically beaked. Seeds nitid, sometimes somewhat rugose or rough.

About 15 species: China, N India, Japan, N Myanmar, Nepal; 11 species (endemic) in China.

- 1a. Rhizome inconspicuous; tap root long; petals funnelform; seeds ellipsoid-fusiform 11. *D. fargesii*
- 1b. Rhizome 1–16 cm; tap root inconspicuous; petals flat (petals unknown in *D. basilare*, *D. carinatum*, and *D. hypoglaucum*); seeds globose to subglobose, rarely ellipsoid.
 - 2a. Stem leaves present.
 - 3a. Central leaflet rhombic to broadly rhombic-ovate, 1.8–6 × 1.5–5 cm 7. *D. auriculatum*
 - 3b. Central leaflet suborbicular, suborbicular-obovate, flabellate, or flabellate-obovate, 0.5–2.3 × 0.6–2.5 cm.
 - 4a. Stamens 5 or 10 10. *D. arisanense*
 - 4b. Stamens 20–45.
 - 5a. Central leaflet suborbicular-obovate to flabellate-obovate; flowers 1.1–2.3 cm in diam. 8. *D. sutchuenense*
 - 5b. Central leaflet suborbicular to subflabellate; flowers 0.4–0.6 cm in diam. 9. *D. franchetii*
 - 2b. Stem leaves absent.
 - 6a. Leaves 3-foliolate or sometimes simple; rhizome to 16 cm 1. *D. trifoliolatum*
 - 6b. Leaves (3)5–15-foliolate; rhizome 1–10 cm
 - 7a. Leaves 5-foliolate, rarely 3-foliolate 2. *D. basilare*
 - 7b. Leaves 7–15-foliolate.
 - 8a. Rhizome 5–10 cm.
 - 9a. Leaflets abaxially pruinose; seeds inconspicuously ridged, smooth 3. *D. hypoglaucum*
 - 9b. Leaflets abaxially not pruinose; seeds conspicuously ridged, rugose 6. *D. carinatum*
 - 8b. Rhizome 2–3(–5) cm.
 - 10a. Central leaflet lanceolate 5. *D. malipoenense*
 - 10b. Central leaflet not lanceolate.
 - 11a. Central leaflet rhombic 4. *D. dalzielii*
 - 11b. Central leaflet suborbicular, suborbicular-obovate, flabellate-obovate, or subflabellate.
 - 12a. Central leaflet suborbicular-obovate to flabellate-obovate; flowers 1.1–2.3 cm in diam. 8. *D. sutchuenense*
 - 12b. Central leaflet suborbicular to subflabellate; flowers 0.4–0.6 cm in diam. 9. *D. franchetii*

1. Dichocarpum trifoliolatum W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin. 9: 324. 1964.

三小叶人字果 san xiao ye ren zi guo

Plant glabrous. Rhizome ca. 16 cm, ca. 4 mm in diam., densely scaly; scales grayish, broadly ovate, ca. 2 mm, apically rounded. Leaves ca. 3, basal, 3-foliolate or sometimes simple, abaxially whitish green, apically toothed; veins inconspicuous; petiole 6.2–8.3 cm. Compound leaves with leaf blade 6–7.8 × 4.5–7 cm; lateral leaflets obliquely obovate; central leaflet rhombic-ovate, 3.7–4.3 × 2.3–2.8 cm, base cuneate, margin distally crenate, apex rounded. Simple leaves with leaf blade broadly obovate, ca. 3.8 × 3.3 cm. Flowering stem 23–25 cm tall. Inflorescences monochasial, 3-flowered; bracts sessile or shortly

petiolate, obovate, ca. 1.5 mm, 3-lobed or entire. Pedicel 0.4–1.7 cm. Sepals pinkish, obovate, ca. 3.5 mm. Petal limbs flabellate, ca. 2.5 mm, apex retuse; claw longer than limb. Stamens ca. 3.5 mm; anthers ellipsoid, ca. 0.5 mm. Follicles linear, 8–10 × ca. 1.5 mm; persistent styles ca. 2.5 mm. Seeds brown, ellipsoid, ca. 2.5 mm in diam. Fl. and fr. Apr.

