**Primulina chizhouensis** sp. nov. (Gesneriaceae), a new species from a limestone cave in Anhui, China

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Abstract

A new species of *Primulina*, *P. chizhouensis*, from Anhui, China, is described and illustrated. It is similar to *P. nandanensis* and *P. juliae* in leaf and flower shape, but can be distinguished by extraordinary short rhizomes (5–7 mm long), cymes 1–3(–10), peduncles 1.3–5 cm long, ovate bracts acuminate at apex, corolla 4–5 cm long with cylindrical tube and the lower lip to ca. 1.2 cm long, scattered glandular-pubescent filaments, the backside of the anthers bearded, and the plants forming compact dormancy buds in winter.

Introduction


**Taxonomic Treatment**

*Primulina chizhouensis* Xin Hong, S.B.Zhou & F.Wen, *sp. nov.* (Figures 1, 2)

It differs from *P. nandanensis* (S.X.Huang, Y.G.Wei & W.H.Luo) Mich.Möller & A.Weber and *P. juliae* (Hance) Mich.Möller & A.Weber in extraordinary short rhizomes (5–7 mm long), cymes 1–3(–10), peduncles 1.3–5.0 cm long, ovate bracts with acuminate apex, corolla 4–5 cm long, with cylindrical tube, the lower lip to ca. 1.2 cm long, filaments scattered glandular pubescent, backside of the anthers bearded, and forming compact dormancy buds in winter.

**Type:**—CHINA. Anhui Province: Chizhou city, Tangxi village, growing in the entrance of a limestone cave, elevation ca. 200 m, 8 June 2008 (fl.), S.B.Zhou & Xin Hong 0806001 (holotype ANU!, isotype IBK!).

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**FIGURE 1.** *Primulina chizhouensis* sp. nov. (A) habit in flowering period; (B1) anthers, dorsal view (showing beard); (B2) anthers, ventral view; (C) dissection of a flower showing stamens and staminodes; (D) calyx and pistil; (E) stigma; (F) disc and cross section of ovary (drawn from the holotype).

Perennial herbs, rhizomes terete, 5–7 mm long, 0.4–0.5 mm in diameter. Leaves 4–7, all basal; petiole flattened, 2–10 × 0.5–1 cm, densely strigose; blade thick papery, ovate to oblong, 4–14 × 3–10 cm, asymmetric, cuneate at base, margin with crenations from the middle to the apex, obtuse at apex, densely villous on both surfaces, lateral veins 5, not reaching the leaf margin. Compact dormancy buds with 2–3
villous cataphylls, acaulescent, nearly orbicular, 0.8–1.5 × 0.7–1.7 cm, formed in winter. Cymes 1–3(–10), axillary, 1–3 branches, 1–6-flowered; peduncles 1.3–5 cm long, ca. 0.1 cm wide, densely pubescent; bracts 2, opposite, ovate, acuminate at apex, 0.4–0.6(–1.1) × 0.3–0.5 cm, outside puberulous, inside glabrous, entire; pedicels 0.5–1.5 cm long, ca. 0.1 cm wide, villous. Calyx 5-parted to the base, narrowly linear, 0.6–1 × 0.2–0.3 cm, densely villous. Corolla purple, 4–5 cm long, pubescent from base to orifice outside; tube cylindrical, ca. 2.4 cm long, orifice ca. 0.8 cm in diameter; adaxial lip ca. 6 mm long, 2-parted to the middle, orbicular-ovate; abaxial lip 0.9–1.2 cm long, 3-lobed to the base. Stamens 2, adnate to corolla tube ca. 1.5 cm above the base; filaments linear, ca. 5 mm long, scattered glandular pubescent; anthers fused by their entire adaxial surfaces, oblong, 3–4 × ca. 2 mm, bearded on the back. Staminodes 2, glabrous, adnate to corolla tube ca. 8 mm above the base, 2–3 mm long. Pistil ca. 3 cm long; ovary linear, ca. 1.5 × 0.2 cm, style pubescent, 1.5–1.8 cm long; stigma bipartite, lobes narrowly lanceolate, 0.1–0.2 mm long. Capsule linear, slightly curved, ca. 3 cm long, pubescent when young.

