Taiwania, **53**(1): 6-10, 2008

A New Species of *Amomum* Roxb. (Zingiberaceae) from Northern Thailand

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(Manuscript received 4 June, 2007; accepted 3 December, 2007)

ABSTRACT: A new species of the genus *Amomum* Roxb. (Zingiberaceae) from northern Thailand, *Amomum inthanonense* A. Chaveerach & T. Tanee is described and illustrated. It is closely related to *A. thysanochililum* S. Q. Tong & Y. M. Xia, but differs in several characters. The important different characters are plant up to 1.30 m tall, ligule apex bilobed, edge ciliate; leaf blade elliptic-oblong, base attenuate, cuneate or oblique, apex acute to acuminate; peduncle 1-2 cm long; first bracteole linear-oblong, apex ciliate, second bracteole obovate, apex ciliate; corolla tube white or reddish-white, dorsal and lateral lobes oblong; anther yellow, oblong, apex emarginated, connective appendages 2, long flat deltoid, yellow; ovary glabrous.

KEY WORDS: ***Amomum, Amomum inthanonense*, Zingiberaceae, new species, Thailand.**

INTRODUCTION

The genus *Amomum* is a member of the family Zingiberaceae. Some members of the genus are well known in ethnobotany and economics especially *A. testaceum* Ridl. which is a very important and most famous spicy material in Asian cuisines. It is really known as a commercial name “Siam cardamon”. Its dried fruits were used for improving food flavor and anti-flatulence in the Thai folk herbal formula. Some species of the genus have long been recognized as an important group of Thai medicinal plants with a long history in Thai traditional medicine, e.g. dried fruits of *A. testaceum*, *A. villosum* Lour. var. *villosum* and *A. villosum* Lour. var. *xanthoides* T. L. Wu & S. Chen. They are important parts of Thai medicine formula for anti-flatulence and blood circulation tonic.

The species of *Amomum* were found and recorded in Indo-China included Malay Peninsula and Southeast Asia as following listed. Forty eight species were listed in the Flora of British India (Linnaeus, 1894). Ridley (1899) reported 11 species from Malay Peninsula. In 1912, Craib reported *A. siamense* Craib, a new species from Doi Suthep, Chiang Mai province in the north of Thailand. Eighteen species from Malay Peninsula were enumerated by Linnaeus (1924). In 1950, Holttum reported 18 *Amomum* with species descriptions from Malay Peninsula. Wu and Larsen (2000) enumerated 39 species in China. Six species of the genus in Thailand were additionally specified by Smitinand (2001). *Amomum maximum* Roxb., a new record from Thailand Peninsula was reported by Lim (2002). Recently, Kaewsri and Phaisooksantivatana (2006) reported 12 species from their field work in Thailand. In the same year, Larsen and Larsen (2006) listed 16 species from Thailand.

In this paper, a new endemic species, *Amomum inthanonense* A. Chaveerach & T. Tanee, from Doi Inthanon National Park in the north of Thailand is described and illustrated. The population of this species was discovered by the authors in 2005, but its flowers were atrophied and faded in color. In 2006, revisits were made by the authors to collect specimens and to study the plant biology. After studying on species description of the genus by above literature survey and specimens examined namely S. Q. Tong & A. M. Li 24910 at Yunnan Tropical Botanical Institute (YNTBI!), China, the plant was diagnosed as a new species. It is different from the other species, but similar to *A. thysanochililum* S. Q. Tong & Y. M. Xia (Tong and Xia, 1988), as presented in detail below.

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Key to a new species of *Amomum*

1. Plant up to 1.30 m tall; ligules apex bilobed, ciliate; leaf blades elliptic-oblong, 25-28 cm by 5-6 cm, base attenuate, cuneate or oblique, apex acute to acuminate; spikes ovate-elliptic, 8-10 cm by 3-3.5 cm; peduncle 1-2 cm long; bracteole reddish-white with edge ciliate; corolla tube white or reddish-white, lobes red, oblong; anther yellow, oblong; ovary glabrous .... *A. inthanonense*
1. Plant 1.5-3.0 m tall; leaves sessile; ligules entire, glabrous; leaf blades oblong-lanceolate, 50-60 cm by 7-10 cm, base cuneate, apex long caudate; spikes subcapitate, 5-6 cm by 4.5-5 cm; peduncle 2-7 cm long; bracteoles purplish red with brownish apex; corolla tube yellowish, lobes pale purplish red, linear; anther white, linear; ovary slightly hairy ..... *A. thysanochililum*

