



Agapetes rhuichengiana (Ericaceae), a new species from Southeast Xizang, China

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ABSTRACT: *Agapetes rhuichengiana* Bin Yang & Y.H.Tan (Ericaceae) is described and illustrated as a new species from Southeast Xizang, China. It is morphologically similar to *A. huangiana* Bin Yang, Y.H.Tan & Y.H.Tong, but differs in having flowers densely covered with white to light yellowish brown villi, shorter stamens, and fruits that are smaller, depressed subglobose, and villous and verrucose.

KEY WORDS: *Agapetes huangiana*, Floristic exploration, *Graciles*, Mêdog, Taxonomy, *Vaccinieae*.

INTRODUCTION

The genus *Agapetes* D. Don ex G. Don (1834) belongs to the tribe Vaccinieae Rchb. of the subfamily Vaccinioideae Arn. (Ericaceae), and comprises 112 currently recognized species (POWO, 2023), most of which are distributed in the Asian subtropical monsoon region (Wang *et al.*, 2021). In China, 60 species and two varieties are currently recognized (Fang and Stevens, 2005; Yang *et al.*, 2022, 2023; Tong *et al.*, 2023). Most species in this genus are ornamentally important. They have enlarged and swollen tuberous roots and beautiful and delicate flowers, they can be cultivated as excellent potted ornamental flowers for gardens; and the enlarged tubers of some species can be used for medicinal purposes (Huang, 1983; Conlon, 2015).

During our floristic exploration of Mêdog (Motuo) County in December 2020 and April 2023 (Yang *et al.*, 2021, 2022), we encountered an attractive plant with fruits in the understory of a primaeval subtropical forest. We collected some individuals and introduced them to Xishuangbanna Tropical Botanical Garden, where they flowered in June 2023. Morphologically, they resembled *Agapetes huangiana* Bin Yang, Y.H.Tan & Y.H.Tong (2022) due to their small ovate leaves. After a detailed examination of their morphological characteristics and their closely related species (Yang *et al.*, 2022), we concluded that the specimens represent a species new to science, below described and illustrated as *Agapetes rhuichengiana*.

TAXONOMIC TREATMENT

Agapetes rhuichengiana Bin Yang & Y.H.Tan, *sp. nov.*

Fig.1, Fig. S1(A-C) & S2

Type: CHINA. Xizang, Mêdog County, Beibeng Township, Yarang Village, Zhabula, 29°12'6.96"N, 95°19'48.19"E, 1775 m, primaeval subtropical evergreen broad-leaved forests, introduced and cultivated at the greenhouse of Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences, 5 June 2023, B. Yang, L.-Q. Rong, M.-K. Li YB1306 (holotype: HITBC [HITBC0091836!]; isotypes: HITBC [HITBC 0091837!], KUN!).

Diagnosis: *Agapetes rhuichengiana* is morphologically similar to *A. huangiana* in having spirally alternate small, ovate leaves and branchlets, densely covered with spreading setae. *A. rhuichengiana*, however, can be clearly distinguished from *A. huangiana* by its sparsely puberulent corolla with dense white to light yellowish brown villi along the ridges (vs. densely white puberulent), shorter stamens (7.0–7.5 mm vs. 10.0–10.5 mm), depressed subglobose (vs. globose) berry, ca. 8 mm (vs. 12–13 mm) in diam. in vivo, villous and verrucose (vs. densely white puberulent) (Table 1, Fig. S1).

Description: Shrubs, 20–40 cm tall, epiphytic, evergreen, much branched, with subglobose or bead-like root tubers. **Rootlets** fine and adventitious along branches. **Branchlets** terete, 1–3 mm in diam., densely covered with fuscous spreading setae 1–2 mm long; **Leaves** spirally alternate around stem, crowded. **Petiole ca.** 1.0 mm long, sparsely puberulent to glabrous. **Blade** ovate to ovate-elliptic, 4.5–9.5 × 4–6.5 mm, base rounded to subcordate, apex acute or apiculate, margin almost entire, with 3–5 pairs of inconspicuous glandular teeth, slightly recurved, texture thinly leathery, abaxially almost glabrous, pale greyish green in vivo, adaxially almost glabrous, sometimes sparsely verrucose, slightly wrinkled when dry, midvein and secondary veins inconspicuous adaxially, with 1–2 pairs of secondary

