

Microchirita maxima, a new species of *Microchirita* (Gesneriaceae) from Thailand

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Abstract

A new species of *Microchirita* from Northern Thailand, *Microchirita maxima* Triboun, Thamwanna & Kaewkarn, is described and illustrated. It is diagnosed against the other species in Thailand with axillary bracteate inflorescences. Their seed morphologies are also provided.

Keyword: new species, *Microchirita*, Gesneriaceae, limestone, Thailand

INTRODUCTION

Microchirita (C.B.Clarke) Yin Z.Wang in the Gesneriaceae is a genus of about 50 species in tropical Asia with a centre of distribution in Thailand (Middleton *et al.*, 2024). Puglisi and Middleton (2017) revised the genus and recognized 29 species in Thailand, particularly in limestone vegetation. Since then, many new species have been described (Middleton *et al.*, 2023; Middleton *et al.*, 2024). A recent collection of a *Microchirita* species from Phayao Province was found to have axillary bracteate inflorescences similar to those found in *Microchirita involucrata* (Craib) Yin Z.Wang, *M. rupestris* (Ridl.) A.Weber & Rafidah and *M. glandulosa* C.Puglisi. This inflorescence type is distinctive and differs from the large majority of species of *Microchirita* in Thailand which have cristate inflorescences. As the recognized species in Thailand are well documented and the Phayao collection does not belong to the known species with bracteate inflorescences, it has been possible to confidently conclude that the new collection belongs to a hitherto undescribed species. The new species also has the

distinguishing feature of a calyx with a campanulate tube and large calyx lobes. The genus *Microchirita* is the second largest genus in the Gesneriaceae in Thailand (after *Paraboea* (C.B.Clarke) Ridl.) with 41 species, including the new species proposed here.

RESULTS

Description of new species

***Microchirita maxima* Triboun, Thamwanna & Kaewkarn, sp. nov.**

(Figures 1–2)

Diagnosis: *Microchirita maxima* is similar to *M. glandulosa* C.Puglisi, *M. involucrata* (Craib) Yin Z.Wang and *M. rupestris* (Ridl.) A.Weber & Rafidah in having bracteate inflorescences. It differs from *M. glandulosa* and *M. rupestris* by having a generally taller stem, the bracts are free (vs joined across the stem at the very base in *M. glandulosa* and fused into a tube in *M. rupestris*), often longer pedicels (5–35 mm long in *M. maxima* vs 8–12 mm long in *M. glandulosa* and 0.1–15 mm long in *M. rupestris*), and a yellow stripe on the ventral surface of the corolla (vs lacking in *M. glandulosa* and *M. rupestris*). It also differs from *Microchirita involucrata* in the bract margin (serrate or serrulate in *M. maxima* vs entire in *M. involucrata*), wider calyx lobes (1.4–1.5 mm wide in *M. maxima* vs 0.7–1.4 mm in *M. involucrata*) and the paler purplish flowers.

Type: Thailand, Phayao Province, Phu Sang District, Phu Sang National Park, Doi Pha Dam, alt. 770 m elevation, 29 November 2023, Triboun, Khorngton, Kaowthaisong, Kaewkarn, Jampates & Thamwanna 8558 (holotype BBH; isotypes BKF, E) (Figures 1–2, Table 1).