Amomum inthanonense A. Chaveerach & T. Tanee *sp. nov.* Figs. 1-3

Diagnose: This species is similar to *A. thysanochililum* S. Q. Tong & Y. M. Xia but different in the following characters: Plant up to 1.30 m tall, ligule apex bilobed, edge ciliate; leaf blade elliptic-oblong, base attenuate, cuneate or oblique, apex acute to acuminate; peduncle 1-2 cm long; first bracteole linear-oblong, apex ciliate, second bracteole obovate, apex ciliate; corolla tube white or reddish-white, dorsal and lateral lobes oblong; anther yellow, oblong, apex emarginated, connective appendages 2, long flat deltoid, yellow; ovary glabrous.

Latin Diagnose: Haec species A. thysanochililo S. Q. Tong & Y. M. Xia similis sed differt herbae 1.30 m altae, ligulae apex bilobatus, margo ciliatus; folium ellipticum-oblongum, minutum, cuneatum aut obliquum ad terram, apex acutus aut acuminatus; pediculus 1-2 cm longus; bractea primaria linearis-oblonga, apex ciliatus, bractea secundaria ovata, apex ciliatus; folia alba aut subrufa-alba, lobi dorsuali et a latere oblongi; altera bractea flavia, oblonga, apex ad marginem, 2 ad coniungendum appendices, longus, planus, triquetrus, flavus; ovarium glabrum.

Type: Doi Inthanon National Park, alt. 1720 m, Chom Thong district, Chiang Mai province in northern Thailand, 17 May 2006, *P. Mokkamul & A. Chaveerach 316* (holotype: BKF!, isotype: BK!)

Plant with vasiform rhizome, up to 1.30 m tall. Leaf sheaths green, margin brown, glabrous. Ligules membranous, ca. 1 cm long, apex bilobed, ciliate. Leaves subsessile to petiolate; petiole ca. 1 cm long, groove, green, glabrous. Leaf blades elliptic-oblong; 25-28 cm by 5-6 cm; base attenuate, cuneate or oblique; apex acute to acuminate; margin entire or slightly undulate; glabrous. Spikes arise from rhizome, ovate-elliptic, 8-10 cm by 3-3.5 cm. Peduncle decumbent at base ca. 1-2 cm long, red, cover with scalelike sheaths. Bracts imbricate, 7-9, variation in size, ovate or broadly lanceolate, 3.5-4.0 cm by 2.5-3 cm, apex rounded or obtuse, reddish-brown, glabrous. Bracteoles: first bracteole linear-oblong, 3.7-4 cm by 0.5-0.7 cm, membranous, apex acute, edge ciliate, reddish-white, outer side with a keel along midrib; second bracteole tubular, narrowly obovate, 2.8-3 cm by 1-1.2 cm, membranous, apex shallowly denticulate, emarginate, edge ciliate, reddish-white. Flowers numerous. Calyx tube 2-3 cm long, apex trilobed, lobe apex rounded, edge ciliate, split down on one side ca. 1 cm, membranous, red or reddish-white, outer side hairy. Corolla tubular, ca. 2 cm long, white or reddish-white, glabrous; dorsal lobe oblong, 1.7-2 cm by 0.6-0.8 cm, red, apex obtuse, edge ciliate; lateral lobe oblong, 1.4-1.6 cm by 0.4-0.5 cm, red, apex rounded, edge ciliate. Staminodes absent. Labellum obovate, 5-5.5 cm by 2.5-3 cm, tapering toward apex, yellow with 2 red L-shaped stripes from base to center, apex erose and recurved. Filament flat, ca. 1 cm long, yellow, glabrous. Anther yellow, oblong, ca. 1 cm by 0.4 cm, glabrous, apex emarginate, connective appendages 2 long flat deltoid, yellow, ca. 0.8 cm long, anther crest none. Ovary oblong, 0.6-0.8 cm by 0.4-0.5 cm, white, glabrous. Style linear. Stigma funnelform, white, apex ciliate. Fruit unseen. Flowering May.

Ecology: The new species, *Amomum inthanonense* A. Chaveerach & T. Tanee, is growing on moist clay soil under the shade and fogy climate of the humid hill-evergreen forest at the altitude of 1,720 m.

Distribution: A few populations of the new species have been found only at Doi Inthanon National Park, Chom Thong district, Chiang Mai province in northern Thailand.

