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Article

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Primulina fengkaiensis (Gesneriaceae), a new species from limestone areas in Western Guangdong, China

ZU-LIN NING[1], BO PAN[2] & MING KANG[1*]
[1]*South China Botanical Garden, Chinese Academy of Sciences, Guangzhou, Guangdong 510650, China.*
[2]*Guangxi Institute of Botany, Guangxi Zhang Autonomous Region and the Chinese Academy of Sciences, Guilin, Guangxi 541006, China*
**corresponding author's e-mail: mingkang@scbg.ac.cn*

Abstract

Primulina fengkaiensis from western Guangdong, China, is described and illustrated. It is similar to the phylogenetically related *P. baishouensis* and *P. gueilinensis* in the shape and size of corolla, but differs by leaf blades being elliptic to elliptic–lanceolate, 10–21 × 4–8 cm, margin with serrate, leaf blade adaxially sparsely pubescent, petiole 0.6–1.5 cm wide, pedicel 2.2–4 (–7.5) cm long, cymes 3–9–flowered, stigma 4–5 mm long, lobes ovate.

Keywords *Primulina*, *P. baishouensis*, *P. fengkaiensis*, Guangdong, China

Introduction

The genus *Primulina* Hance (1883: 169), previously had only one species, *P. tabacum* Hance (1883: 169). However, recent molecular phylogenetic analyses have altered the concept of generic delimitations among Old World members of Gesneriaceae. Based on recent circumscription of molecular phylogenetic analyses, *Chiritopsis* Wang (1981: 21), *Wentsaiboea* Fang & Qin (2004: 533) [except *W. tiandengensis* Yan Liu & B. Pan (2010: 739)] and all species of *Chirita* sect. *Gibbosaccus* Clarke (1883: 130), were transferred to the originally monotypic genus *Primulina* (Wang *et al.* 2011, Weber *et al.* 2011). The newly revised *Primulina*, is one of the largest genera of the Old World Gesneriaceae comprising ca.150 species that are widely distributed throughout the Karst regions of China and adjacent countries of Southeast Asia (Wei 2010, Wang *et al.* 2011), and is still expanding due to the new species are described.

In recent years, we have undertaken fieldwork and collected living plants of Gesneriaceae in limestone areas of Guangdong and its adjacent regions, China. In December 2011, during investigations of living collections of Gesneriaceae in western Guangdong, China, we found a plant of Gesneriaceae with residual capsules in a limestone cave near the town of Liandu (Fengkai County, Zhaoqing City). We pressed some plants for herbarium specimens and collected several living individuals for planting in the South China Botanical Garden (SCBG), Guangzhou, China. In 2012, 2013 and 2014, the plants cultivated in SCBG flowered in Mar.–Apr., which is similar to *P. baishouensis* (Y.G. Wei, H.Q. Wen & S.H. Zhong 2000: 299) Y.Z. Wang (2011: 60) and *P. gueilinensis* (W.T. Wang 1981: 43) Y.Z. Wang (2011: 61) in the shape and size of corolla. However, the morphological characteristics of *P. fengkaiensis* are obviously different from *P. baishouensis* and *P. gueilinensis* in the leaf blades, bracts, calyx and stigma. To further elucidate the phylogenetic affinities of this new taxon, in a recent study of genome size evolution of the genus, Kang et al (2014) reconstructed a most comprehensive species-level phylogeny of this genus published to date, representing 104 species based on one nuclear (ITS) and three plastid markers (*trnL-trnF*, *rpl32-trnL*, and *atpB-rbcL*), where *P. fengkaiensis* (sp. nov. 6, Fig. 1; Kang et al 2014) was most closely related to *P. baishouensis*. After carefully consulting the relevant literature (Wang 1990, Wang *et al.*1998, Wei *et al.* 2000, Fang *et al.* 2004, Li & Wang 2004, Shen *et al.* 2010, Wei *et al.* 2010, Liu *et al.* 2010, Wu *et al.* 2011, Wen *et al.* 2012, Ning *et al.* 2013), as well as herbarium specimens from IBSC and IBK, it became clear that the plants represented a new species of *Primulina*, which is detailly described and illustrated here.

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Distribution and habitat:—*Primulina fengkaiensis* is currently known from a few local populations in a narrow limestone area in Fengkai County and Huaiji County, Zhaoqing City, Guangdong, China. During field surveys in Fengkai County, we found that it is locally abundant and grows mainly on moist rock faces. It is easy to breed. We introduced some individuals from the field population into cultivation in the South China Botanical Garden, Guangzhou, China in 2011. Now they have been blooming into colonies.

Phenology:—Flowering occurs in Mar.–May., and fruiting occurs in May–Jun.

Relationships:—*Primulina fengkaiensis* is similar to *P. baishouensis* (Y.G. Wei, H.Q. Wen & S.H. Zhou) Y.Z. Wang and *P. gueilinensis* (W.T. Wang) Y.Z. Wang, but differs by leaf blades being elliptic to elliptic–lanceolate, 10–21 × 4–8 cm, margin with serrate, leaf blade adaxially sparsely pubescent, petiole 0.8–1.5 cm wide, pedicel 2.2–4 (–7.5) cm long, cymes 3–5–flowered, stigma 4–5 mm long, lobes ovate. A detailed morphological comparison of the three species is shown in Table 1.

Etymology:—The specific epithet is derived from the name of the type locality, Fengkai County, Guangdong Province, China.

TABLE 1. Morphological comparison of *Primulina fengkaiensis*, *P. baishouensis* and *P. gueilinensis*

Characters	*P. fengkaiensis*	*P. baishouensis*	*P. gueilinensis*
Leaf blade	elliptic to elliptic–lanceolate, 10–21 × 4–8 cm, asymmenty, leaf blade adaxially sparsely pubescent, abaxially densely appressed pubescent	elliptic or ovate–elliptic, 3–10 × 1.5–4.8 cm, symmetry, appressed pubescent on both sides	Narrowly elliptic to rhombic-elliptic, 2.5–7.5 × 1.5–4 cm, pubescent on both sides
Leave margin	conspicuous serrate	entire or rarely 3–4 inconspicuous minute obtusely serrate	Shallowly crenate
Petiole	0.6–1.5 cm wide	1–2 mm wide	4–8 mm wide
Pedicel	2.2–4 (–7.5) cm long	1–2.5 cm long	2.5–10 mm long
Bracts	lanceolate, entire or 2–5 inconspicuous minute obtusely serrate	Narrowly lanceolate, entire,	Linear or obelliptic, entire
Cymes	3–9–flowered	1–4–flowered	1–5-flowered
Corolla lobes	adaxial lip 2–lobed, broadly ovate or suborbicular, 1.3–1.8 × 1.5–2 cm; abaxial lip 3–lobed, obovate, 2–2.4 × 1.8–2 cm, apex truncate or retuse	adaxial lip 2–lobed, broadly ovate, 0.8–1.3 cm long; abaxial lip 3–lobed, 1.7–2.5 cm long, broadly ovate or suborbicular, apex rounded or truncate	adaxial lip 2–lobed, broadly ovate, 0.9–1.2 cm long; abaxial lip 3–lobed, 1.1–1.5 cm long, oblong, apex rounded
Pistil	ovary villous, style pubescent	ovary appressed pubescent, style glandular–pubescent	ovary and style densely pilose,
Stigma	4–5 mm long, 2-1obed, lobes ovate	ca. 2 mm long, 2-cleft, lobes narrowly triangular	2.5–4 mm long, 2-parted, triangular

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