
顶冰花属  ding bing hua shu

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*Szechynia* Kanitz.

Herbs perennial, small, bulbiferous. Bulbs ovoid to globose, covered with a tunic, distally sometimes with a collar of persistent leaf bases, basally sometimes with bulbels. Stem usually simple. Leaves basal or also cauline, linear or filiform. Inflorescence usually umbellate, corymbose, or racemose, less often reduced to a solitary flower, basally usually subtended by a bract; bracteole 1. Flowers bisexual. Tepals 6, free, in 2 whors, yellow or yellow-green, very rarely white or other color, persistent, ± induratescent and accrescent in fruit. Stamens 6, equal or 3 longer; filaments filiform or proximally widened and flat; anthers basifixed. Ovary 3-loculed; ovules many per locule. Style usually rather long; stigma capitate or 3-lobed. Fruit a capsule, 3-angled, loculicidal, surrounded by enlarged, persistent tepals. Seeds many, globose to flat.

About 90 species: temperate regions of N Africa, Asia and Europe, mainly in C Asia and the Mediterranean region; 17 species (one endemic) in China.

1a. Leaves 1 or 2 basal only; leafy bract (floral leaf) subtending inflorescence 1, sometimes with extra, much smaller bracts; seeds globose or ovoid-globose, rarely flat.

2a. Leaves semiterete, fistulose ..................................................................................................................................... 4. *G. fragifera*

2b. Leaves flat, not fistulose.

3a. Bulb without bulbel at base.

4a. Leaves filiform, less than 1 mm wide; seeds flat .................................................................................... 5. *G. divaricata*

4b. Leaves linear or narrowly so, 2–10 mm wide; seeds globose.

5a. Leaves not falcate, 3–10 mm wide, not keeled abaxially ........................................................................... 6. *G. nakaiiana*

5b. Leaves falcate, 2–3 mm wide, keeled abaxially .................................................................................... 7. *G. fedtschenkoana*

3b. Bulb usually with 1 to many bulbels within or around tunic base.

6a. Bulbel 1, lateral, within tunic .................................................................................................................... 3. *G. filiformis*

6b. Bulbels many, within or around tunic.

7a. Bulblets not present in axils of cauline leaves. Plants to 20 cm tall. Bulb ovoid, 4–7 mm in diam.; tunic brown, submembranous; bulbels numerous, arranged in a ring around tunic base. Leaves basal only, usually 1, narrowly linear, 20–24 cm × 2–5 mm, conspicuously parallel veined. Inflorescence usually 2–4-flowered, umbellate. Floral leaf lanceolate, slightly longer than inflorescence, 4–8 mm wide. Pedicel glabrous or sparsely pubescent. Tepals yellow adaxially, yellowish abaxially, narrowly elliptic-linear or linear-lanceolate, 5–15(–30) cm tall. Basal leaves always 1; bulbs with several to many bulbels at base; plants 5–15 cm tall ................................................................................................................... 12. *G. albertii*

7b. Bulblets arranged in a ring, surrounding tunic base; style nearly as long as ovary ............................ 1. *G. granulosa*

10b. Stigma capitate or slightly 3-lobed, lobes very short, less than 1 mm. Leaves narrowly linear, 1–2 mm wide; bulblets only in axils of proximal cauline leaves ................................................................................................................................ 11. *G. stepposa*

10a. Stigma deep 3-lobed, lobes more than 1 mm ............................................................................................ 8. *G. pauciflora*

10b. Basal leaf always 1; bulbs with several to many bulbels at base; plants 3–6 cm tall ....................... 14. *G. altaica*

14a. Tepals 1.4–1.8 cm; basal leaves not overtopping inflorescence ............................................................ 15. *G. neopopovii*

14b. Tepals 0.8–1.2 cm; basal leaves overtopping inflorescence.

15a. Basal leaves nearly 2 × as long as stem .................................................................................................. 13. *G. altaica*

15b. Basal leaves slightly longer than stem.

