

A preliminary study of the genus *Hornstedtia* (Zingiberaceae) in Thailand

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ABSTRACT. The taxonomy of the genus *Hornstedtia* Retz. in Thailand is re-evaluated. Four species are recognized, *H. conica* Ridl., *H. minor* (Blume) Valetton, *H. leonurus* (J.König) Retz. and *H. scyphifera* (J. König) Steud. All of them occur in Peninsular Thailand. *Hornstedtia scyphifera* and *H. leonurus* are widely distributed, whereas *H. conica* and *H. minor* are found near the Thai-Malaysian border in Yala and Narathiwat provinces only. A key to species and photographs of *H. conica*, *H. leonurus* and *H. minor* are provided.

KEY WORDS: *Hornstedtia*, Thailand, Taxonomy.

INTRODUCTION

The genus *Hornstedtia* Retz. was established by Retzius (1791). *Hornstedtia scyphifera* (J. König) Steud. was initially the only species recognized in Thailand (Larsen, 1996). Subsequently three other species have been recorded from peninsular Thailand (Maknoi & Sirirugsa, 2002), *H. conica* Ridl., *H. minor* (Blume) Valetton, (syn. *H. ophiuchus* (Ridl.) Ridl.) and *H. leonurus* (J.König) Retz.

TAXONOMIC TREATMENT

HORNSTEDTIA

Retz. Observ. Bot. 6: 18. 1791. Type species: *Hornstedtia scyphifera* (J.König) Steud.—*Greenwaya* Giseke, Prael. Ord. Nat. Pl. 245. 1792, *nom. illeg.*—*Donacodes* Blume, Enum. Pl. Javae 54. 1827. Type species: *Donacodes paludosa* Blume.—*Stenochasma* Griff., Not. Pl. Asiat. 3: 431. 1851. Type species: Not designated.—*Cardamomum* Kuntze, Revis. Gen. Pl. 2: 685. 1891, *pro parte*. Type species: Not designated.

Perennial herb; rhizome creeping, sometimes supported by stilt-roots above ground, branched, woody. *Pseudostem* robust, with swollen base. *Leaves* sessile or petiolate; ligule conspicuous; leaf blades oblong or lanceolate. *Inflorescence* arising from rhizome near base of pseudostems, sometimes lower half embedded in ground, ovoid or fusiform; peduncle short, covered by short sheaths; bracts densely imbricate, outer ones rigid, coloured, pubescens, inner ones membranous, usually white, glabrous.

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Calyx tubular, split down one side, apex 3-toothed or 2-lobed. *Corolla* tube long, slender, curved; dorsal lobe erect, hooded, lateral ones shallowly concave, apex rounded or obtuse, partly adnate to labellum. *Lateral staminodes* reduced to small teeth at base of labellum or absent. *Labellum* equal to corolla lobes or longer, narrow, concave and fleshy, ovate, base auriculate, apex oblong-rounded. *Filament* short; connective appendage emarginate. *Ovary* oblong, 3-locular. *Style* slender; stigma funnel form. *Stylodes* 2, united or free.

KEY TO SPECIES OF *HORNSTEDTIA* IN THAILAND

- | | |
|---|--------------------------------|
| 1 Labellum much longer than corolla lobe | 1. <i>H. conica</i> |
| 1' Labellum more or less equal to corolla lobe | |
| 2 Lateral corolla lobes folded within dorsal lobe | 2. <i>H. leonurus</i> |
| 2' Lateral corolla lobes free from dorsal lobe | |
| 3 Calyx as long as corolla tube | 3. <i>H. minor</i> |
| 3' Calyx half length of corolla tube | 4. <i>H. scyphifera</i> |

1. *Hornstedtia conica* Ridl., J. Straits Branch Roy. Asiat. Soc. 32: 142. 1899. Type. Malaysia, Selangor, *Ridley* 7803 (lectotype **SING!**, designated by Turner, 2000, isolectotype **K!**).— *Amomum sarawacense* K.Schum., Bot. Jahrb. Syst. 27: 304. 1899. Type: Malaysia, Sarawak, Gunung Matang, *Beccari* 1435 (holotype **FI**).— *Hornstedtia sarawacensis* (K.Schum.) K.Schum. in H.G.A. Engler (ed.), Pflanzenr. IV, 46: 191. 1904.— *Hornstedtia alliacea* Valetton, Icon. Bogor. 4. t. 350. 1912. Type. Indonesia, Bogor, *Anon.* s.n. (Lectotype **BO**, designated by Sakai & Nagamasu, 2003). Fig. 1A, Map 1.

Leaf sheath finely ribbed with cross bars; blade glabrous on both surfaces, base truncate, apex caudate. *Inflorescence* fusiform, c. 11 cm long; including peduncle. *Involucral bracts* finely ribbed, with appressed hairs. *Labellum* 3 cm long, with thicker middle band, apex rounded, edge wrinkled.

Thailand.— PENINSULAR: Narathiwat [Waeng, 18 June 1999, *Maknoi* T11 (**PSU**, **QBG**)].

Distribution.— Peninsular Malaysia, Sarawak, Java.