Etymology: The specific epithet of this new species is named following the name of the natural type location at Doi Inthanon National Park. It is an endemic species of this mountain. “Doi” in northern Thailand means “the mountain”. Doi Inthanon is the highest mountain in Thailand with the highest altitude of 2,565 m. It is a colony mountain of Himalaya that covered with hill-evergreen vegetations. So, there is very rich of biodiversity and natural resources actually in the family Zingiberaceae. Many rare and endemic species have been found at this place for example *Hymenasplenium inthanonense* N. Murak. & J. Yokoy., *Trichosanthes inthanonensis* Duyfjes & Pruesapan, *Simulium inthanonense* Takaoka & Suzuki, *Ocellularia inthanonensis* Homchantara & Coppins - Wolseley.

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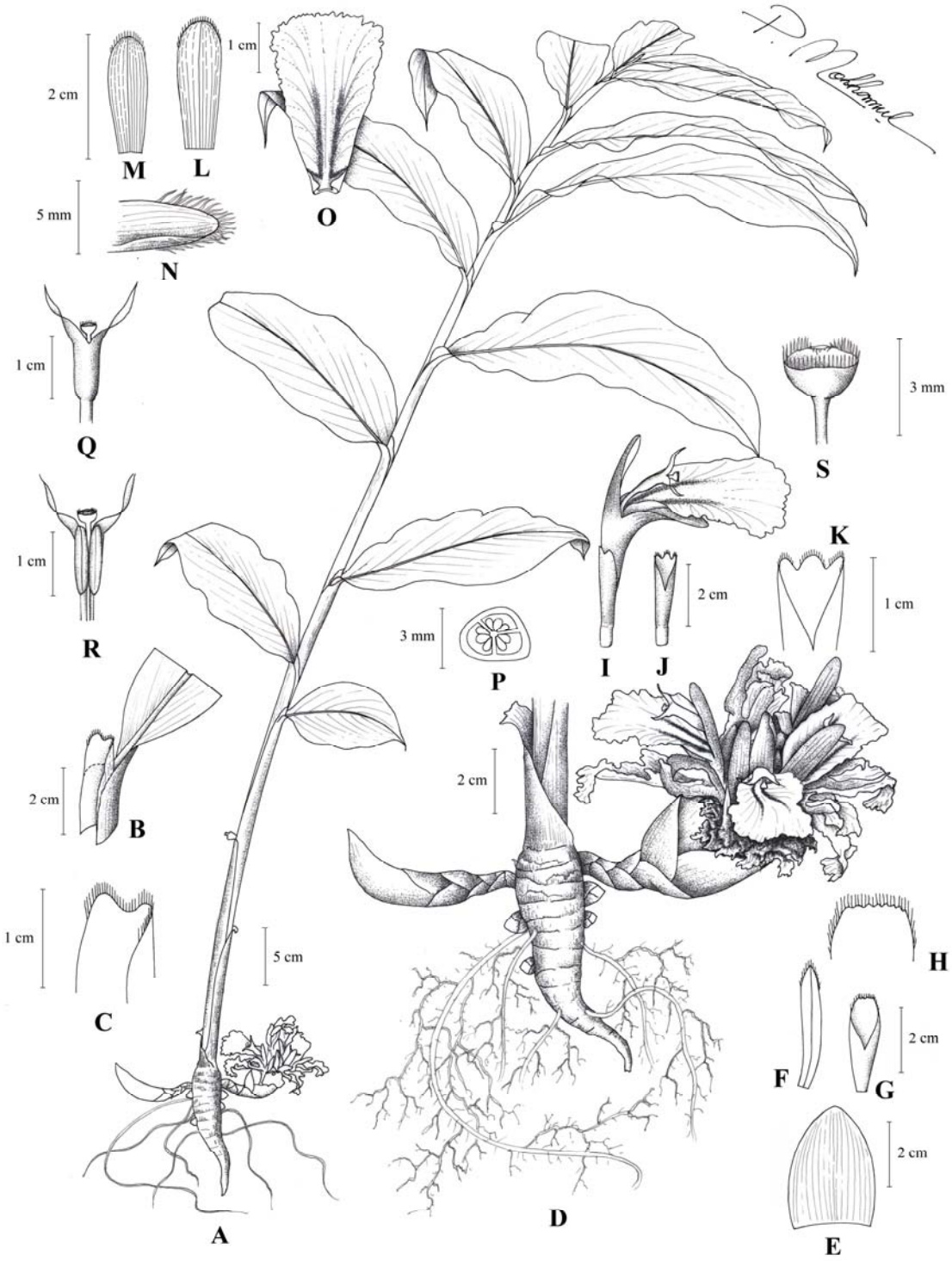