• Rocky areas by streams; 700–800 m. S Sichuan (Junlian Xian).

2. Dichocarpum basilare W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin. 9: 325. 1964.

基叶人字果 ji ye ren zi guo

Rhizome ca. 1 cm, to 6 mm in diam. Leaves 3–5, basal, (3–)5-foliolate; petiole 2–4.7 cm; leaf blade triangular or pentagonal, 1.5–3.4 × 2.2–4 cm; lateral leaflets 1

pair, obliquely rhombic, similar to central leaflet but smaller, or 2 pairs shortly petiolulate, obliquely rhombic to elliptic, unequal in size: lower leaflets 3.5–8 × 2.5 mm, upper leaflets 1.2–1.3 × 0.7–0.8 cm; central leaflet rhombic to rhombic-obovate, 1.2–2.7 × 0.8–2.8 cm, base broadly cuneate, apex obtuse. Flowering stem 16–19 cm tall, glabrous, 3–5-flowered; bracts obovate, ca. 5 × 2.5 mm, 3-lobed. Flowers unknown. Follicles linear, 7.5–10 mm, glabrous; persistent styles ca. 1.5 mm. Seeds dark purple, subglobose, ca. 1.5 mm, smooth. Fr. Jun.

• Grassy places; 500–600 m. S Sichuan (Yibin Xian).

3. *Dichocarpum hypoglaucum* W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin. 9: 327. 1964.

粉背人字果 *fen bei ren zi guo*

Plant glabrous. Rhizome robust, 5–10 cm, ca. 1 cm in diam. Leaves ca. 4, basal, 7–9-foliolate, abaxially pruinose; petiole 20–26 cm; leaf blade pentagonal, 14–16 × 10–16 cm; lateral leaflet petiolules 2–2.4 cm; leaflet blade obliquely rhombic-ovate, unequal in size, lower leaflets 3.5–5.2 cm, upper leaflets 8–9 × 3.8–4.5 cm; central leaflet petiolule ca. 4 cm; leaflet blade rhombic-ovate, 10–12 × 5–5.6 cm, base broadly cuneate, margin crenate and toothed. Flowering stem ca. 28 cm tall. Inflorescences monochasial, 3–7-flowered; lower bracts shortly petiolate, 2.4–3.2 cm, 3-foliolate; upper bracts 4–9 mm, 3-parted. Flowers unknown. Follicles oblanceolate-linear, ca. 1 cm, glabrous; persistent styles ca. 2 mm. Seeds dark purple, subglobose, ca. 2.5 mm, inconspicuously ridged, smooth. Fr. May. $2n = 24^*$.

• Limestone under dense forests; 1200–1300 m. SE Yunnan (Xichou Xian).

4. *Dichocarpum dalzielii* (J. R. Drummond & Hutchinson) W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin. 9: 327. 1964.

蕨叶人字果 *jue ye ren zi guo*

Isoopyrum dalzielii J. R. Drummond & Hutchinson, Bull. Misc. Inform. Kew 1920: 163. 1920; *I. flaccidum* Ulbrich; *I. pteridifolium* Handel-Mazzetti.

Plant glabrous. Rhizome ca. 3 cm. Leaves 3–11, basal, 11–15-foliolate, papery, glabrous; petiole 3.5–11.5 cm; leaf blade pentagonal, 3.5–10 cm wide; lateral leaflets petiolulate; leaflet blade obliquely rhombic to obliquely ovate, unequal in size, smallest ones ca. 8 × 4 mm; central leaflet rhombic, 2.5–6.5 (–7.5) × 1.7–3 (–3.5) cm, base cuneate, margin distally lobulate or crenate and toothed, apex obtuse. Flowering stems 3–11, 20–28 cm tall, 3–8-flowered; bracts sessile, 3-sect, lower bracts 1–2.1 cm, upper bracts 2–3 mm. Flowers 1.4–1.8 cm in diam. Pedicel 2–3 cm. Sepals white, obovate-elliptic, 8–10 × 3.8–4 mm, apex slightly acute to obtuse. Petal limbs suborbicular, 2.8–4.5 mm, apex retuse or entire, apically mucronate; claw longer than limb. Stamens numerous, 3.5–4.5 mm; anthers broadly ellipsoid, ca. 0.8 mm. Follicles obovoid-lanceolate, 11–12 mm;

persistent styles ca. 2 mm. Seeds brown, subglobose, ca. 1 mm, smooth. Fl. Apr–May, fr. May–Jun.