Lithophytic caulescent annual herb, 0.3–1 m tall, with 5–7 internodes, upper internodes 3–11 cm long, lower internodes 8–15 cm long; stem succulent, solitary or branching at lower nodes, yellowish green on the upper part and brownish red on the lower part, covered with a dense fine indumentum, lower part of the stem with fibrous roots. Leaves in decussate pairs, the basalmost leaves the largest and solitary; petiole 3–20 cm long, furrowed above, with a dense minute indumentum (conspicuous when fresh); blade green above and paler beneath, elliptic to ovate, 11–20 × 8–10 cm, apex acute to acuminate, base cordate to truncate, margin serrate, lateral veins 7–9 on each side of midrib, tertiary venation finely reticulate, upper surface with dense minute eglandular trichomes, lower surface with dense fine indumentum, secondary veins covered with short eglandular hairs. Inflorescences axillary, bracteate, arising from near the base of the petioles from all opposite leaf pairs, each axil with 2–5 inflorescences, the upper inflorescences smaller than those lower on the plant; peduncle robust and erect, 0.2–5 cm long, reddish brown, densely covered with minute glandular hairs; bracts 2, sessile, free, equal, resembling small leaves in the upper inflorescences, broadly ovate, 1.5–6 × 1–6 cm, apex acute, base cordate or cuneate, margin serrate or nearly so, green above and paler beneath, upper surface with dense minute eglandular trichomes and sparse erect, long and slender eglandular trichomes along with short glandular trichomes on the margin, lower surface densely covered with minute hairs, with 5–9 veins from base; pedicels 0.5–3.5 cm long, densely covered with short glandular hairs and sparse erect, long and slender eglandular hairs, light green or reddish brown flowers in pairs, often 1 or 4 pairs in a dichasium, rarely 3 pairs. Calyx green, tube 2–3.2 mm long, 1.4–1.5 mm wide, yellowish green, both sides densely covered with short glandular hairs, outside covered with erect, long and slender

eglandular hairs, lobes 5, linear to lanceolate, $6.5\text{--}8.6 \times 2\text{--}2.5$ mm, apex acute and reflexed, densely covered with short glandular hairs, with 3–5 veins, parallel from base. Corolla light purple, funnelform, tube 16–18 mm long, ca 3 mm wide at the base, ca 8 mm wide at the apex, white, outside densely covered with glandular hairs, inside glabrous, with a yellow stripe on the ventral surface inside; lobes suborbicular, $3\text{--}4.4 \times 3.6\text{--}4.6$ mm, apices rounded.



Figure 1. *Microchirita maxima* Triboun, Thamwanna & Kaewkarn A. Habit, B. Inflorescences with opened flowers. Photos A.-B. by Pattraporn Jampates.

Stamens arising ca 1 cm above the corolla base; filaments 5–5.2 mm long; anthers widely obcordate, $1.3\text{--}2 \times 2.1\text{--}2.7$ mm, creamy orange, with whitish hairs at the apex. Pistil ca 13.5 mm long; ovary narrowly cylindric, $5.2\text{--}7.4 \times \text{ca } 0.4$ mm, densely covered with glandular hairs; style 7–13 mm long, densely covered with glandular hairs; stigma 1.2–1.8 mm long, split into 2 segments, white. Capsule narrowly cylindric, 3.9–4.5 cm long, ca 1.5 mm wide, erect or slightly curved, dark brown to black, densely covered with short glandular hairs. Seeds numerous, reddish brown to dark brown, ovoid, $0.7\text{--}0.8 \times 0.3\text{--}0.4$ mm, surface rough.

Distribution. Endemic to Northern Thailand. Only known from the type locality in Phayao Province.

Ecology. Among rocks in exposed areas on limestone hills, at ca 700 m elevation.

Phenology. Flowering in August to early October, fruiting in November to December.

Etymology. The specific epithet refers to the large size of the plant and the rather tall stem.

Vernacular. Yad wai ya but (หยาดไยบุตร), name given here.

Notes. The calyx of *Microchirita maxima* is similar to that of *M. glandulosa* which is rather different from most other Thai species in being slightly zygomorphic. *Microchirita maxima* has a very restricted distribution in a limestone habitat at the type locality.

