

Two New Species of *Hedychium* (*Zingiberaceae*) from Thailand

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Two new species, *Hedychium muanwongyathiae* and *H. phuluangense* (*Zingiberaceae*), are described and illustrated from Thailand. Relationship with other closely related species is also discussed.

Key words: *Hedychium muanwongyathiae*, *Hedychium phuluangense*, New species, Thailand, *Zingiberaceae*.

Some crude drugs employed in Thai traditional medicine or ethnomedical prescriptions, e.g., Wan Khing Haeng, Wan Pad Roi Sanom, Wan Chai Dam, are the rhizomes of the genus *Hedychium* J. König (*Zingiberaceae*). However, botanical names of the plant sources yielding these crude drugs are still unknown or misidentified, mainly due to the lack of taxonomic foundation on the existing taxa of this plant group in Thailand. Hence, further research and development on these materia medica are impossible. We, therefore plan to revise the genus for Thailand, at least for the sake of scientifically documenting our ethnobotanical knowledge of this genus.

In continuation of our intensive field work throughout Thailand since the year 2000, twenty-four taxa (22 species and two varieties) were roughly accounted for Thailand (Picheansoonthon and Wongsuwan 2008), including the two species recently recognized, *H. khaomaenense* Picheans. & Mokkalul and *H. thaianum* Mokkalul & Picheahs.

(Picheansoonthon and Mokkalul 2005) and one Malayan taxon newly recorded for Thailand, *H. malayanum* Ridl. (Picheansoonthon and Wongsuwan 2008).

In this paper, we further recognized two new species from Thailand that are similar to *H. spicatum* Buch.-Ham. ex Sm. Comparisons of key morphological characters of these new species and *H. spicatum* are given in Table 1.

1. ***Hedychium muanwongyathiae*** Picheans. & Wongsuwan, sp. nov. [Figs. 1–2]

TYPE: THAILAND, Changwat Chaing Mai, Doi Ang Khang, 19°50'48"N, 99°03'0.04"E, 1,044 m alt., 10 August 2007, Picheansoonthon & Wongsuwan 064 (BKK–holotype; BK, SING–isotypes).

Hedychio spicato Buch.-Ham. ex Sm. simile ligulis longioribus (2.4–3.1 cm versus 1.7–2 cm) pubescentibus apice rotundatis, bracteis 2–4-floribus, calycis tubo pubescenti, filamentis longioribus (3.2–3.35 cm versus 1.9–2.4 cm), ovariiis villosis differt.