• Forests, shady and wet places by streams; 700–1600 m. Anhui, W Fujian, Guangdong, Guangxi, Guizhou, Hainan, SW Hubei, S Hunan, Jiangxi, SE Sichuan, Zhejiang.

5. *Dichocarpum malipoenense* D. D. Tao, Acta Phytotax. Geobot. 40: 179. 1989.

麻栗坡人字果 *ma li po ren zi guo*

Rhizome 2–3 cm, 1–1.8 cm in diam. Leaf 1, basal, 7–9-foliolate, papery, glabrous; petiole 1.5–1.8 cm, glabrous; lateral leaflets ovate-rhombic to ovate, unequal in size, smaller than central leaflet; central leaflet lanceolate, ca. 14.5 × 5 cm, base broadly cuneate, margin crenate, apex attenuate. Scapes 2, 4–6 cm tall, glabrous. Inflorescences 2- or 3-flowered, glabrous; bracts 3-foliolate. Flowers ca. 0.8 cm in diam., glabrous. Pedicel ca. 1 cm. Sepals white, obovate, 4–5 × 4–5 mm, apex obtuse. Petal limbs orbicular-ovate, shorter than sepals, apex emarginate; claw longer than limb. Stamens ca. 3 mm. Pistils linear, nearly as long as stamens; persistent styles short. Fl. Jan.

• By streams in woods; ca. 1300 m. SE Yunnan (Malipo Xian).

6. *Dichocarpum carinatum* D. Z. Fu, Acta Phytotax. Sin. 26: 258. 1988.

种脐人字果 *zhong qi ren zi guo*

Rhizome 8–10 cm, 5–6 mm in diam., often branched. Stem ca. 40 cm, glabrous. Leaves ca. 2, basal, 12–15-foliolate, papery, glabrous; petiole to 12 cm; lateral leaflets smaller, unequal in size; central leaflet subrhombic to rhombic-ovate, 1.8–2.8 × 0.9–2 cm, apically 3-lobed, apex obtuse. Inflorescences 3–5-flowered, glabrous; bracts foliaceous. Flowers unknown. Follicles linear, ca. 1 cm; persistent styles short. Seeds subglobose, ca. 1 mm in diam., conspicuously ridged, rugose.

• Slopes; 500–700 m. Sichuan (Junlian Xian).

7. *Dichocarpum auriculatum* (Franchet) W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin. 9: 328. 1964.

耳状人字果 *er zhuang ren zi guo*

Plant glabrous. Rhizome blackish brown, (1–)2–3 cm, to 6 mm in diam. Stem (15–)20–36 cm. Leaves few, basal, 5-foliolate; petiole 5–11 cm; leaf pentagonal, 3–9 × 3–7.5 cm; lateral leaflets obliquely ovate, unequal in size, lower leaflets 0.4–2 × 0.4–1.9 mm, upper leaflets obliquely ovate, 1.1–3.5 × 0.9–3 cm; central leaflet rhombic to broadly rhombic-ovate, 1.8–6 × 1.5–5 cm, base cuneate, margin distally crenate, apex obtuse. Stem leaves 2(–4), petiole 2–5 cm, leaf blade similar to basal leaves. Inflorescences 7–19 cm, (1–)3–7-flowered; bracts simple or 3-sect; lower bracts foliaceous, upper bracts sessile, ca. 3 mm. Flowers 1–1.7 cm in diam., glabrous. Pedicel 2.5–3.5 cm. Sepals white, obovate-elliptic, 5–9 × 3–5.5 mm, apex obtuse. Petal limbs broadly obovate, ca. 4 mm, apex retuse or entire; claw longer than limb. Stamens ca. 20, 5–6 mm; anthers broadly ellipsoid, ca. 0.6 mm. Follicles obovoid-

lanceolate, 1.1–1.5 cm; persistent styles ca. 2 mm. Seeds 8 or 9, yellowish brown, subglobose, ca. 1 mm in diam., smooth. Fl. Apr–May, fr. Apr–Jun.

