



The Genus *Gagnepainia* K. Schum. (Zingiberaceae) in Thailand

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Abstract

Two rare Thai medicinal plant species of the genus *Gagnepainia* K. Schum. (family Zingiberaceae), *G. godefroyi* (Baill.) K. Schum. and *G. thoreliana* (Baill.) K. Schum., are enumerated. Descriptions and illustrations of both taxa are given.

Key words: *Gagnepainia* K. Schum., Thailand, *G. godefroyi* (Baill.) K. Schum., *G. thoreliana* (Baill.) K. Schum.

Introduction

As a part of our effort to establish fundamental knowledge, particularly on ethnobotany and taxonomy, of the Thai Zingiberaceae, one of the most important medicinal plant family in Thailand, for future research and development, we have continued studying on the tribe *Globbeae*. As a result, the genus *Hemiorchis* Kurz in Thailand was revised (Picheansoonthon 2009). A new taxon, *Globba ranongensis* Picheans. & Tiyawor. was also recently added (Picheansoonthon & Tiyaworanant, 2010).

K. Schum. (1904) transferred 3 species previously placed under the genus *Hemiorchis* Kurz to his new genus, *Gagnepainia* K. Schum.: *G. harmandii* (Baill.) K. Schum., *G. godefroyi* (Baill.) K. Schum., and *G. thoreliana* (Baill.) K. Schum. based mainly on the longer (than the labella) filaments and the erect anthers. The genus was named in honour of Francois Gagnepain (1866-1952), a famous French botanist. The type specimens of these 3 species were collected from the former French Indochina. Since then, no other new taxa have been added.

K. Larsen (1996) listed 2 species, *G. godefroyi* (Baill.) K. Schum. and *G. glabra* K. Larsen & S. S. Larsen. The latter species was presumably their new species.



In fact, it has never been published. A few years later, they listed all 3 taxa for Thailand (Larsen & Larsen, 2000). However, based on available herbarium materials from major herbaria (BK, BKF, QBG, SING, K, and P) and from our field trips throughout Thailand, we have encountered only 2 taxa, *G. godefroyi* (Baill.) K. Schum. and *G. thoreliana* (Baill.) K. Schum in Thailand. Several populations around the country were investigated and both species show several deviations from the types and original descriptions. The distribution of this genus in Thailand is revised here for the first time.

Gagnepainia

K. Schum. in Engl. Pflanzenr. 4(46). 20 Heft: 129. 1904; Loesener in Engl., Nat. Pflanzenfam. 2. ed. 15a: 581. 1930; Larsen *et al.* in Kubitzki, Fam. Gen. Vasc. Pl. 4: 488. 1998.-non Ehrenb. ex Schweinf. Beitr.–*Hemiorchis* Baill. in Bull. Soc. Linn. Paris I: 1195. 1985.

Perennial herb, rhizomes short. Leafy shoots produced after flowering stems, Leaves oblong or oblong-lanceolate, petiolate. Flowers in pedunculate spikes, usually crowded at the tips of elongating tomentose rachis; calyx tubular, lobes ovate, apex acute; corolla tube slightly dilated towards the mouth, lobes ovate-oblong, recurved; staminodes broadly obovate, or suborbicular; labellum 3-lobed, median lobe form a club-shape elongated appendages, broader than long, emarginate; filament longer than the labellum, curved; anther linear; ovary unilocular; placenta 3, parietal; stylodial glands 2, filiform. Capsules subglobose to ovate, crowned with persistent calyces. Seeds subglobose to globose, arillate.

Three species are distributed in Vietnam, Laos, Cambodia and Thailand. Two species are native to Thailand

Key to Species

1. Lower leaf surface pubescent to sericeous, flowers green.....1.**G. godefroyi**
 1. Lower leaf surface glabrous, flower whitish.....2.**G. thoreliana**

1. **Gagnepainia godefroyi** (Baill.) K. Schum. in Engl. Pflanzenrch. Heft 20:130 1904.–*Hemiorchis godefroyi* Baill. in Bull. Soc. Linn. Paris I: 1196. 1890. Figures 1, 2 and 5B.



