

Corydalis panda (Fumariaceae), a new species from Sichuan, China

Ying-Wei Wang¹ & Magnus Lidén²

¹ Institute of Botany, the Chinese Academy of Sciences, Beijing 100093, China

² Botaniska trädgården, Villavägen 8, SE-752 36 Uppsala, Sweden (e-mail: magnus.liden@botan.uu.se)

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Corydalis panda M. Lidén & Y.W. Wang (Fumariaceae) is described as a new species and compared with its relatives. It belongs to sect. *Elatae* according to the following characters: roots numerous, rhizome monopodial, often with a fleshy hibernation bud at the apex, and stigma subquadrangular with four apical papillae and two lateral pairs on each side.

Key words: *Corydalis*, Fumariaceae, new species, taxonomy

Corydalis is a north temperate genus and comprises ca. 440 species (Wang *et al.* 2003). The section *Elatae*, closely related to sect. *Asterostigmata*, contains about 19 species. Most of them are endemic in Sichuan Province of China (Wu *et al.* 1996).

When exploring NW Sichuan with a focus on *Corydalis* in the summer of 2005, we visited Mt. Balang in the Woolong Conservation Centre and there we found several species of section *Elatae*. We describe and illustrate one of them as new to science.

Corydalis panda M. Lidén & Y.W. Wang, *sp. nova* (Figs. 1 and 2)

Differt a affinis C. pseudobarbisepalo caulibus saepe ramosis, foliis biternatisectis, foliolis angustioribus, bracteis magis divisis, floribus angustioribus, sepalis parvis, capsulis angustioribus.

TYPE: China. Sichuan, Wenchuan, Mt. Balang, open soil on slopes, 4100 m, 9.VIII.2005 Magnus Lidén & Ying Wei Wang # 9 (holotype PE; isotypes PE, UPS).

Perennial glabrous herb. Roots numerous, slightly fleshy, 8–10 cm long, 1–2 mm in diameter, with fibrillar rootlets. Rhizome 1–4 cm, often with a fleshy bulb-like terminal hibernation bud. Scales numerous, 4–8 mm long, 2–3 mm broad. Flowering stems axillary to scales of previous years terminal bud or leaf rosette, 1–3(–5), 8–15(–25) cm high, often reddish in fresh state, suberect to ascending, often with 1–2(–3) branches. Radical leaves 3–5, petioles 6–8 cm long with sheathing base, lamina triangular, 1–3 cm long, 2–4 cm broad, biternate, primary leaflets ovate, with stalks 3–20 mm long, secondary leaflets sessile to short-stalked, ovate, deeply cut into 3–7 oblanceolate or linear obtuse lobes 1–4 mm broad, sometimes tipped with a very small dark mucro. Cauline leaves 2–3(–4), alternate, evenly spaced (also at base of stem), lower with petioles 3–10 cm long,

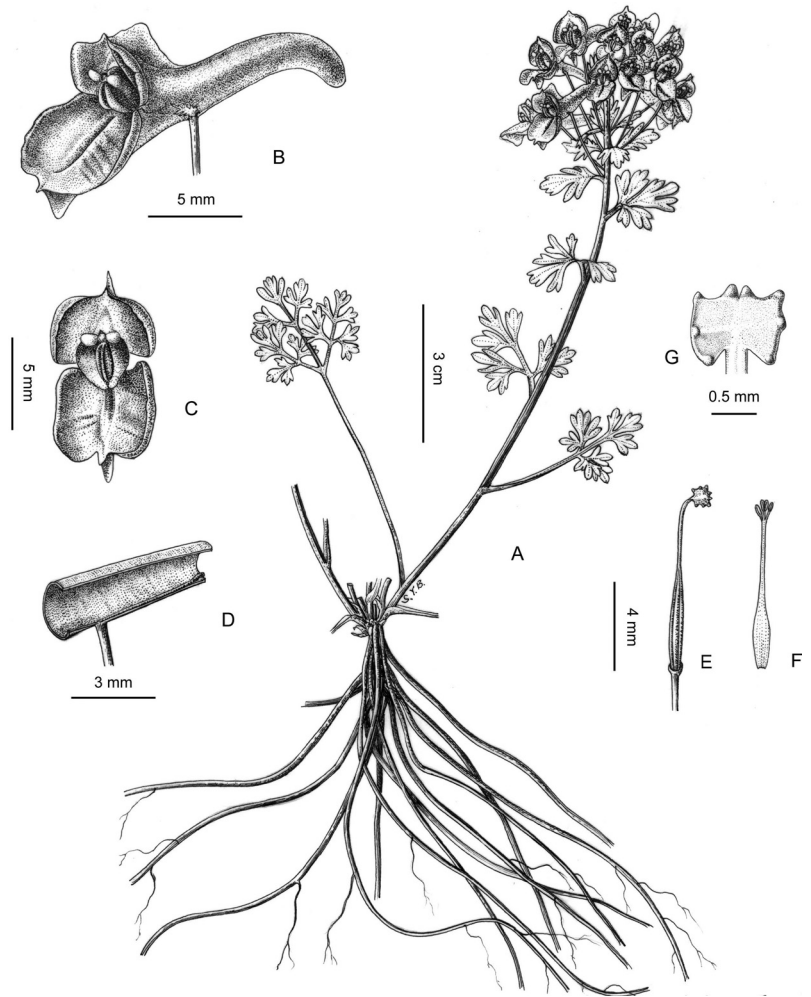


Fig. 1. *Corydalis panda* (from holotype, drawn by Y. B. Sun). — **A:** Habit. — **B:** Lateral view of flower. — **C:** Front view of flower. — **D:** Dissection of spur, showing a nectary. — **E:** Ovary. — **F:** Filament bundle. — **G:** Stigma.