• Near rocks in forests, shady wet places on slopes; 500–1500 m. Fujian, Guizhou, W Hubei, Sichuan, NE Yunnan.

1a. Leaflets glabrous 7a. var. *auriculatum*

1b. Leaflets abaxially glabrous, adaxially puberulous 7b. var. *puberulum*

7a. *Dichocarpum auriculatum* var. *auriculatum*

耳状人字果(原变种) *er zhuang ren zi guo* (yuan bian zhong)

Isopyrum auriculatum Franchet, Bull. Soc. Bot. France 33: 376. 1886; *I. auriculatum* Franchet (1897), not Franchet (1886); *I. delavayi* Franchet; *I. limprichtii* Ulbrich.

Leaflets glabrous.

• Near rocks in forests, shady wet places; 600–1500 m. Fujian, W Hubei, Sichuan, NE Yunnan.

7b. *Dichocarpum auriculatum* var. *puberulum* D. Z. Fu, Acta Phytotax. Sin. 26: 258. 1988.

毛叶人字果 *mao ye ren zi guo*

Leaflets abaxially glabrous, adaxially puberulous.

• Shady wet places on slopes; 500–600 m. Sichuan (Junlian Xian).

8. *Dichocarpum sutchuenense* (Franchet) W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin. 9: 328. 1964.

人字果 *ren zi guo*

Isopyrum sutchuenense Franchet, J. Bot. (Morot) 8: 247. 1894.

Plant glabrous. Rhizome to 6 mm in diam. Stem 1, 7.5–30 cm, unbranched. Basal leaves few, withered at anthesis, 5–13-foliolate; petiole 2.5–7.5 cm; leaf blade pentagonal, 1.5–4 × 1.9–4.5 cm; lateral leaflets shortly petiolulate or sessile; leaflet blade obliquely ovate, rhombic-ovate, or obliquely obovate, unequal in size; central leaflet suborbicular-obovate to flabellate-obovate, 0.5–2.3 × 0.6–2.5 cm, base broadly cuneate, margin 3–5-lobulate and with 3–5 obtuse teeth, apex obtuse to rounded. Stem leaf 1, sometimes absent; petiole ca. 5 cm; leaf blade 3–6(–9) cm wide, similar in shape to basal leaves. Flowering stems (1–)3–8-flowered; lower bracts similar to leaves but smaller, upper bracts sessile, 3-sect. Flowers 1.1–2.3 cm in diam. Pedicel 2–7 cm. Sepals white, obovate-elliptic to obovate, 3.5–11 × 2–6 mm, apex obtuse. Petal limbs suborbicular, 1–3 mm, apex retuse or entire; claw longer than or nearly as long as limb. Stamens 20–45, 2–7 mm. Follicles obovoid-lanceolate, 0.7–1.5 cm; persistent styles 0.2–2 mm. Seeds 8–10, yellowish brown, globose, ca. 1 mm, smooth. Fl. Apr–May, fr. May–Jun.

• Near rocks in forests; 1400–2200 m. Hubei, Sichuan, Yunnan, Zhejiang.

9. *Dichocarpum franchetii* (Finet & Gagnepain) W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin. 9: 329. 1964.

小花人字果 *xiao hua ren zi guo*

Isopyrum franchetii Finet & Gagnepain, Bull. Soc. Bot. France 51: 405. 1904.