Small perennial herb. *Leafy shoots* with 2-4 sheaths at base; leaf sheaths hairy, 2.5-12 by 1.6-2.4 cm, green, pubescent with white margin, upper with longitudinal green or white line. *Leaves* petiolate, 3.5-13.5 by 0.6-1.6 cm, some winged; lamina narrowly ovate-elliptic, tapering towards the petiole; upper surface green, hairy, lower surface pale green, pubescent, 7.5-33.5 by 4-12.5 cm. *Flowering shoots* 17-42 cm; peduncle and rachis pubescent. *Flowers* 6-36, greenish, ebracteate; calyx tubular, 0.9-1.8 cm long, apex 3-lobed, the apices acute or obtuse, green; corolla tubes 1.4-2.2 cm long; dorsal corolla lobe ovate-oblong, 6-9 by 2-5 mm, greenish, recurved; lateral corolla lobe ovate-oblong, 5.6-7.2 by 2-4 mm, greenish, recurved; lateral staminode broadly obovate to suborbicular, 6-9 by 3-5 mm, greenish; labellum pale green, 3-lobed, median lobe whitish, formed a club-shape elongated appendage, 2-3 by c. 0.5 mm, lateral lobes broadly obovate to suborbicular, 2.5-4 by 2-3 mm, with 2 elongated appendage, 1-1.5 by c. 0.5 mm; filament 7-8 mm long; anther 4-4.5 by c. 1.5 mm, thecae diverging towards apex, opening by longitudinal slits; ovary ellipsoid, c. 4 mm long, sessile, tomentose; stylodial glands 2, filiform, c. 4 mm long. *Fruits* capsular, oblong-ovoid, 1.9-3.4 by 1.2-2.5 cm, hairy, crowned with persistent calyces. Seeds globose to subglobose, c. 3 mm diam, yellowish to light brownish, hairy, aril white.

Thailand.—CENTRAL [Namtok Samlun NP, Changwat Saraburi], SOUTH-EASTERN [Khao Khiew, Changwat Chonburi]; NORTH-EASTERN [Phu Sa Dok Bua NP, Changwat Mukdahan]; EASTERN [Pha Taem NP, Changwat Ubon Ratchathani]

Distribution.—LAOS [Phu Luang, the Bolaven Plateau, Attapeu and Champasak Provinces]; CAMBODIA [Boeng Yeak Lom and Virachay NP, Ratanakiri Province]

Ecology.—Deciduous dipterocarp forest and bamboo forest, at the altitude of 30–700 m.

Vernacular name.—Toobmoob Khao Khwai (ตูปมูบเขากววย), Wan Krahang Khiew (ว่านกระหังเขี้ยว), Wan Morakot (ว่านมรกต), Pee Suea Khiew (ผีเสื้อเขี้ยว)

Use.—Medicinal

2. **Gagnepainia thoreliana** (Baill.) K. Schum. in Engl. Pflanzenrch. Heft 20:130. 1904.—*Hemiorchis thoreliana* Baill. in Bull. Soc. Linn. Paris I:1196. 1890. Figures 3, 4 and 5A.

Small perennial herb. *Leafy shoots* with 3-5 sheaths at base; leaf sheaths hairy, 2.2-13.6 by 1.4-2.4 cm, green pubescent with white margin, upper with longitudinal green or white line; ligule 2-3 mm long, pubescent, apex bilobed.