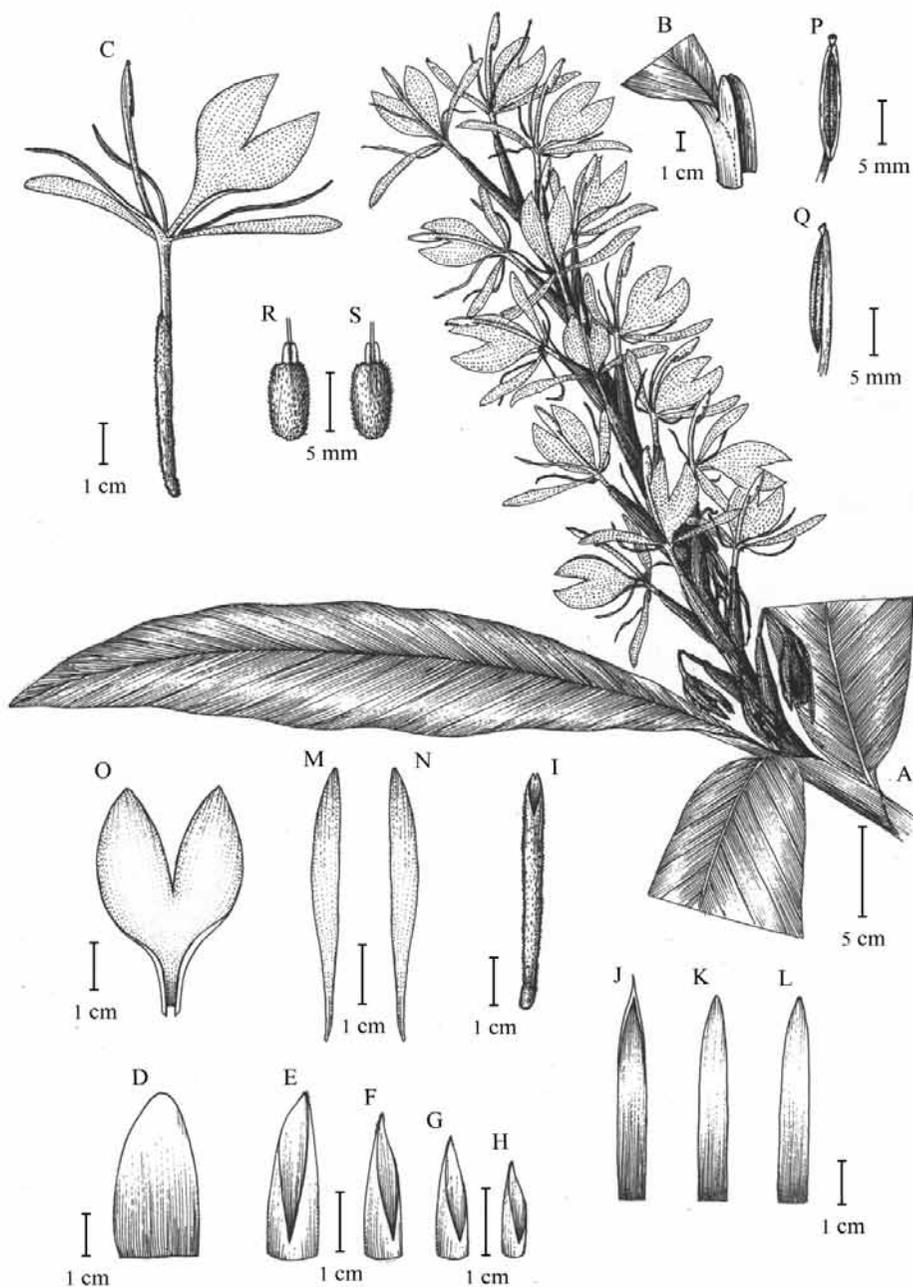


Fig. 1. *Hedychium muanwongyathiae* Pichens. & Wongsuwan. A. Flowering top showing leaves and an inflorescence. B. Part of leaf showing a ligule. C. Flower showing an ovary, calyx tube, corolla tube and lobes, lateral staminodes, labellum, filament, anthers, and stigma. D. Bract. E. Primary bracteole. F. Second bracteole. G. Third bracteole. H. Fourth bracteole. I. Calyx-tube and ovary. J. Dorsal corolla lobe. K, L. Lateral corolla lobes. M, N. Staminode. O. Labellum. P, Q. Anther (front and side views). R, S. Ovary and epigynous glands (front and rear views). Drawn by Chalermchoke Boonchit.