16a. Basal leaves 1 or 2; bulbs without bulbels at base; plants 3–6 cm tall .............................................. 14. *G. olgae*

16b. Basal leaf always 1; bulbs with several to many bulbels at base; plants 5–15 cm tall .................... 15. *G. albertii*

9–11 × 1.5–2 mm. Stamens 4–6 mm. Style nearly as long as ovary; stigma capitate, scarcely lobed. Seeds globose. Fl. Jun.

Coniferous forests, thickets, moist grasslands; 1300–2000 m. N and W Xinjiang [Kazakhstan, Mongolia, Russia; Europe].


小顶冰花  xiao ding ding hua


Plants 4–15 cm tall. Bulb ovoid or ovoid-globose, 4–7 mm in diam.; tunic brown-yellow or black-brown; bulbels 1 to numerous, crowded within tunic, narrowly ovoid. Leaves basal only, 1, narrowly linear, 5–18 cm × 1–3 mm. Inflorescence usually 2–5-flowered, umbellate. Floral leaf lanceolate to linear-lanceolate, shorter than or equaling inflorescence, 2–5 mm wide, sometimes laxly hairy on basal margin or pilose. Pedicels unequal, pilose or glabrous. Tepals unequal, pilose or glabrous. Pedicels unequal, pilose. Tepals yellow adaxially, yellow-green abaxially, narrowly oblong, 1–2 cm × 3–4 mm, apex obtuse or emarginate. Stamens 5–10 mm. Style nearly as long as ovary. Capsule obovoid, trigonous, ca. 1/2 as long as enlarged, persistent tepals. Seeds globose. Fl. and fr. Apr.–May.

Meadows, moist places on forest margins, river flats; 1600–2300 m. W Xinjiang [Kazakhstan, Mongolia, Russia (Siberia)].

The name Gagea fistulosa Ker Gawler, based on Ornithogalum fistulosum Ramond ex de Candolle, has been used for this species. However, both names are nomenclaturally superfluous and therefore illegitimate because when originally published they included in synonymy the earlier name O. bohemicum Zaschun (currently G. bohemicum (Zaschun) Schultes & J. H. Schultes).


又梗顶冰花  cha geng ding ding hua

Plants ca. 5 cm tall. Bulb ovoid, 6–9 mm in diam.; tunic pale brown or yellowish brown, scariosus, breaking up into fibers; bulbels absent. Leaves basal only, 1, filiform or very narrowly linear, 5–8 cm × 1 mm. Glabrous. Inflorescence (1 or) 2–5-flowered. Floral leaf linear-lanceolate, longer than inflorescence, 1.5–2 × as long as enlarged, persistent tepals. Seeds globose. Fl. and fr. Apr.–May.

Deserts, sandy places; near sea level to 1000 m. W Xinjiang [Kazakhstan, Uzbekistan].


顶冰花  ding hua


Plants 15–20 cm tall. Bulb ovoid-globose, 5–10 mm in diam.; tunic brown-yellow; bulbels absent. Leaves basal only, 1, narrowly linear, 1.5–22 cm × 3–10 mm, gradually tapering from middle to base, glabrous. Inflorescence 3–5-flowered, umbellate. Floral leaf lanceolate, nearly as long as inflorescence, 4–6 mm wide. Pedicels unequal, glabrous. Tepals yellow, linear or narrowly lanceolate, 9–12 × ca. 2 mm, Stamens 6–8 mm; filaments flat basally. Style 1.5–2 × as long as ovary; stigma inconspicuously 3-lobed. Capsule ovoid to obovoid, ca. 2/3 as long as enlarged, persistent tepals. Seeds globose. Fl. and fr. Mar–Apr. 2n = 48.

Forests, thickets, grasslands. Heilongjiang, Jilin, Liaoning [India,

Japan, Korea, Nepal, Pakistan, Russia, Sikkim].

Records of *Gagea lutea* (Linnaeus) Ker Gawler from China (e.g., in FRPS) are referable to *G. nakaiiana*.