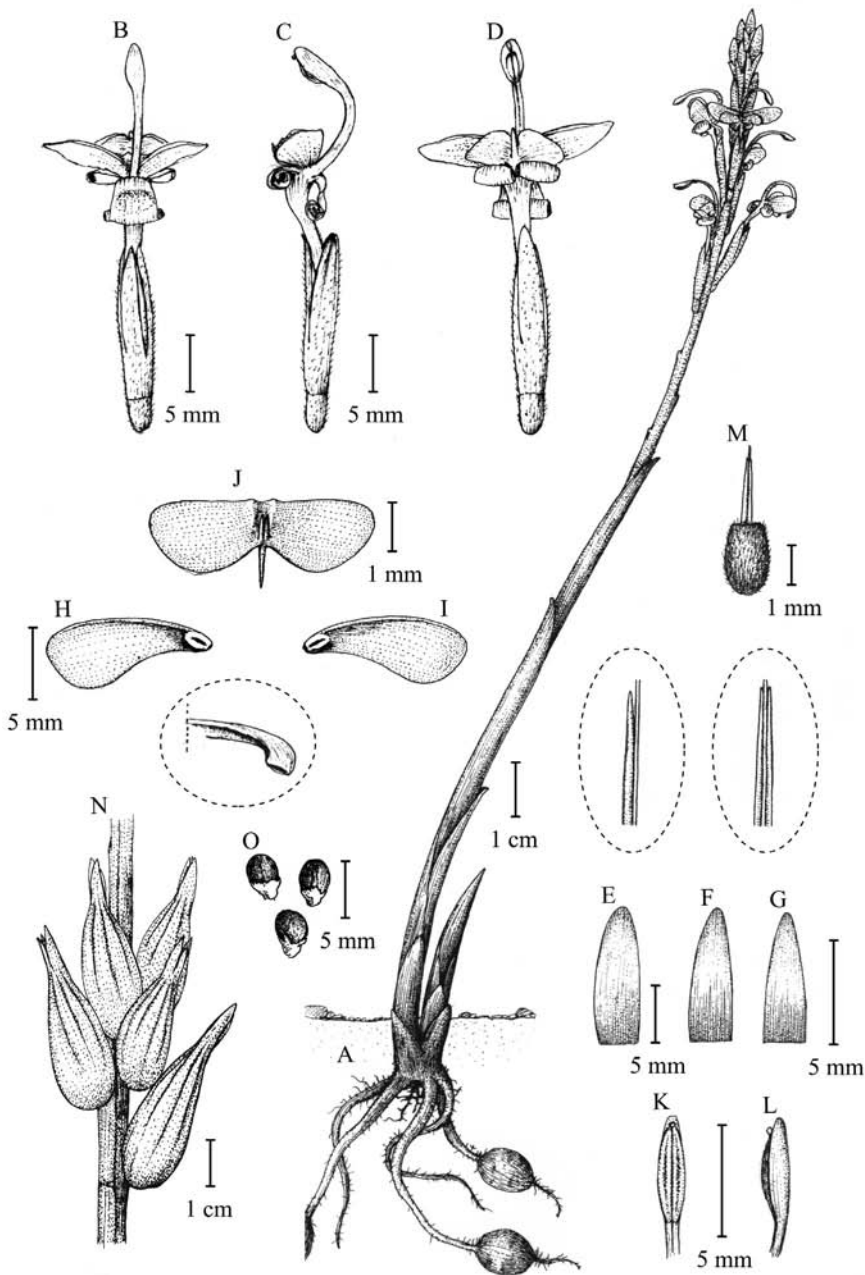


Figure 1 *Gagnepainia godefroyi* (Baill.) K. Schum.

A. A flowering stem, showing roots, rhizome, leaf sheaths, and an inflorescence with a front view of a flower and a side view of a flower. B, C & D. A flower; rear view (B), side view (C), and front view (D). E. Dorsal corolla lobe. F & G. Lateral corolla lobes. H & I: Lateral staminodes; J: Labellum; K & L. Anther, front view (K) and side view (L). M. ovary and stylodial glands. N. Upper part of flowering stem showing infructescence. O. Seeds. Drawn by Chalermchoke Boonchit.

