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

ZU-LIN NING1, BO PAN2 & MING KANG1*
1South China Botanical Garden, Chinese Academy of Sciences, Guangzhou, Guangdong 510650, China.
2Guangxi Institute of Botany, Guangxi Zhuang 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. tianzengensis Yan Liu & B. Pan (2010: 739)] and all species of Chiritita 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.
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

<table>
<thead>
<tr>
<th>Characters</th>
<th><em>P. fengkaiensis</em></th>
<th><em>P. baishouensis</em></th>
<th><em>P. gueilinensis</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaf blade</td>
<td>elliptic to elliptic–lanceolate, 10–21 × 4–8 cm, asymmetry, leaf blade adaxially sparsely pubescent, abaxially densely appressed pubescent</td>
<td>elliptic or ovate–elliptic, 3–10 × 1.5–4.8 cm, symmetry, appressed pubescent on both sides</td>
<td>Narrowly elliptic to rhombic-elliptic, 2.5–7.5 × 1.5–4 cm, pubescent on both sides</td>
</tr>
<tr>
<td>Leave margin</td>
<td>conspicuous serrate</td>
<td>entire or rarely 3–4 inconspicuous minute obtusely serrate</td>
<td>Shallowly crenate</td>
</tr>
<tr>
<td>Petiole</td>
<td>0.6–1.5 cm wide</td>
<td>1–2 mm wide</td>
<td>4–8 mm wide</td>
</tr>
<tr>
<td>Pedicel</td>
<td>2.2–4 (–7.5) cm long</td>
<td>1–2.5 cm long</td>
<td>2.5–10 mm long</td>
</tr>
<tr>
<td>Bracts</td>
<td>lanceolate, entire or 2–5 inconspicuous minute obtusely serrate</td>
<td>Narrowly lanceolate, entire,</td>
<td>Linear or obelliptic, entire</td>
</tr>
<tr>
<td>Cymes</td>
<td>3–9–flowered</td>
<td>1–4–flowered</td>
<td>1–5-flowered</td>
</tr>
<tr>
<td>Corolla lobes</td>
<td>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</td>
<td>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</td>
<td>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</td>
</tr>
<tr>
<td>Pistil</td>
<td>ovary villous, style pubescent</td>
<td>ovary apressed pubescent, style glandular–pubescent</td>
<td>ovary and style densely pilose,</td>
</tr>
<tr>
<td>Stigma</td>
<td>4–5 mm long, 2-lobed, lobes ovate</td>
<td>ca. 2 mm long, 2-eleft, lobes narrowly triangular</td>
<td>2.5–4 mm long, 2-parted, triangular</td>
</tr>
</tbody>
</table>

Acknowledgements

This work was supported by the National Science Foundation of China (31270427), and the Foundation of Key Laboratory of Plant Resources Conservation and Sustainable Utilization, South China Botanical Garden, Chinese Academy of Sciences (211023). We thank Yun-Xiao Liu for the illustration.

References


http://doi.org/10.1111/nph.12726
http://dx.doi.org/10.1111/j.1756-1051.2010.00893.x
http://dx.doi.org/10.1007/s00606-010-0413-z
http://dx.doi.org/10.5735/085.050.0124
http://dx.doi.org/10.11646/phytotaxa.137.1.5
http://dx.doi.org/10.1111/j.1759-6831.2010.00113.x
http://dx.doi.org/10.5735/085.049.0117
http://dx.doi.org/10.5735/085.048.0505