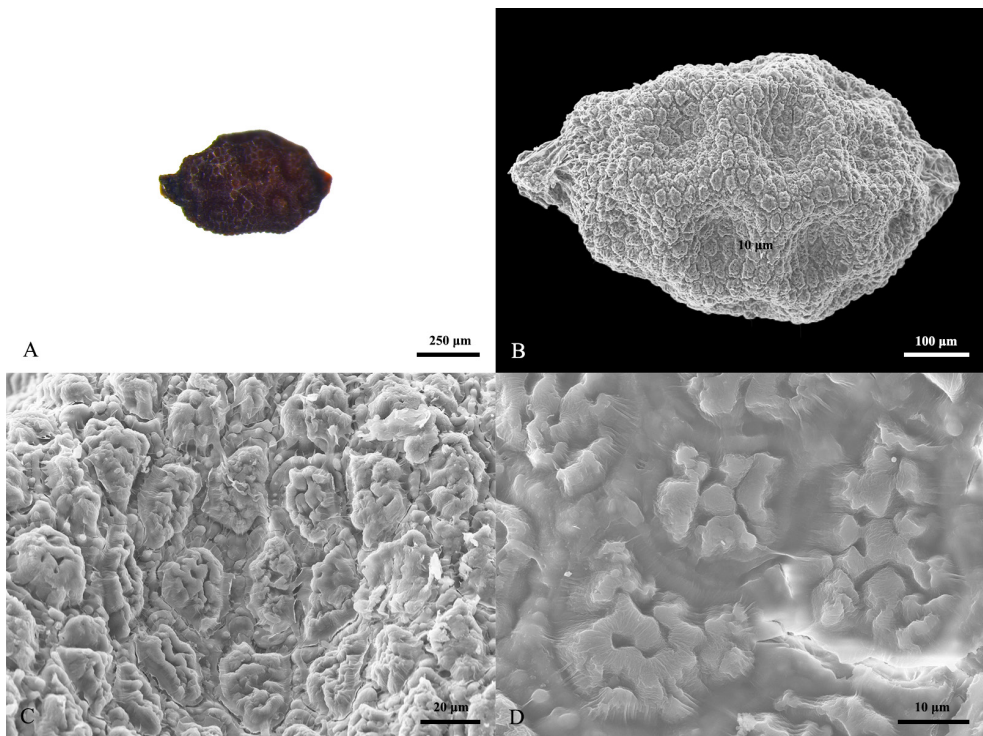


Figure 2. Seed of *Microchirita maxima* Triboun, Thamwanna & Kaewkarn from Triboun *et al.* 8558 (BBH). A. Stereomicrograph, B.-D. Electronmicrographs. All photos by Sirinan Khorngton.

Table 1 Seed characteristics of four species in *Microchirita*

Species	general characteristics	Seed sizes	Ornamentation of seed surfaces
1. <i>M. glandulosa</i> C. Puglisi	Ellipsoid, dark brown to black	0.56–0.62 × 0.36–0.41 mm (average 0.59 × 0.37 mm)	Simplicolumellate-reticulate
2. <i>M. involucrata</i> (Craib) Yin Z. Wang	Spheroidal oblong, black	0.33–0.47 × 0.17–0.30 mm (average 0.41 × 0.25 mm)	Areolate to areolate subreticulate
3. <i>M. maxima</i> Triboun <i>et al.</i>	Ovoid, reddish brown to dark brown	0.7–0.8 × 0.35–0.41 mm (average 0.74 × 0.39 mm)	Simplicolumellate-reticulate
4. <i>M. rupestris</i> (Ridl.) A. Weber & Rafidah	Ellipsoid, dark brown	0.46–0.54 × 0.25–0.3 mm (average 0.51 × 0.27 mm)	Areolate-reticulate

The seeds of four *Microchirita* species with bracteate inflorescences in Thailand have been studied, namely *M. involucrata*, *M. rupestris*, *M. glandulosa*, *M. maxima* (Figures 2–5, Table 1). The terminology follows Punt *et al.* (2006) and Halbritter *et al.* (2009).

The seeds of *Microchirita glandulosa* are on average 0.59 × 0.37 mm (0.56–0.62 × 0.36–0.41 mm) with a simplicolumellate-reticulate ornamentation and curved muri and a rather clearly separated single row of columellae. Voucher material: Triboun *et al.* 8470 (BBH), collected from Northern Thailand, Nan Province, Song Kwae District (Figure 3).