细弱顶冰花 *xi ruo ding bing hua*

Plants 5–12 cm tall. Bulb ovoid, 4–6 mm in diam.; tunic grayish brown, distally with a collar of persistent leaf bases 1–2 cm. Stem glabrous or slightly hairy. Leaves basal and cauline; basal leaf 1, narrowly linear or subfiliform, 4–8 cm × 0.6–1 mm, keeled abaxially, margin involute; cauline leaves 2 or 3, margin ciliate. Inflorescence 1- or 2-flowered. Tepals yellow adaxially, dark purple-red abaxially, narrowly oblong or linear, 1.4–1.8 cm × 3–5 mm. Stamens 0.9–1.2 cm. Style ca. 2 × as long as ovary; stigma capitate, scarcely 3-lobed. Seeds flat. Fl. Apr.


阿尔泰顶冰花 *a er tai ding bing hua*

Plants 5–10(–15) cm tall. Bulb ovoid, 4–7 mm in diam.; tunic black-brown, leathery; bulbels many, crowded within tunic. Leaves basal and cauline; basal leaf 1, narrowly linear or subfiliform, 4–8 cm × 0.5–0.8 mm; cauline leaves 2 or 3, usually with a floral shoot in axil. Inflorescence 2–6-flowered, resembling a dichasium. Pedicel glabrous or slightly pilose. Tepals white or yellowish white adaxially, pale yellow-green abaxially, narrowly oblong or narrowly elliptic, 5–9 × 1.5–2 mm. Stamens 4–7 mm; filaments much longer than oblong anthers. Style slightly longer than ovary; stigma capitate, scarcely 3-lobed. Capsule oblong, ca. 1/2 as long as persistent tepals. Seeds polyhedral. Fl. Apr–May. 2n = 48.


新疆顶冰花 *xin jiang ding bing hua*


Plants 8–12 cm tall. Bulb narrowly ovoid, 5–7 mm in diam.; tunic membranous, brownish, distally with a collar of persistent leaf bases; bulbels absent. Leaves basal and cauline; basal leaf 1, narrowly linear, 10–12 cm × 1–2 mm, distally slightly falcate; cauline leaves 3 or 4, margin ciliate. Inflorescence 1(or 2)-flowered. Pedicel glabrous. Tepals yellow adaxially, dark purple-red abaxially, narrowly oblong or linear, 1.4–1.8 cm × 3–5 mm. Stamens 0.9–1.2 cm. Style ca. 2 × as long as ovary; stigma capitate, scarcely 3-lobed. Seeds flat. Fl. Apr.


细弱顶冰花 *xi ruo ding bing hua*

Plants 6–15 cm tall. Bulb ovoid-globose or globose, 5–8 mm in diam.; tunic dark brown, subleathery; bulbels several, within tunic, narrowly ovoid. Leaves basal and cauline; basal leaf 1, filiform, 9–15 cm × 1.5–2.5 mm; cauline leaves 2 or 3, proximal 2 narrowly lanceolate, 2–4 cm × 3–4 mm, basally slightly amplexicaul. Inflorescence 2- or 3(-5)-flowered, corymbose. Pedicel glabrous. Tepals yellow adaxially, yellowish green abaxially, narrowly oblong or narrowly elliptic-linear, 8–12 × 2.5–3 mm. Stamens 6–9 mm. Style slightly longer than ovary; stigma slightly 3-lobed. Seeds polyhedral. Fl. Apr. 2n = 36.


阿尔泰顶冰花 *a er tai ding bing hua*

Plants 5–12 cm tall. Bulb ovoid-globose or globose, 5–8 mm in diam.; tunic dark brown, subleathery; bulbels several, within tunic, narrowly ovoid. Leaves basal and cauline; basal leaf 1, filiform, 9–15 cm × 1.5–2.5 mm; cauline leaves 2 or 3, proximal 2 narrowly lanceolate, 2–4 cm × 3–4 mm, basally slightly amplexicaul. Inflorescence 2- or 3(-5)-flowered, corymbose. Pedicel glabrous. Tepals yellow adaxially, yellowish green abaxially, narrowly oblong or narrowly elliptic-linear, 8–12 × 2.5–3 mm. Stamens 6–9 mm. Style slightly longer than ovary; stigma slightly 3-lobed. Seeds polyhedral. Fl. Apr. 2n = 36.

The presence of this species in China requires confirmation.