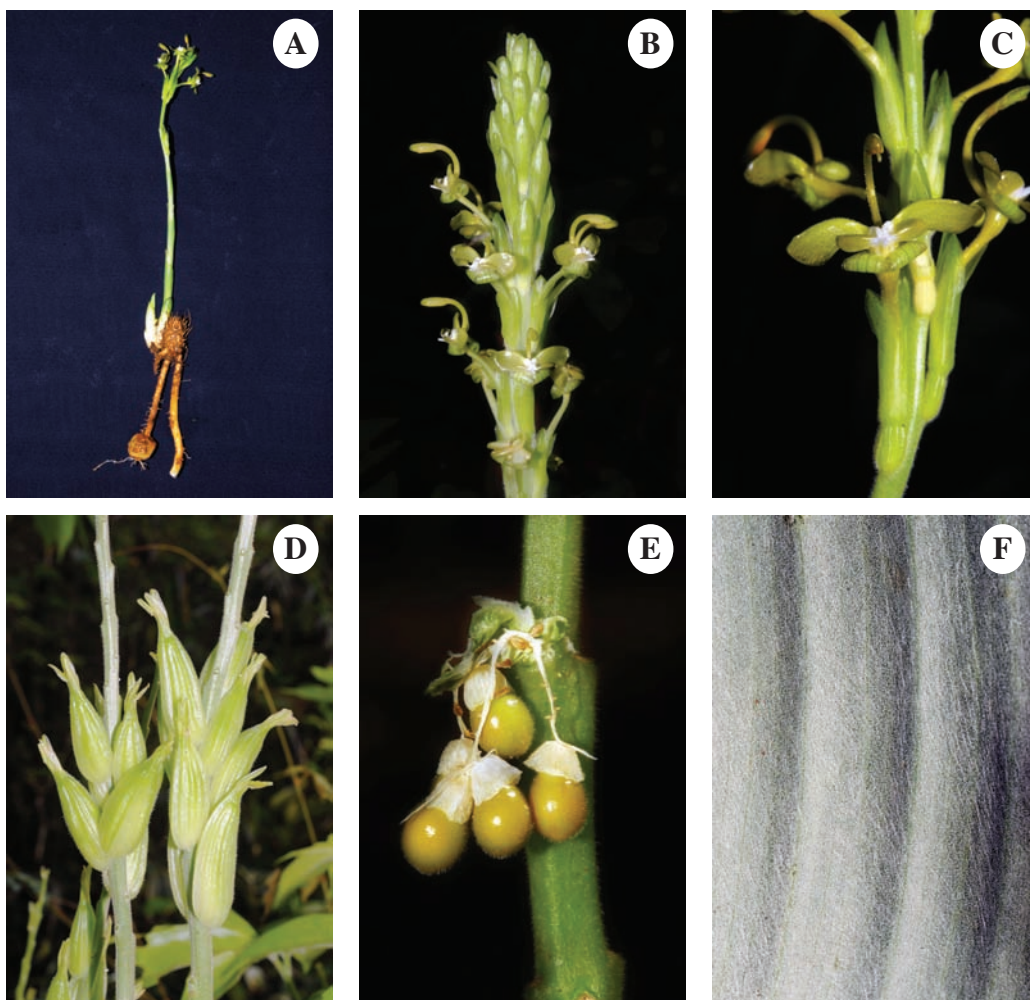


Figure 2 *Gagnepainia godefroyi* (Baill.) K. Schum.

A. A flowering shoot, showing roots, rhizome, leaf sheaths, and an inflorescence. B. An inflorescence. C: Close-up of flowers. D. Infructescences. E. Seeds. F. Lower leaf surface. Photographed by Chayan Picheansoonthon.