**FIGURE 2.** Primulina chizhouensis sp. nov. (A) habit; (B) flowering plants; (C) flower, frontal view; (D) flower, side view; (E) plant in winter (with dormancy bud).
**Distribution:**—China (narrow endemic and only known from the type locality, i.e. Tangxi village (30°19′N, 117°35′E) ca. 16 km south of Chizhou City in southern Anhui Province of eastern China) (see Figure 3).

**Habitat & Ecology:**—*Primulina chizhouensis* is locally abundant. It grows in rocky crevices on moist shady cliffs at the entrance of a limestone cave, at an elevation of 200 m a.s.l. The average temperature of Tangxi County is 16.5°C, the average annual precipitation is ca. 1525 mm. The forest where *P. chizhouensis* occurs is subtropical evergreen broad-leaved forest, with the main community types of *Castanopsis sclerophylla* (Lindl. & Paxton) Schottky and *Cyclobananopsis gracilis* (Rehder & E.H.Wilson) W.C.Cheng & T.Hong. Flowering from the end of May to the middle of June.

**Etymology:**—The species is named after Chizhou City in Anhui province.

**Vernacular name:**—China: chizhoubaochunjutai.

**Additional collections (paratypes):**—CHINA. Anhui Province: Chizhou city, Tangxi village, ca. 200 m, 10 June 2008, S.B.Zhou & Xin Hong 0806012 (IBK!); ibid., 220 m, 23 May 2011, Xin Hong 201105089 (ANU!), 201105090 (ANU!).

**Similar species:**—*Primulina chizhouensis* is morphologically close to *P. nandanensis* (Huang, Wei & Luo 2010: 139) Mich.Möller & A.Weber (in Weber *et al.* 2011: 783) and *P. juliae* (Hance 1883: 168) Mich.Möller & A.Weber (in Weber *et al.* 2011: 782) based on leaf shape and the color of the flowers, but it can be easily distinguished by several other characters (see Table 1).
**TABLE 1.** Diagnostic character differences between *Primulina chizhouensis*, *P. nandanensis* and *P. juliae*.

<table>
<thead>
<tr>
<th>Characters</th>
<th><em>P. chizhouensis</em></th>
<th><em>P. nandanensis</em></th>
<th><em>P. juliae</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>rhizomes</td>
<td>ca. 0.5–0.7 cm long</td>
<td>ca. 1–1.8 cm long</td>
<td>ca. 2–3 cm long</td>
</tr>
<tr>
<td>blade margin</td>
<td>with crenation from middle to apex</td>
<td>with crenation from base to middle</td>
<td>basally dentate to pinnately lobed or crenate</td>
</tr>
<tr>
<td>presence of compact dormancy buds in winter</td>
<td>yes</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>petiole size (cm)</td>
<td>2–10 × 0.5–1</td>
<td>1–7 × 0.2–0.3</td>
<td>3–17 × 3–4</td>
</tr>
<tr>
<td>cymes</td>
<td>1–3(–10)</td>
<td>8–15</td>
<td>2–3</td>
</tr>
<tr>
<td>peduncles</td>
<td>1.3–5 cm long</td>
<td>5–10 cm long</td>
<td>4–11 cm long</td>
</tr>
<tr>
<td>bracts (cm)</td>
<td>ovate, 0.4–1.1 × 0.2–0.6</td>
<td>narrowly lanceolate, 0.6 × 0.1</td>
<td>narrowly lanceolate, 0.5–1.3 × 0.6–1.2</td>
</tr>
<tr>
<td>corolla length (cm)</td>
<td>4–5</td>
<td>2–3.2</td>
<td>3.5–4.5</td>
</tr>
<tr>
<td>corolla tube</td>
<td>cylindrical, ca. 2.4 cm long</td>
<td>infundibuliform-cylindrical, ca. 1–1.5 cm long</td>
<td>infundibuliform-cylindrical, ca. 2.2–3.3 cm long</td>
</tr>
<tr>
<td>filaments</td>
<td>scattered glandular pubescent</td>
<td>glabrous</td>
<td>scattered glandular pubescent or glabrous</td>
</tr>
<tr>
<td>anthers</td>
<td>bearded</td>
<td>glabrous</td>
<td>glabrous</td>
</tr>
<tr>
<td>lobes of stigma</td>
<td>narrowly lanceolate</td>
<td>narrowly lanceolate</td>
<td>narrowly oblong</td>
</tr>
<tr>
<td>flowering time</td>
<td>May–June</td>
<td>May</td>
<td>July–October</td>
</tr>
</tbody>
</table>

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**References**