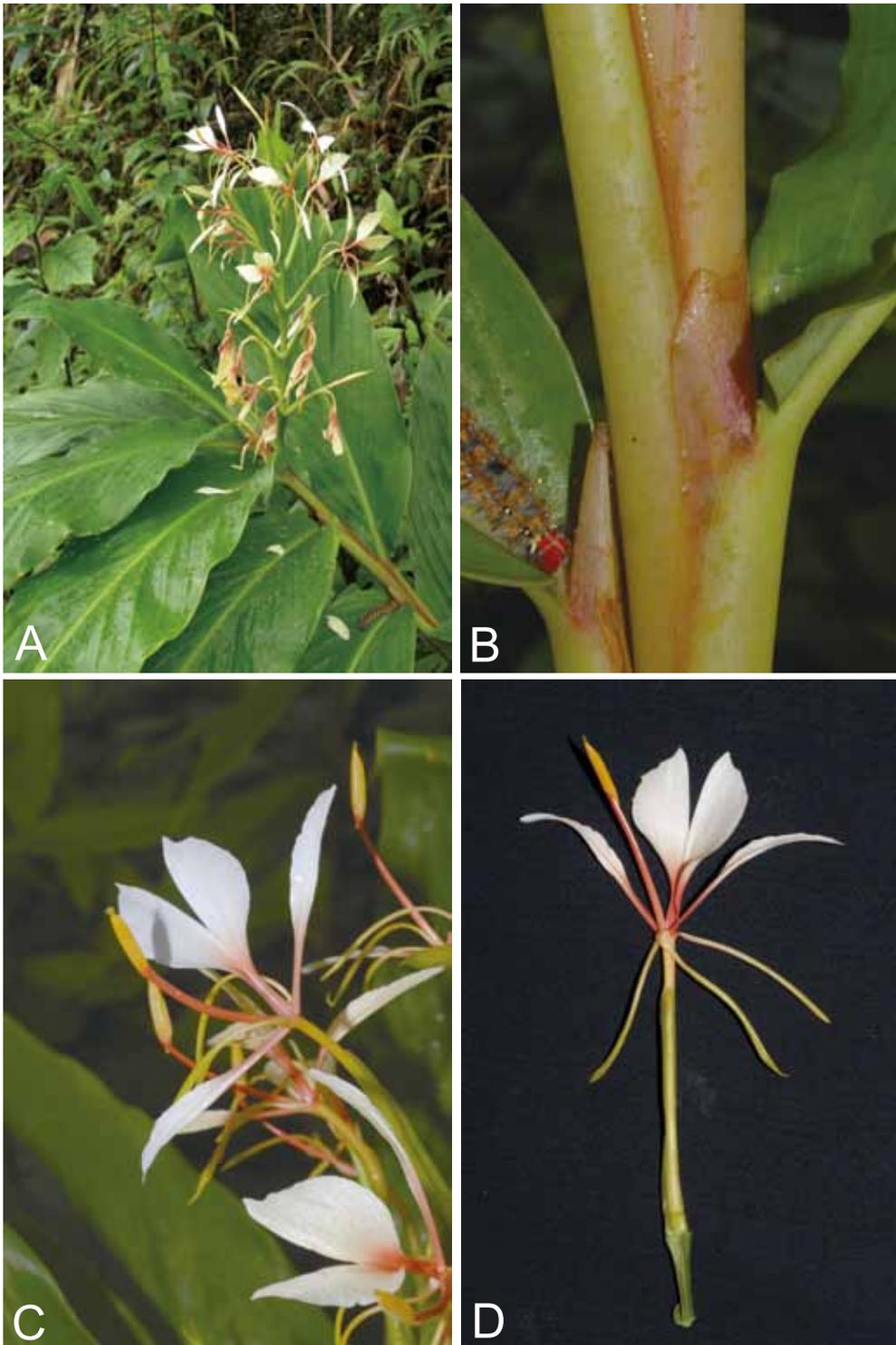


Fig. 2. *Hedychium muanwongyathiae* Pichens. & Wongsuwan. A. Flowering plants in the type locality. B. Part of leaves and ligules. C. Inflorescence. D. Flower showing an ovary, calyx tube, corolla tube, corolla lobes, lateral staminodes, labellum, filament, and anther. Photo by Chayan Pichansoonthon.

Table 1. Comparison of *Hedychium muanwongyathiae* Pichens. & Wongsuwan, *H. phuluangense* Pichens. & Wongsuwan and *H. spicatum* Buch.-Ham. ex Sm. in morphological characters

	<i>H. muanwongyathiae</i>	<i>H. phuluangense</i>	<i>H. spicatum</i>
Leaf	lanceolate-oblong, lower surface pubescent	lanceolate-oblong, lower surface glabrous	elliptic-oblong, lower surface pubescent
Ligule	2.4–3.1 cm long, apex round, pubescent	1.8–2.1 cm long, apex acute, pubescent	1.7–2 cm long, apex acute, glabrous
Inflorescence	dense-flowered	lax-flowered	lax-flowered
Number of flowers per bract	2–4	1	1
Calyx-tube	hairy	glabrous	glabrous
Labellum	elliptic-obovate, ca. 4.3 × 2.45–2.8 cm, deeply divided, 2.2–2.5 cm deep	elliptic, 2.9–3.5 × 1.5–1.55 cm, apex 2-cleft, 6–7 mm deep	elliptic-obovate, 4.3–5.1 × 2.5–2.7 cm, deeply divided, 2.2–3.0 cm deep
Filament	3.2–3.35 cm long	3.3–4.1 cm long	1.9–2.4 cm long
Ovary	villose	glabrous	glabrous