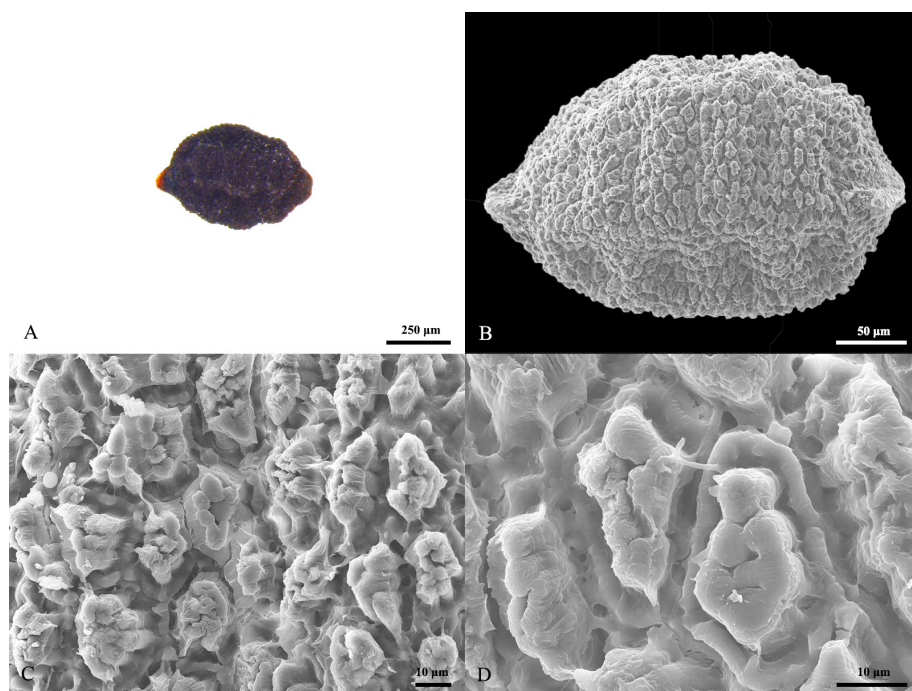


Figure 3. Seed of *Microchirita glandulosa* C. Puglisi from Triboun *et al.* 8470 (BBH). A. Stereomicrograph, B.-D. Electronmicrographs. All photos by Sirinan Khorngton.

The seeds of *Microchirita involucrata* are on average 0.41×0.25 mm ($0.33\text{--}0.47 \times 0.17\text{--}0.30$ mm) with an areolate to areolate-subreticulate ornamentation and a circular area and obscurely separated by layered reticulation Voucher material: *Triboun et al.* 8297 (BBH), collected from Southern Thailand, Phangnga Province, Mueang District, Somdech Phra Srinagarindra Park, 21 December 2022 (Figure 4).

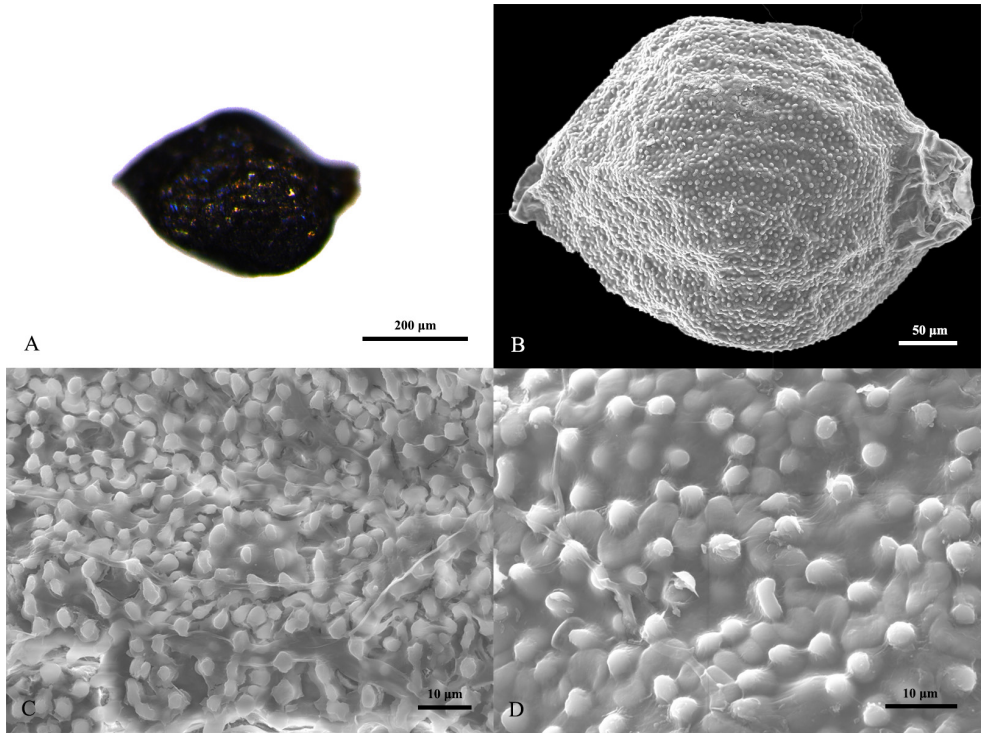


Figure 4. Seed of *Microchirita involucrata* (Craib) Yin Z.Wang from *Triboun et al.* 8297 (BBH). A. Stereomicrograph, B.-D. Electronmicrographs. All photos by Sirinan Khorngton.