Leaves petiolate, 4.7-10.3 by 0.8-1.1 cm, some winged; lamina elliptic to obovate, 22.7-36.0 by 6.5-8.9 cm, base tapering towards the petiole, apex acuminate, margin entire to slightly undulate, upper surface hairy, lower surface glabrous. *Flowering shoots* 29.6-40.2 cm long, peduncle and rachis pubescent. *Flowers* up to 50, ebracteate; calyx tubular, 1.3-1.5 cm long, 3-lobed, lobes acute to obtuse, white; corolla tube 1.8-2.1 cm long; dorsal corolla lobe ovate-oblong, whitish, 1.1-1.3 cm

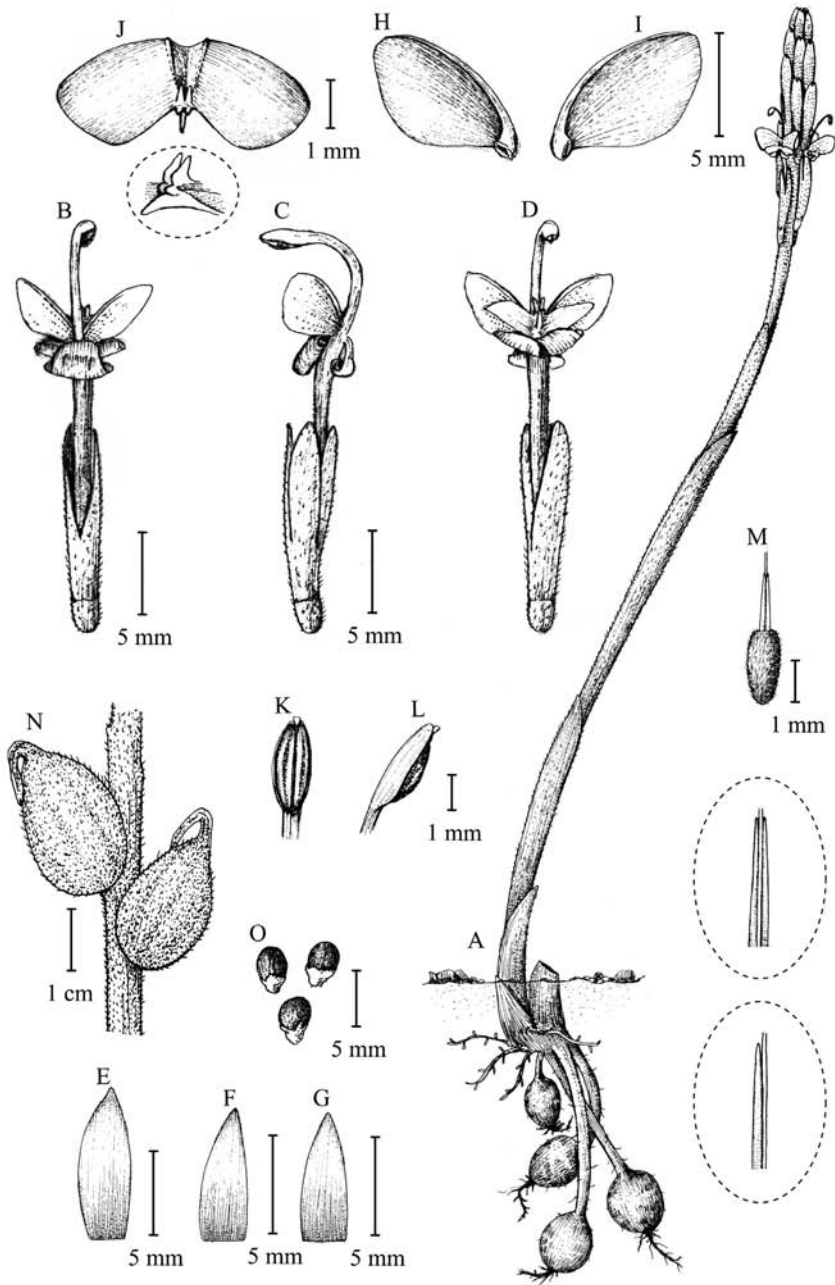


Figure 3 *Gagnepainia thoreliana* K. Schum.

A. A flowering shoot showing roots, rhizome, leaf sheaths and an inflorescence. B, C & D. A flower; rear view (B), side view (C), and front view (D). E. Dorsal corolla lobe. F & G. Lateral corolla lobes. H & I. Lateral staminodes. J. Labellum. K & L. Anther, front view (K) and side view (L). M. ovary and stylodial glands. N. Upper part of flowering stem showing infructescence. O. Seeds. Drawn by Chalermchoke Boonchit.