2. *Hornstedtia leonurus* (J.König) Retz., Observ. Bot. 6: 18. 1791. Type. Malaysia, Peninsular Malaysia, *König* s.n. (holotype **C!**).— *Amomum leonurus* J.König in A.J. Retzius, Observ. Bot. 3: 69. 1783.— *Cardamomum leonurus* (J.König) Kuntze, Revis. Gen. Pl. 2: 686. 1891.— *Stenochasma convoluta* Griff., Not. Pl. Asiat. 3: 433, t. 359. 1851. Type. Not located.— *Amomum ridleyi* Baker, Bull. Misc. Inform. Kew 1892: 128. 1892. Type. Singapore, *Ridley* 96 (holotype **K!**). Fig. 1B, Map 1.

Leaf sheath shallowly ribbed, glabrous, dark brown; blade oblong, glabrous, with yellow patch along mid-vein, base unequally cordate, apex acuminate. *Inflorescence* c. 9 cm, mostly embedded in soil. *Involucral bract* finely ribbed, with short white hairs. *Calyx* silky hairy, denser on veins. *Lateral corolla* lobes covered by dorsal lobe. *Labellum* 3 cm long, dark red; mid-lobe narrowly triangular, apex rounded.

Thailand.— PENINSULAR: Satun [Khuan Kalong, 25 Aug. 1984, *Maxwell* 84-138,

(**PSU**)]; Yala [Betong, 1 June 2005, *Wai* 231, (**PSU**)]; Narathiwat [Su-ngai Padi, 24 Aug. 1999, *Maknoi* T40 (**PSU**, **QBG**), 25 Jan. 2000, *Maknoi* T64 (**PSU**, **QBG**); Waeng, 26 Jan. 2000, *Maknoi* T69 (**PSU**, **QBG**); Bala-Hala, 27 Sept. 1998, *Niyomdham* 5570 (**BKF**)].

Distribution.— Peninsular Malaysia, Singapore.

3. *Hornstedtia minor* (Blume) Valetton, Bull. Inst. Bot. Buitenzorg 20: 57. 1904. Type. Indonesia, Java, *von Blume* 2266 (holotype **L**, isotype **L**).— *Elettaria minor* Blume, Enum. Pl. Javae 53. 1827.— *Alpinia minor* (Blume) D.Dietr., Syn. Pl. 1: 12. 1839.— *Cardamomum minus* (Blume) Kuntze, Revis. Gen. Pl. 2: 687. 1891.— *Amomum minus* (Blume) K.Schum., Bot. Jahrb. Syst. 27: 305. 1899.— *Geanthus minor* Reinw. ex Blume, Catalogus 29. 1823, *nom. nud.*— *Amomum ophiuchus* Ridl., Trans. Linn. Soc. London, Bot. 3: 381. 1893. Type. Malaysia, Pahang, July 1891, *Ridley* s.n. (lectotype **SING!**, designated by Turner, 2000).— *Hornstedtia ophiuchus* (Ridl.) Ridl., J. Straits Branch Roy. Asiat. Soc. 32: 141. 1899. Fig. 1C, Map 1.

Leaf sheath with prominent ridges and white flecks; blade narrowly lanceolate, lower surface with appressed hairs, base cuneate, apex acuminate. *Inflorescence* conical, c. 12 cm long including short peduncle. *Involucral bracts* with densely white, stiff hairs, apex acute with short spine. *Calyx* hairy at base. *Labellum* ovate, 1.8 cm long, red, with white edges at base, apex rounded.

Thailand.— PENINSULAR: Yala [Betong, 10 July 1999, *Maknoi* T26 (**PSU**, **QBG**)].

Distribution.— Peninsular Malaysia, Kalimantan, Java.

4. *Hornstedtia scyphifera* (J.König) Steud., Nomencl. Bot. ed. 2, 1: 776. 1840. Type. Malaysia, Peninsular Malaysia, *König* s.n. (holotype **C!**).— *Amomum scyphiferum* J.König in A.J. Retzius, Observ. Bot. 3: 68. 1783.— *Greenwaya scyphifera* (J.König) Giseke, Prael. Ord. Nat. Pl. 245. 1792.— *Hornstedtia scyphus* Retz., Observ. Bot. 6: 18. 1791, *nom. illeg.* (= *Amomum scyphiferum* J.König).— *Stenochasma urceolare* Griff., Not. Pl. Asiat. 3: 431. 1851. Type. Not located. Map 1.

Leaf sheath glabrous to densely hairy especially on upper part; blade narrowly lanceolate, both surfaces glabrous to covered with densely appressed hairs, base obliquely rounded, apex acute to acuminate. *Inflorescence* c. 15 cm long including short peduncle. *Involucral bracts* finely longitudinal ribbed, with irregular cross-bars, covered with white hairs. *Calyx* mostly glabrous except few hairs at apex. *Labellum* slightly longer than lateral corolla lobes, with white edges at base, apex rounded.

Thailand.— PENINSULAR: Yala [Hala-Bala, 2 May 1998, *Niyomdham* & *Puudjaa* 5516 (**BKF**); 2 May 1998, *Niyomdham* & *Puudjaa* 5517 (**BKF**)]; Narathiwat [Waeng, 27 Dec. 1971, *Bunchuai* 1948 (**BKF**)].

Distribution.— Sumatra, Peninsular Malaysia, Sarawak.



Map 1. Distribution of *Hornstedtia conica* Ridl. (■), *H. leonurus* (J.König) Retz. (●), *H. minor* (Blume) K.Schum. (◆) and *H. scyphifera* (J.König) Steud. (★) in Thailand.



Figure 1. A. *Hornstedtia conica* Ridl.; B. *Hornstedtia leonurus* (J.König) Retz.; C. *Hornstedtia minor* (Blume) K. Schum.

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