Terrestrial, perennial herb. Pseudostems 70–130 cm high, bladeless sheaths 2–4. Ligule membranous, pubescent, reddish, oblong, 2.4–3.1 by 3.3–4.6 cm, apex rounded. Leaves sessile, lanceolate-oblong, 38.3–48.5 by 17.8–19.4 cm, base cuneate, apex acute-acuminate, margin entire, upper surface glabrous, lower surface pubescent. Inflorescence a terminal spike, erect, 21.6–28.2 cm long; peduncle glabrous, 5.5–7.6 cm long; bracts lax, folded, glabrous, greenish, oblong, 4.3–4.5 by 1.4–1.8 cm, apex acute, each subtending a cincinnus of 2–4 flowers; primary bracteole membranous, glabrous except apex hairy, tubular, 2.4–2.9 by 1.3–1.9 cm, apex acute; secondary bracteole glabrous except apex hairy, tubular, ca. 2.2 by 1.0–1.1 cm, apex acute; tertiary bracteole membranous, glabrous except apex hairy, tubular, 1.5–1.8 by 0.7–0.9 cm, apex acute; quarternary bracteole membranous, tubular, 1–1.4 by 0.4–0.5 cm. Flowers white to pale yellow, fragrant; calyx hairy, tubular, 3.9–4.45 cm by 0.4–0.5 cm, apex acute to 3-lobed; corolla tube slender, 5–7.6 by 0.2–0.3 cm, 3-lobed, the lobes yellowish, linear, 3.6–4.6 by 0.4–0.6 cm, apex hooded; lateral staminodes pale salmon, linear-oblong, 4.2–4.3 by 0.4–0.5 mm, base attenuate into a 1–1.2 cm by 0.3–0.4 cm claw; labellum white with pale salmon red

patch at base, elliptic-obovate, ca. 4.3 by 2.45–2.8 cm, base attenuate into a 1–1.1 by 0.4–0.5 cm claw, apex deeply divided by 2.2–2.5 cm; filament salmon red, 3.2–3.35 cm long; anther yellowish, dorsified, 1.3–1.5 by 0.2–0.3 cm, base divaricate; ovary villose, 3-loculed, 5–6 by 3–4 mm, placentation axile; epigynous glands 2, yellowish, slender, 3–4 by 2–3 mm; stigma densely ciliate, green. Fruits not seen.

Phenology: Flowering in August to September.

Ecology: This new species grows under the shade on sandstone in lower montane scrub at an altitude of 1000–1500 m.

Distribution: Thailand: Chaing Mai (Doi Ang Khang) and Mae Hong Son (Doi Kew Lom).

Etymology: The plant is named to honor Prof. Dr. Payaw Muanwongyathi, Thailand, a leading pharmaceutical botanist.

Vernacular name: Ta Hoen Pa.

Use: Medicinal.

Note: This new taxon morphologically resembles *H. spicatum*, but can be readily distinguished by its longer and pubescent ligules (2.4–3.1 cm versus 1.7–2 cm) with rounded apex, 2–4 flowers per bract, hairy calyx tubes, longer filaments (3.2–3.35 cm versus 1.9–2.4

cm), and the villose ovaries.

It is also different from *H. phuluangense* Pichens. & Wongsuwan in several characters: lax-flowered inflorescences, 2–4-flowered bracts, larger obovate-elliptic labella with the deeply bilobed apex, and the villose ovaries.

2. *Hedychium phuluangense* Pichens. & Wongsuwan, sp. nov. [Figs. 3–4]

TYPE: THAILAND, Changwat Loei, Phu Luang Wildlife Sanctuary, 17°16'36.18"N, 101°31'5.70"E, alt. 1,474 m, 26 July 2007, Pichensoonthon & Wongsuwan 060 (BKK–holotype; BK, SING–isotypes).

Hedychio spicato Buch.-Ham. ex Sm. simile foliis oblongo-lanceolatis infra glabris, ligulis pubescentibus, labello bifido, filamentis longioribus (3.3–4.1 cm versus 1.9–2.4 cm) differt.