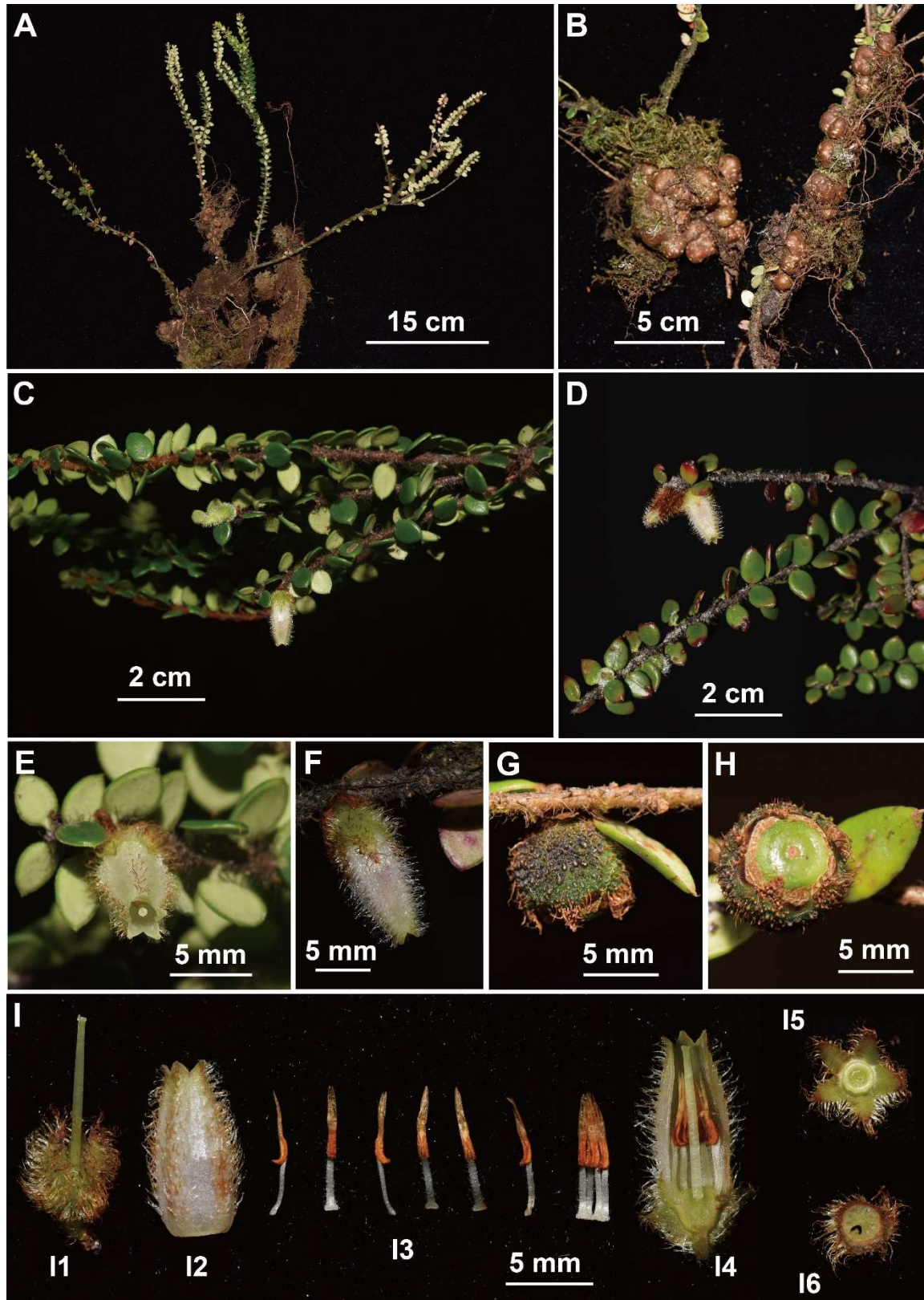


Fig. 1. *Agapetes rhuichengiana* Bin Yang & Y.H.Tan. **A.** habit; **B.** tubers; **C-D.** flowering branches; **E.** part of flowering branch, showing the flower (upward view); **F.** flower (side view); **G.** fruit (side view); **H.** fruit (upward view); **I.** dissection of a flower (I1. flower with corolla and stamens removed; I2. corolla; I3. stamens; I4. longitudinal dissection of a flower; I5. calyx limb and disc; I6. cross-section of ovary). (Photographed by B. Yang).