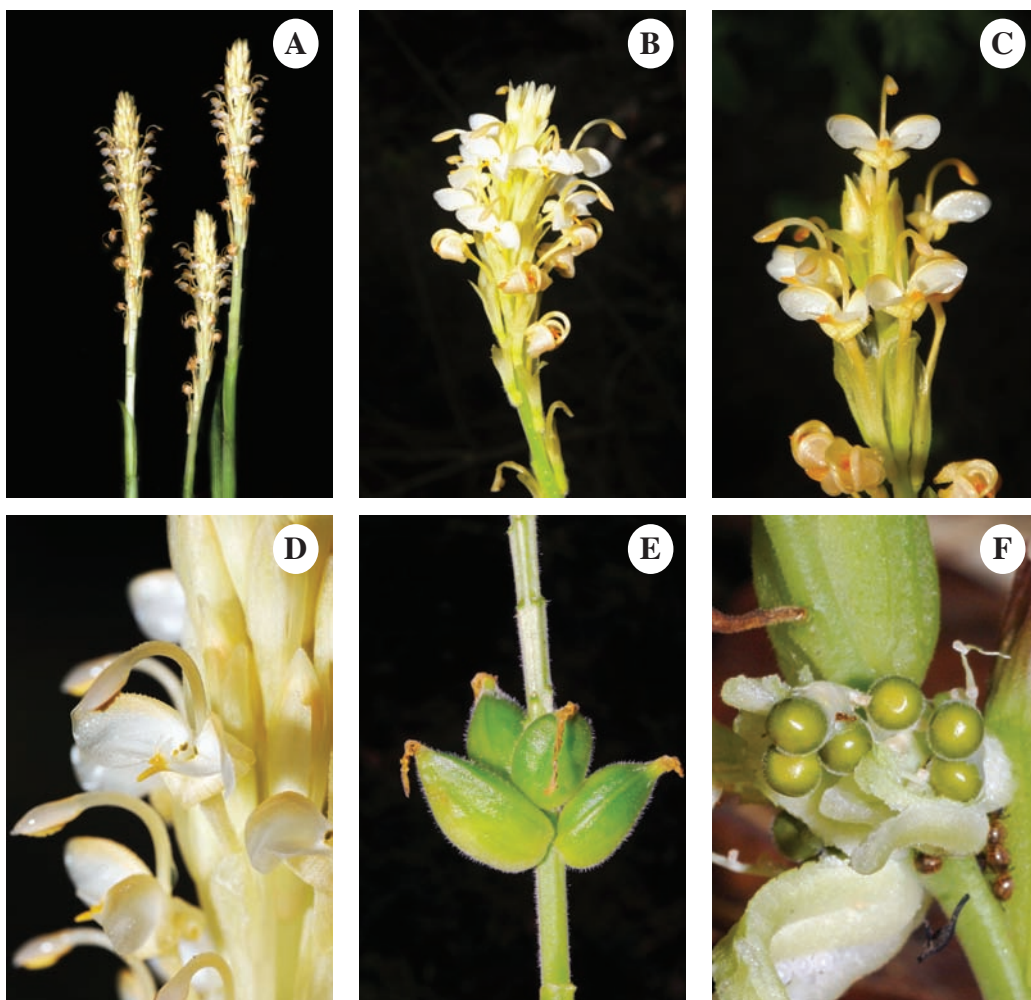


Figure 4 *Gagnepainia thoreliana* K. Schum.