Terrestrial, perennial herb. Pseudostems 110–160 cm high, bladeless sheaths 2–4. Ligule, oblong, 1.8–2.1 by 1.2–1.6 cm, apex acute, membranous, pubescent. Leaves reddish, sessile, lanceolate-oblong, 42.1–50.3 by 9.8–13.4 cm, base cuneate, apex acute-acuminate, margin entire, lower surface glabrous. Inflorescence a terminal spike, erect, 11.6–18.2 cm long; peduncle glabrous, 5.4–10.6 cm long; bracts lax, folded, glabrous, greenish, oblong, 2.9–3.1 by 0.8–1.1 cm, apex acute, each subtending a cincinnus of a single flower; bracteole membranous, glabrous, oblong, 1.4–1.6 by 0.9–1.1 cm, apex acute. Flowers white to pale yellow, fragrant; calyx glabrous, tubular, 2.6–2.8 by 0.3–0.4 cm, apex 3-lobed; corolla tube slender, somewhat twisted, 5.2–6.1 by 0.2–0.3 cm, 3-lobed, the lobes yellowish, linear, 3.4–4.7 by 0.4–0.5 cm, apex hooded; lateral staminodes, oblanceolate-linear, 3.8–4.8 by 0.4–0.5 cm, base attenuate into a 1.6–1.9 by 0.2–0.3 cm claw; labellum white with pale salmon red patch at base, elliptic, 2.9–3.5 by 1.5–1.6 cm, base attenuate into a 1.1–1.3 by 0.3–0.4 cm claw, apex 2-cleft by 6–7 mm; filament salmon red, 3.3–4.1 cm long; anther salmon red, dorsified, 1.5–1.6

by 0.3–0.4 cm, base divaricate; ovary glabrous, 2–4 by 2–3 mm, 3-loculed, placentation axile; epigynous glands 2, yellowish, slender, 2–3 by ca. 0.5 mm; stigma densely ciliate, green. Fruits glabrous, greenish, suborbicular, 1.2–1.6 by 1.2–1.5 cm. Seeds numerous, reddish orange, elliptic to orbicular, 4–5 by ca. 3 mm.

Phenology: Flowering in July to August; fruiting in August to September.

Ecology: This new species grows under the shade on sandstone in lower montane scrub at an altitude of 1000–1500 m. It is often found under the shade of *Rhododendron simsii* Planch. and/or *Anneslea fragrans* Wall.

Distribution: Thailand., Loei (Phuluang).

Etymology: The specific epithet is derived from the type locality, Phu Luang Wildlife Sanctuary (Changwat Loei).

Vernacular name: Hong Hoen.

Use: Medicinal.

Note: This new taxon is similar to *Hedychium spicatum* in lax-flowered inflorescences, 1-flowered bracts, glabrous calyx tubes, and the glabrous ovaries, but can be distinguished by its lanceolate-oblong leaves with glabrous lower leaf surface, longer ligules with acute and pubescent apex, 2-cleft labella, and longer filaments (3.3–4.1 cm versus 1.9–2.4 cm).

It also somewhat resembles *H. muanwongyathiae*, however, the two species are quite different in several characters, i.e., leaf shape and surface, length of the filaments, and in particular shape and apex of the labellum.