Fig. 1. *Amomum inthanonense* A. Chaveerach & T. Tanee. A: A plant with inflorescences. B: ligule with a lower part of leaf. C: Ligule showing bilobed apex and ciliated edge. D: Rhizome with a lower part of leafy stem and inflorescences. E: Bract. F: First bracteole. G: Second bracteole. H: Enlarged apex of second bracteole. I: Side view of a flower. J: Calyx tube with ovary. K: Enlarged apex of calyx tube. L: Dorsal lobe and M: lateral lobe of a flower. N: Apex of corolla lobe. O: Labellum. P: Cross section of an ovary. Q: Top view and R: Front view of anther. S: Stigma. (Drawing by Piya Mokkamul).

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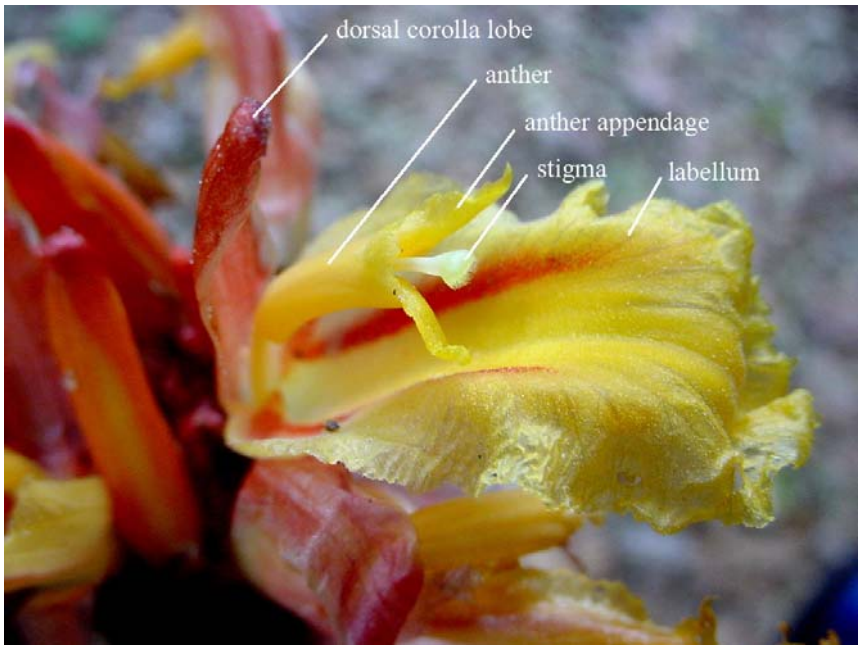


Fig. 2. An opening flower showing labellum, corolla lobes, anther, appendages and stigma. (All photos taken by Piya Mokkamul).



Fig. 3. Natural plant habit showing leaf blades, petioles and ligules.

Notes: This species is similar to *A. thysanochililum* S. Q. Tong & Y. M. Xia from Yunnan, China in following characters: leaves sessile; leaf blade oblong-lanceolate, glabrous; base cuniate; peduncle with scalelike sheaths pale red (nearly similar to peduncle of a new species covered with small bracts); bracts ovate; bracteoles purplish red, tubular; calyx pale purplish red, slightly hairy, apex 3-toothed; staminode absent; labellum yellow with two red stripes from center to base. This new species is an endemic plant of Doi Inthanon National Park in Thailand.

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泰國北部荳蔻屬(薑科)一新種

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(收稿日期：2007 年 6 月 4 日；接受日期：2007 年 12 月 3 日)

摘　　要

本文描繪在泰國北部發現之薑科荳蔻屬一新種，*Amomum inthanonense* A. Chaveerach & T. Tanee。本種非常類似梳唇砂仁 (*A. thysanochililum* S. Q. Tong & Y. M. Xia)，但可以數個特徵區別。最重要的區別特徵為植株高達 1.3 公尺，葉舌先端二裂，邊緣具細毛；葉片橢圓狀矩圓形，葉基漸尖、楔形或歪斜，葉端銳尖至漸尖；總花梗長 1-2 公分；第一枚小苞片線狀矩圓形，先端具細毛，第二枚小苞片倒卵形，先端具細毛；花冠筒白色或淡紅色，背裂片與側裂片矩圓形；花藥黃色，矩圓形，先端微凹，藥隔附屬物 2 枚，長扁三角形，黃色；子房光滑。

關鍵詞：荳蔻屬、*Amomum inthanonense*、薑科、新種、泰國。

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