A. Flowering shoots. B. An infructescence. C. Close-up of flowers in different views. D. An oblique view of flowers. E. An infructescence, showing fruits with persistent calyces. F. Dehiscing fruit showing seeds. Photographed by Chayan Picheansoontorn.

by 3-5 mm, recurved; lateral corolla lobe ovate-oblong, 6-8 by 3-5 mm, whitish, recurved; lateral staminodes broadly obovate to suborbicular, 5-6 by 3-5 mm, white with yellow upper margin; labellum white, 3-lobed, median lobe formed a yellow club-shape elongated appendage, *c.* 4 by 2.5 mm, lateral lobes broadly obovate to suborbicular, 2.5-3.5 by *c.* 3 mm with 4 elongated appendages; filament 1-1.3 cm



long; anther *c.* 4 by 1 mm, thecae diverging toward apex, opening by longitudinal slits; ovary sessile, tomentose, ellipsoid, *c.* 3 mm long; stylodial glands 2, filiform, *c.* 4.5 mm long. Fruits capsular, ovoid, 1.7-3 by 1.3-1.6 cm, hairy, crowned with persistent calyces. Seeds globose, *c.* 3 mm diam, greenish, aril white.

Thailand.—NORTHERN [Noen Pisawong, Amphoe Mae Sod, Changwat Tak; Namtok Tee Lorsu NP, Amphoe Umpang, Changwat Tak; Doi Chiang Dao WS, Amphoe Chiang Dao, Changwat Chiang Mai; Huai Suea Tao, Amphoe Muang Mae Hong Son, Changwat Mae Hongson]; NORTH-EASTERN [Nam Nao NP, Amphoe Nam Nao, Chawat Chaiyapum; Phu Ruea NP, Amphoe Phu Ruea, Changwat Loei]; WESTERN [Pong Phu Ron, Amphoe Thong Pha Pum, Changwat Kanchanaburi].

Distribution.—Laos and Cambodia

Ecology.—Mixed evergreen forests and bamboo forests, at the altitude of 60-560 m.

Vernacular name.—Wan Krahang (ว่านกระหัง), Wan Krahang Khao (ว่านกระหังขาว), Wan Petch Na Tang (ว่านเพชรหน้าตั้ง), Wan Kon Na Tang (ว่านค้อนหน้าตั้ง), Choe Kinaree (ช่อกินรี)

Use—Medicinal

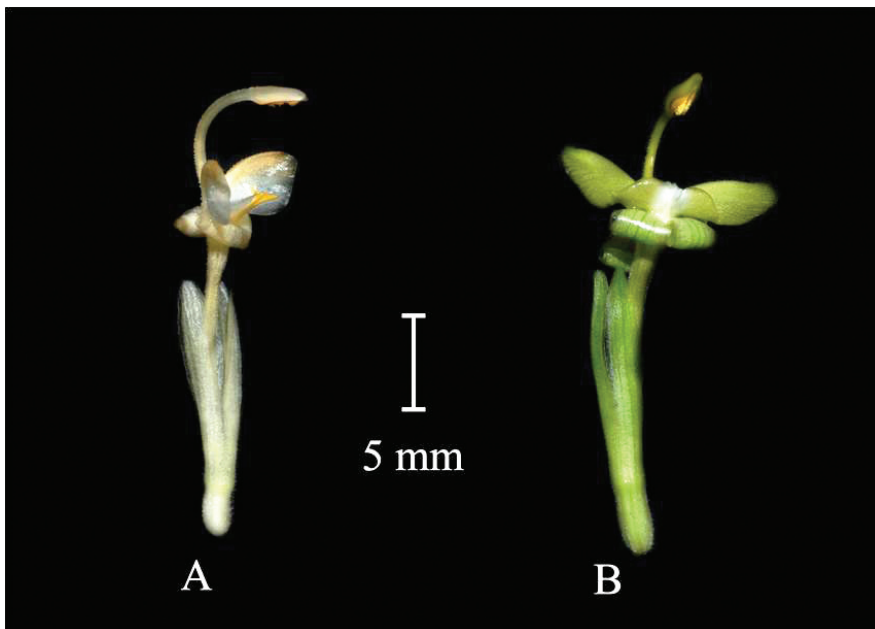


Figure 5 Comparison of the flowers of *G. thoreliana* (A, an oblique view) and of *G. godefroyi* (B, a front view)



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