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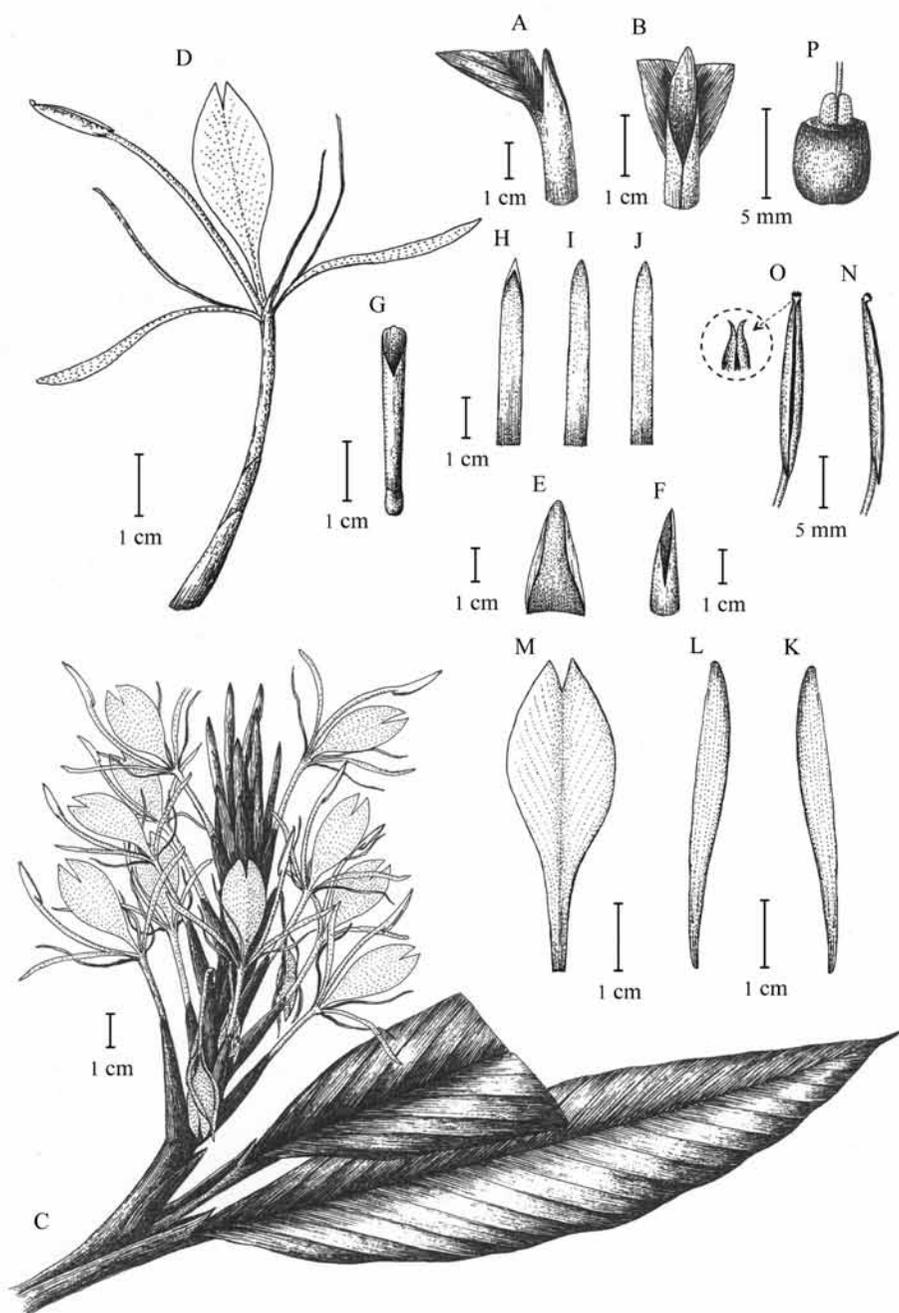


Fig. 3. *Hedychium phluangense* Pichens. & Wongsuwan. A, B. Part of leaf showing a ligule (side and front views). C. Flowering top showing leaves and an inflorescence. D. Flower showing a bracteole, calyx tube, corolla tube and lobes, lateral staminodes, labellum, filament, anthers, and stigma. E. Bract. F. Bracteole. G. Calyx tube and ovary. H. Dorsal corolla lobe. I, J. Lateral corolla lobes. K, L. Staminode. M. Labellum. N, O. Anther (side and front views). P. Ovary and epigynous glands. Drawn by Chalermchoke Boonchit.