The seeds of *Microchirita maxima* are on average 0.74×0.39 mm ($0.7\text{--}0.8 \times 0.35\text{--}0.41$ mm) with a simpliculumellate-reticulate ornamentation and curved muri and a rather clearly separated single row of columellae area by pattern of reticulation. Voucher material: *Triboun et al.* 8558 (BBH), collected from Northern Thailand, Phayao Province, Phu Sang District, 29 November 2023 (Figure 2).

The seeds of *Microchirita rupestris* are on average 0.51×0.27 mm ($0.46\text{--}0.54 \times 0.25\text{--}0.3$ mm) with an areolate to areolate reticulate ornamentation of with a circular area and distinguish separated by asymmetrical reticulate and inside with one to three circulars. Voucher material: *Triboun et al.* 8605 (BBH) collected from Southern Thailand, Trang Province, Huay Yot District, Lamphu Ra, Tham E-so Temple, 16 January 2024 (Figure 5).

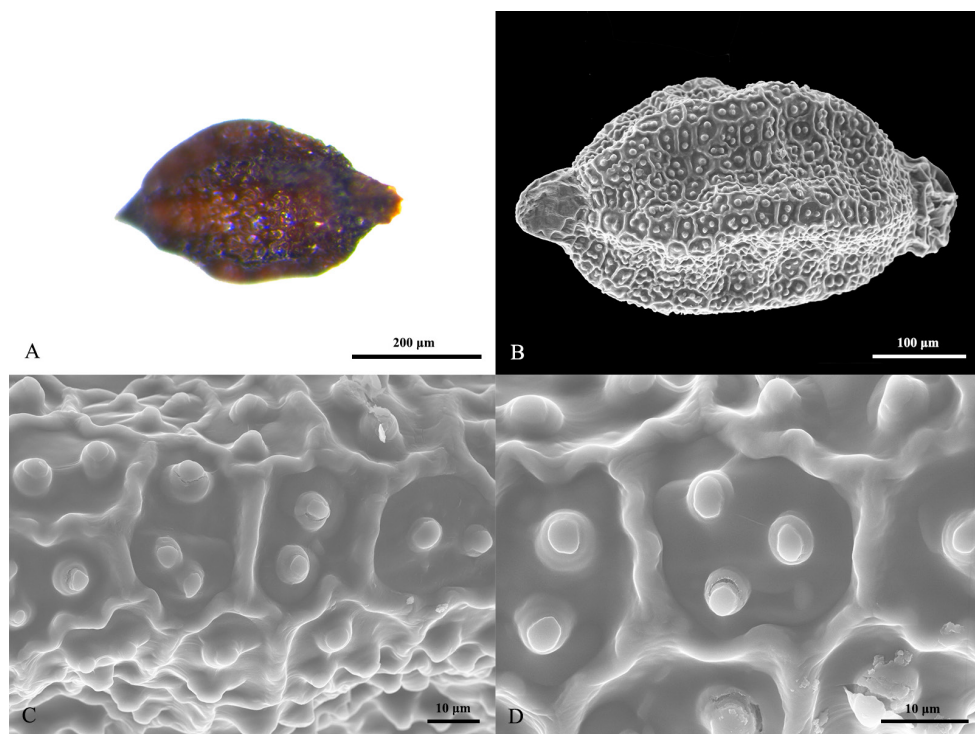


Figure 5. Seed of *Microchirita rupestris* (Ridl.) A. Weber & Rafidah from Triboun *et al.* 8605 (BBH). A. Stereomicrograph, B.-D. Electronmicrographs. All photos by Sirinan Khorngton.

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