Table 1. Morphological comparison of *Agapetes rhuichengiana* and *A. huangiana*

Characters	<i>A. rhuichengiana</i>	<i>A. huangiana</i>
Leaf blade	ovate to ovate-elliptic	ovate to suborbicular
Leaf blade size	4.5–9.5 × 4–6.5 mm	5–8 × 3–6 mm
Leaf blade indumentum	almost glabrous abaxially	verrucose-scabrid abaxially
Corolla length	10–11 mm	11–12 mm
Corolla tube	with five vertical ridges	without vertical ridges
Corolla indumentum	sparsely puberulent and densely white to light yellowish brown villous along ridges	densely white-puberulent
Stamens	7.0–7.5 mm long	10.0–10.5 mm long
Filament length	3.0–3.5 mm	5.0–5.5 mm
Anthers	ca. 4 mm long, without spurs	5.0–5.5 mm long, without spurs
Berry	depressed subglobose, ca. 8 mm in diam. in vivo, villose and verrucose	globose, 12–13 mm in diam. in vivo, densely white puberulent

veins slightly visible abaxially, young leaves with 1–2(–4) pairs of secondary veins visible when dry. **Inflorescences** axillary, 1- to 2-flowered, peduncle ca. 0.5–1 mm long. **Bracts** 3–4, ovate, 1.5–2.0 × 1.0 mm, glabrous. **Flowers** articulated with pedicel, 1.0–1.2 cm long. **Bractoles** 2, ovate, ca. 1.0 mm long. **Pedicel** ca. 1.0 mm long, villous. **Calyx** villous, tube obconical, 2.0 × 2.0–2.5 mm, limb 4.5–5.5 mm long, lobes 5, triangular, ca. 3.0 × 1.5–2.0 mm, villous, apex attenuate. **Corolla** in vivo white, yellowish green apically, tubular with five vertical ridges, constricted at apex, 10–11 × 4.5–5 mm, sparsely puberulent and densely white to light yellowish brown villous along ridges exteriorly, sparsely puberulous interiorly in upper part, lobes 5, slightly reflexed at maturity, ovate-triangular, ca. 1.0 × 1.0 mm, acute apically. **Stamens** 10, 7.0–7.5 mm long. **Filaments** parallel, flattened, 3.0–3.5 mm long, widening at base, sparsely white-puberulous. **Anthers** adpressed to each other forming a ring around the style, ca. 4.0 mm long, without spurs, thecae 1.0–1.5 mm long, verrucous echinulate, tubules parallel, ca. 3.0 mm long. **Disc** margin scalloped with inconspicuous 10 peaks, glabrous. **Ovary** inferior, pseudo-10-locular, 2.0–2.5 mm in diam. **Style** ca. 9 mm long. **Stigma** punctate. **Berry** green when nearly mature, depressed subglobose, ca. 8 mm in diam. in vivo, villous and verrucose, with persistent calyx lobes at apex.

Distribution and habitat: *Agapetes rhuichengiana* is known only from Beibeng Township of Mêdog County, in Southeast Xizang, Southwest China (Fig. 2). It is usually epiphytic on trees of subtropical evergreen broad-leaved forests at 1600–1800 m elevation.

Phenology: Flowering from June to July, fruiting from November to December.

Etymology: The specific epithet is named in honor of Prof. Rhui-Cheng Fang from the Kunming Institute of Botany, who made significant contributions to the flora of Ericaceae in China.

Chinese name: 瑞征树萝卜 (Rui Zheng Shu Luo Bo).

Preliminary conservation status: During our survey, we only encountered three locations of *Agapetes rhuichengiana*, close to each other and in habitats near the

roadside (Fig. 2). Since very few details exist about its natural distribution, a detailed investigation of the same habitats may identify more populations and individuals of this new species. The current lack of data precludes a final risk evaluation, and this species might be assessed as data deficient (DD) following IUCN guidelines (IUCN, 2022).