Plant glabrous. Rhizome present, lateral roots dense. Stem 1–5, 9–26 cm tall. Basal leaves few, persistent or withering at anthesis; petiole 2.5–7 cm; leaf blade pentagonal, 1.5–3.3 × 1.2–3.2 cm; lateral leaflets subflabellate, obliquely ovate, or subround, unequal in size, smallest ones ca. 2 mm to almost as large as central leaflet; central leaflet suborbicular to subflabellate, 0.6–1.2 × 0.9–1.4 cm, margin apically 5-toothed; teeth apex retuse. Stem leaf 1, sometimes absent; petiole ca. 4.5 cm; leaf blade similar in shape to basal leaves. Flowering stems 5–11 cm, 3–7-flowered; lower bracts foliaceous, with a slender petiole, upper bracts sessile or shortly petiolate, 3–5-sect. Flowers 4.2–6 mm in diam. Pedicel slender. Sepals white, obovate, 3.5–4.5 × ca. 2 mm, apex obtuse. Petal limbs suborbicular, 1–1.2 mm, apex retuse or entire; claw as long as or slightly longer than limb. Stamens 2–3 mm; anthers ca. 0.3 mm. Follicles 7–9(–10) mm; persistent styles ca. 0.5 mm. Seeds 7 or 8, pale yellowish brown, globose, ca. 1 mm in diam., smooth. Fl. Apr–May, fr. May–Jun.

• Mountainous forests; 1300–3200 m. Guangxi, Guizhou, Hubei, Hunan, Sichuan, Yunnan.

10. *Dichocarpum arisanense* (Hayata) W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin. 9: 329. 1964.

台湾人字果 *tai wan ren zi guo*

Isopyrum adiantifolium J. D. Hooker & Thomson var. *arisanense* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 21. 1911.

Stem ca. 20 cm tall, subglabrous, apically branched. Basal leaves ca. 8; petiole 3–4 cm, shortly sheathed; leaf blade 4–5 cm; lateral leaflets 1–3, broadly rhombic to flabellate-obovate; central leaflet flabellate-obovate, ca. 7 × 8 mm, apically 3-lobed and lobes retuse. Stem leaves borne at base of branches, opposite, small, ternate. Inflorescences few flowered. Sepals narrowly ovate, ca. 4 mm, apex obtuse. Petal limbs orbicular, ca. 1 mm; claw as long as petal. Stamens 5 or 10; filaments flat, linear, ca. 2.5 mm; anthers subglobose. Pistils ca. 3 mm; styles very short. Follicles ca. 9 × 2.5 mm. Seeds ca. 10, ca. 0.75 mm in diam., dorsally slightly ridged. Fl. Apr–May, fr. May–Jun.

• Taiwan.

11. *Dichocarpum fargesii* (Franchet) W. T. Wang & P. K. Hsiao, Acta Phytotax. Sin. 9: 329. 1964.

纵肋人字果 *zong lei ren zi guo*

Isopyrum fargesii Franchet, J. Bot. (Morot) 11: 294. 1897.

Plant glabrous, with tap root. Rhizome inconspicuous. Stem 14–35 cm tall. Basal leaves few, 5–9-foliolate; petiole 3–8 cm; leaf blade ovate, 1.8–3.5 cm wide, papery; lateral leaflets petiolulate; leaflet blade obliquely ovate, unequal in size and shape, lower leaflets ovate, 0.5–0.9 × 0.5–0.9 cm, upper leaflets obliquely obovate, 0.6–1.4 × 0.4–1 cm; central leaflet

reniform to flabellate, $0.5-1.2 \times 0.7-1.6$ cm, base broadly cuneate, rounded, or truncate, margin distally 3-lobulate or toothed, apex obtuse. Stem leaves opposite, shortly petiolate, similar to basal leaves. Inflorescences 2-4-flowered; bracts sessile, 3-foliolate, 3-sect, or simple. Flowers 6-7.5 cm in diam., glabrous. Pedicel 1-3.5 cm. Sepals white, obovate-elliptic, 4-5 mm. Petal limbs funnelform, 1.8-2.5 mm; claw longer than limb. Stamens 10; anthers broadly ellipsoid, ca. 0.3 mm. Follicles linear, 1.2-1.5 cm, apex acute; persistent styles inconspicuous. Seeds ellipsoid-fusiform, 1.5-1.8 mm, longitudinally costate. Fl. May-Jun, fr. Jun.

- Shady and wet places in valleys; 1300-1600 m. W Anhui, SE Gansu, Guizhou, S and W Henan, W Hubei, NW Hunan, S Shaanxi, E Sichuan.