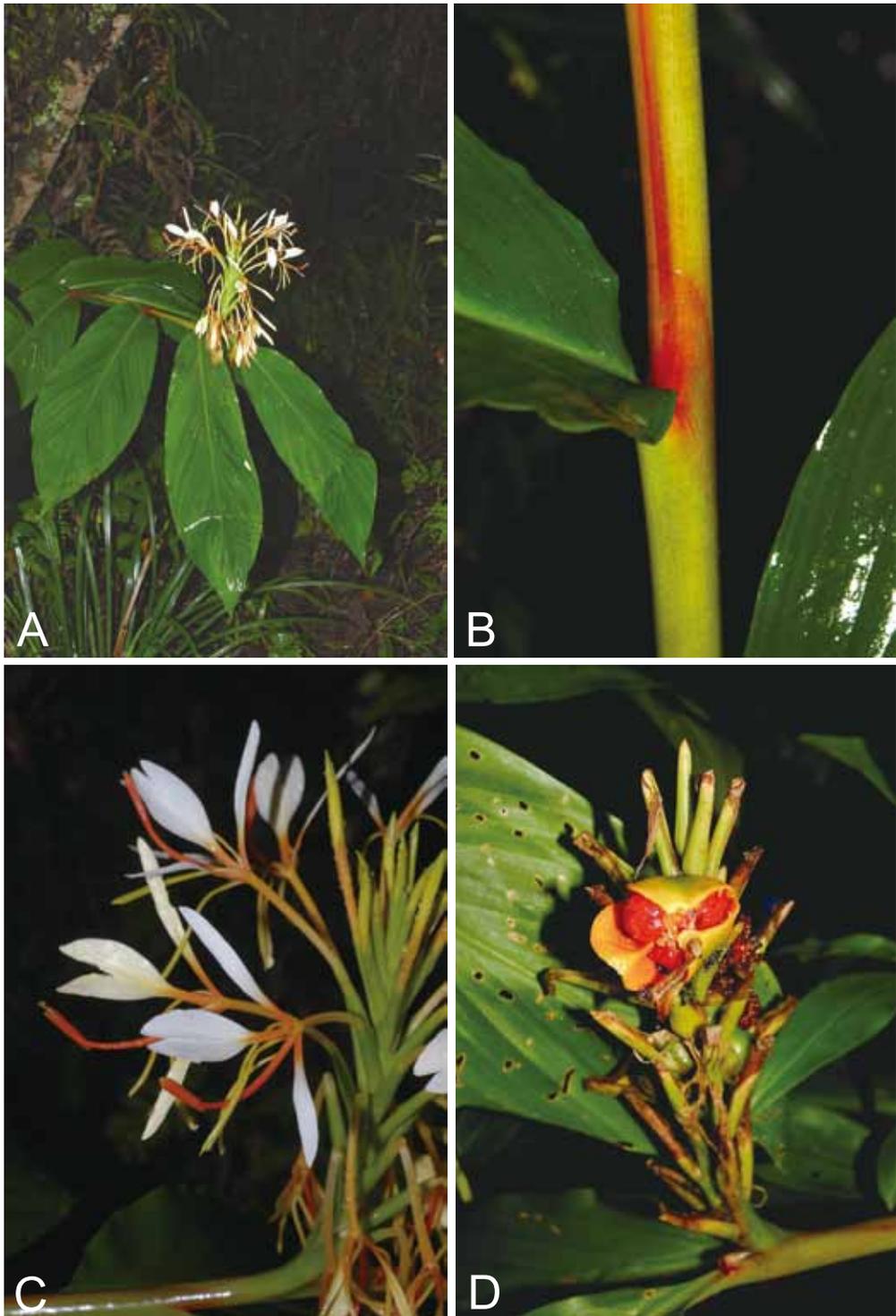


Fig. 4. *Hedychium phuluangense* Pichens. & Wongsuwan. A. Flowering plant in the type locality. B. Part of leaves and ligules. C. Inflorescence. D. Inflorescence showing mature fruits and a dehiscent fruit. Photo by Pornpimon Wongsuwan (A, B, D) and Chayan Pichansoonthon (C).

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C. ピチェアンスーントン^{a, b}, P. ウォンスワン^b: タイ産シユクシャ属 (ショウガ科) の2新種

タイからショウガ科シユクシャ属の2新種, *Hedychium muanwongyathiae* Picheans. & Wongsuwan と *H. phuluangense* Picheans. & Wongsuwan を記載した。両種とも地上生で *H. spicatum* Buch.-Ham. ex Sm. に似ているが, *H. muanwongyathiae* は, 葉舌がより長く, 有毛, 先端が円く, 苞あたり2–4個の花をつけ, 萼筒は有毛, 花糸はより長く, 子房に毛があることで区別される。

H. phuluangense は, 花付きがまばらで, 苞あたり1花しか付けないこと, 萼筒や子房が無毛である点でさらに *H. spicatum* に似ているが, 葉は披針状長楕円形で裏面無毛であり, 葉舌はより長く先端は鋭形で有毛, 唇弁は2裂し, 花糸がより長い点で異なる。

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