Additional specimens examined (paratypes): CHINA. Xizang, Mêdog County, Beibeng Township, Yarang Village, 29°12'23.32"N, 95°19'28.28"E, 1620 m, 21 December 2020, B. Yang & P.-Y. Wang, T737 (HITBC [HITBC0091835!], PE!, IBSC!); Yarang Village, Zhabula, 29°12'8.04"N, 95°19'56.61"E, 1790m, 22 December 2020, B. Yang & P.-Y. Wang, T750 (HITBC [HITBC0091832!, HITBC0091833!]).

Notes: In habit, *Agapetes rhuichengiana* is very similar to *A. huangiana* in having subglobose root tubers and spirally alternate small ovate leaves. However, the indumentum of the flowers and fruits are very different between these two species (Table 1). As *A. huangiana*, *A. rhuichengiana* has ovate, small leaves, spurless anthers, and filaments nearly equal in length to anthers. Therefore, based on the three characteristics above, our overall consideration of Airy Shaw's infrageneric classification (Airy Shaw, 1935, 1958), and our previous taxonomic association with *A. huangiana* (Yang *et al.*, 2022), it is expedient to assign *A. rhuichengiana* to *Agapetes* ser. *Graciles*.

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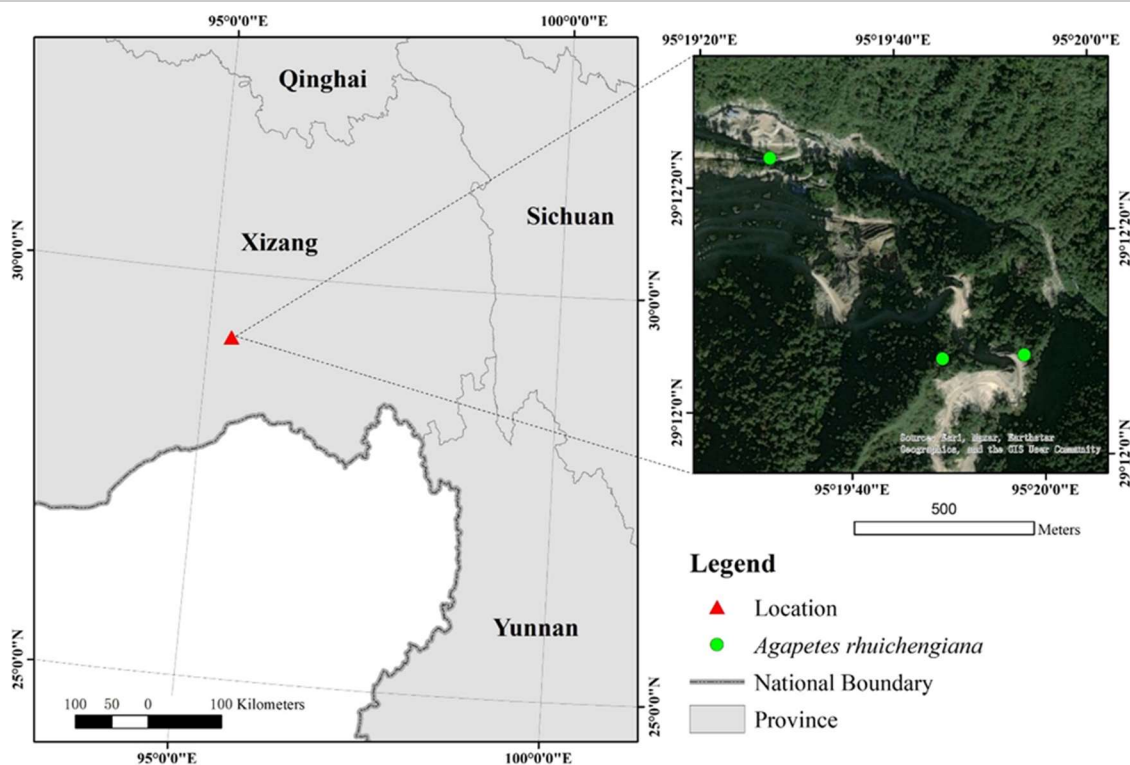


Fig. 2. Distribution of *Agapetes rhuichengiana*.

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