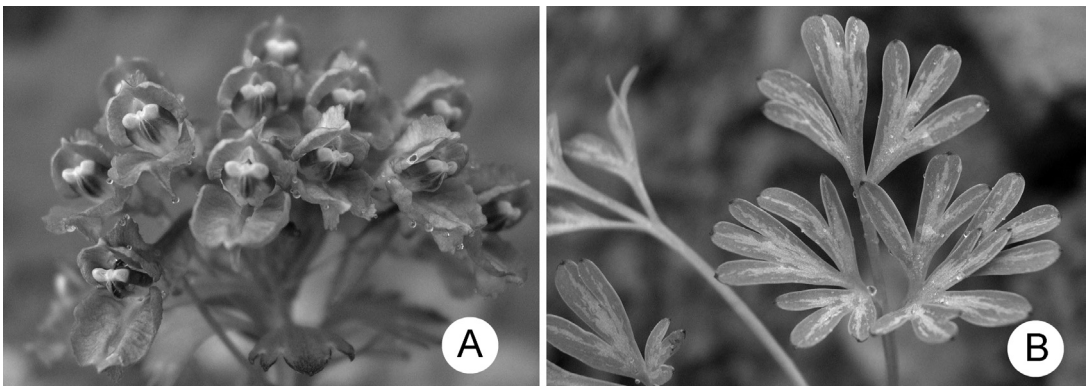


Fig. 2. *Corydalis panda*. — **A:** Raceme. — **B:** Primary leaflet.

uppermost short-stalked or sessile, lamina like radical. Racemes 2–3 cm long, dense, (5–)8–15-flowered, slightly elongating in fruit. Lowermost bracts like uppermost leaf, subsequent ones progressively becoming less divided; upper ones oblanceolate, entire. Pedicels slender, erect, longer than bracts. Sepals 2 mm long, white, lanceolate, with a few sharp teeth. Flowers blue to purplish blue. Upper petal 18–20 mm long, with crest 1–2 mm high, not quite reaching apex, and a narrow spur 11–13 mm, slightly to often strongly downcurved at tip. Lower petal 10–12 mm, with narrow claw rather abruptly dilated into a rounded limb 5–7 mm broad, usually irregularly sinuate-dentate, sometimes shortly mucronate, not or rarely very slightly saccate at base, apically with a short median crest. Inner petals 8–10 mm long, with white tips. Nectary 1/2 as long as spur. Ovary narrowly fusiform, with a slender style 3–4 mm long, smooth. Ovules 8–11. Stigma subquadrangular with four apical papillae and two paired papillae on each lateral margin. Capsules narrowly fusiform, 1 cm long, 4–10-seeded, reflexed at apex of straight erect pedicels. Mature seeds not seen. Flowering and fruiting from July to September.

ADDITIONAL SPECIMEN EXAMINED (paratype): **China.** Sichuan, Wenchuan, Mt. Balang, hill slope, 4200 m, 31.VIII.2004 *Lei Xie & Qiong Yuan 2004027* (PE).

ETYMOLOGY: *panda* = curved, alluding to the curved spur. Incidentally, the species also occurs in the same area as *Ailuropoda melanoleuca* (giant panda), the famous symbol of the WWF.

HABITAT: Open soil on moist slopes, alt. 4000–4200 m.

DISTRIBUTION: Only known from the type locality, Sichuan Province, China.

Corydalis panda can be easily distinguished from *C. pseudobarbisepala* by the frequently branched shoots, biternate leaves with much narrower ultimate lobes, much more divided bracts, small sepals, much narrower flowers and narrowly fusiform instead of broadly obovate fruits.

This species, one of the more eye-catching in the genus with its rich display of bright blue flowers, was found growing copiously along the new highway over the Balangshan pass, at an altitude of 4100 m, apparently much benefitting

from the disturbance caused by the road construction. Here it grows in close proximity to *C. pseudobarbisepala*. Hybridization (and possibly even introgression) may occur between these two species, as we noted a couple of individuals with some intermediate traits. It is also possible that the road construction may have facilitated their proximity.

The two species may not be easily discriminated by pollinators. The bright blue flowers of *C. panda* have a white spot at the very apex of the inner petals, but similar spots are not infrequently found also in *C. pseudobarbisepala*. Furthermore, *C. pseudobarbisepala* varies in growth habit, with more erect stems at lower altitudes (ca. 3900 m), and more like *C. panda*, and low-growing with ascending, branched stems in screes at higher altitudes (ca. 4000 m).

We believe that *C. panda* has its closest relatives in a group of species of the section *Elatae*, comprising *C. pseudobarbisepala*, *C. barbisepala*, *C. pingwuensis* and possibly *C. rorida*, which however deviates in its long, narrow inflorescence. They differ from the *C. flexuosa* group in their much shorter rhizome with comparatively longer and better-developed roots. Contrary to the *C. flexuosa* group they mainly occupy screes and unstable slopes close to the tree line. Three other species in this group remain as yet undescribed, among which a species from Maoxian district appears to be the closest morphological match with *C. panda*.

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References

- Wang, Y. W., Lidén, M., Liu, Q. R. & Zhang, M. L. 2003: *Corydalis pinnatibracteata* (Fumariaceae), a new species from Qinghai, China. — *Ann. Bot. Fennici* 40: 295–298.
- Wu, C. Y., Chuang, X. & Su, Z. Y. 1996: The systematic evolution of *Corydalis* in relation to florogenesis and floristic regionalization in the world. — *Acta Bot. Yunn.* 18: 241–267.