

## *Kaempferia lophuriensis* (Zingiberaceae), a New Species from Central Thailand

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(Received on January 7, 2010)

A new species of *Kaempferia* L. (Zingiberaceae) from Central Thailand, *K. lophuriensis*, is described and illustrated. This new species belongs to the *K. rotunda* group (inflorescences on separated shoots arising from the rhizomes and appearing before pseudostems) and can be easily recognized by its 2–3 large orbicular leaves, red broadly-triangular and hairy ligules with obtuse or rounded apices, and rectangular or broadly obovate anther crests with tridentate to crenate apices. Relationship with its closely related taxon, *K. grandifolia* Saensouk & Jenjitt., is also discussed.

**Key words:** *Kaempferia lophuriensis*, new species, Thailand, Zingiberaceae.

The genus *Kaempferia* L. (Zingiberaceae) comprises approximately 40 species, mostly distributed from India, South China, to Malesia (Mabberley 2008). Several Thai taxa are ethnobotanically important: Ja Wan (*K. angustifolia* Rosc.), Wan Nok Khum (*K. elegan* Wall. ex Baker), Wan Thipanate (*K. rotunda* L.) to mention a few. Dried rhizomes of some species are used as ingredients in Thai traditional herbal drugs, e.g., Wan Pro Hom (*K. galanga* L.), Wan Pro Pa (*K. roscoeana* Wall.).

Taxonomically, this genus can be divided into two groups: the *K. rotunda* group and the *K. galanga* group. Inflorescences of the prior group appear on separate shoots arising from the rhizomes and appearing before pseudostems, while those of the latter group are terminal on the pseudostems. Among the seventeen taxa known for Thailand (Picheansoonthon and Koonterm

2008, 2009), only three species belong to the first group, *K. rotunda* L., *K. candida* Wall., and *K. grandifolia* Saensouk & Jenjitt.

In this paper, the fourth species (for Thailand) of the *K. rotunda* group is described and illustrated. With this new taxon, 18 *Kaempferia* species are presently recognized for Thailand. The relationship between this new taxon and other closely related species is discussed.

***Kaempferia lophuriensis*** Picheans., sp. nov. [Figs. 1, 2]

*Kaempferiae grandifoliae* similis, vaginis aphyllis glabris, foliis 2 vel 3 suborbicularibus ad orbicularibus supra sparse pubescentibus, ligulis late triangularibus pubescentibus apicibus obtusis vel rotundatis, staminodiis lateralibus obovatis albis ad dilute purpureis apicibus

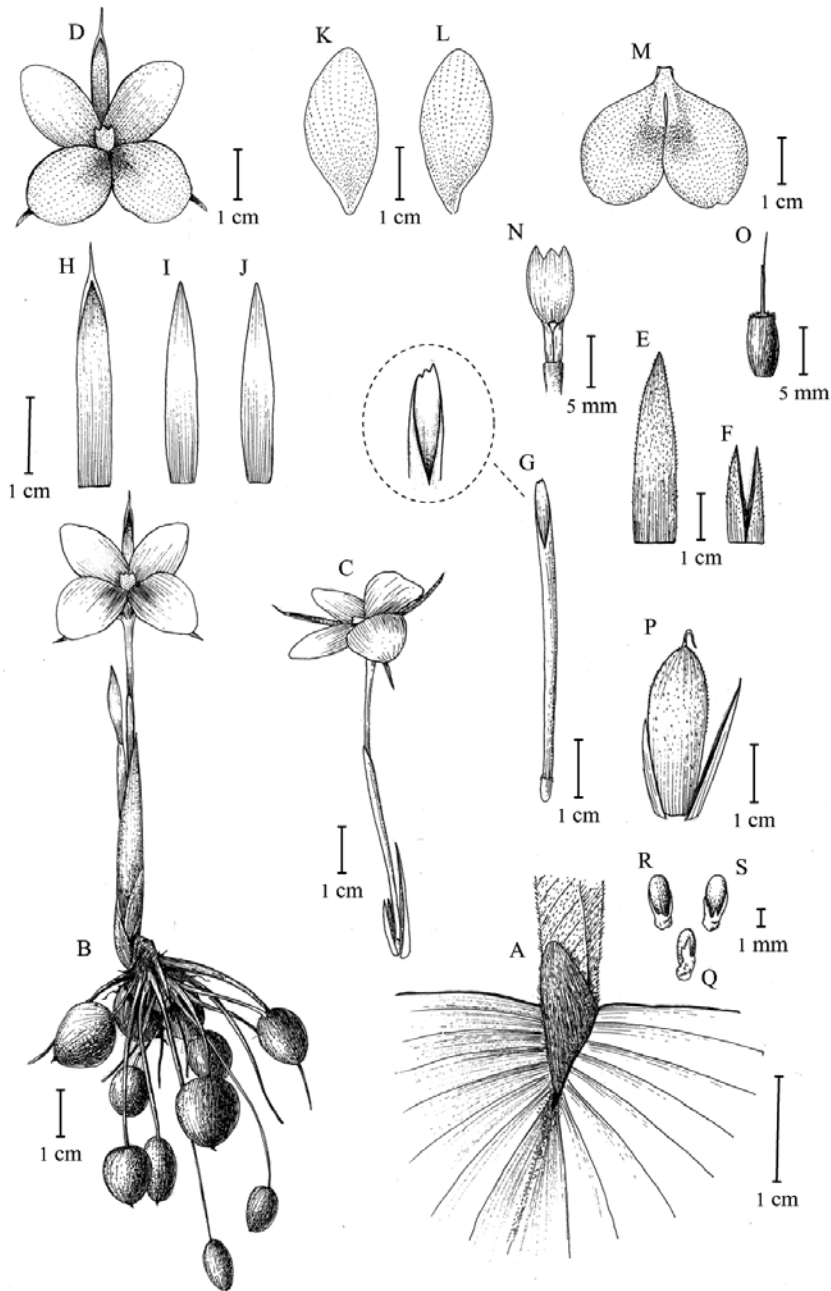


Fig. 1. *Kaempferia lobburiensis* Pichens. A. Part of leaf showing the ligule. B. Flowering shoot, showing the inflorescence with a front view of the flower, rhizome and tuberous roots. C. Flower (oblique view), showing bract, bracteole, calyx tube, corolla tube, corolla lobes, staminodes, and labellum. D. Flower (top view), showing part of the three corolla lobes, staminodes and labellum. E. Bract. F. Bracteole. G. Ovary and calyx tube. H. Dorsal corolla lobe. I–J. Lateral corolla lobes. K–L. Stamines. M. Labellum. N. Anther and anther crest and part of the filament. O. Ovary with stylodial gland and part of the style. P. Fruit with bracteole and bract. Q–S. Seeds. Drawn by Chalermchoke Boonchit.

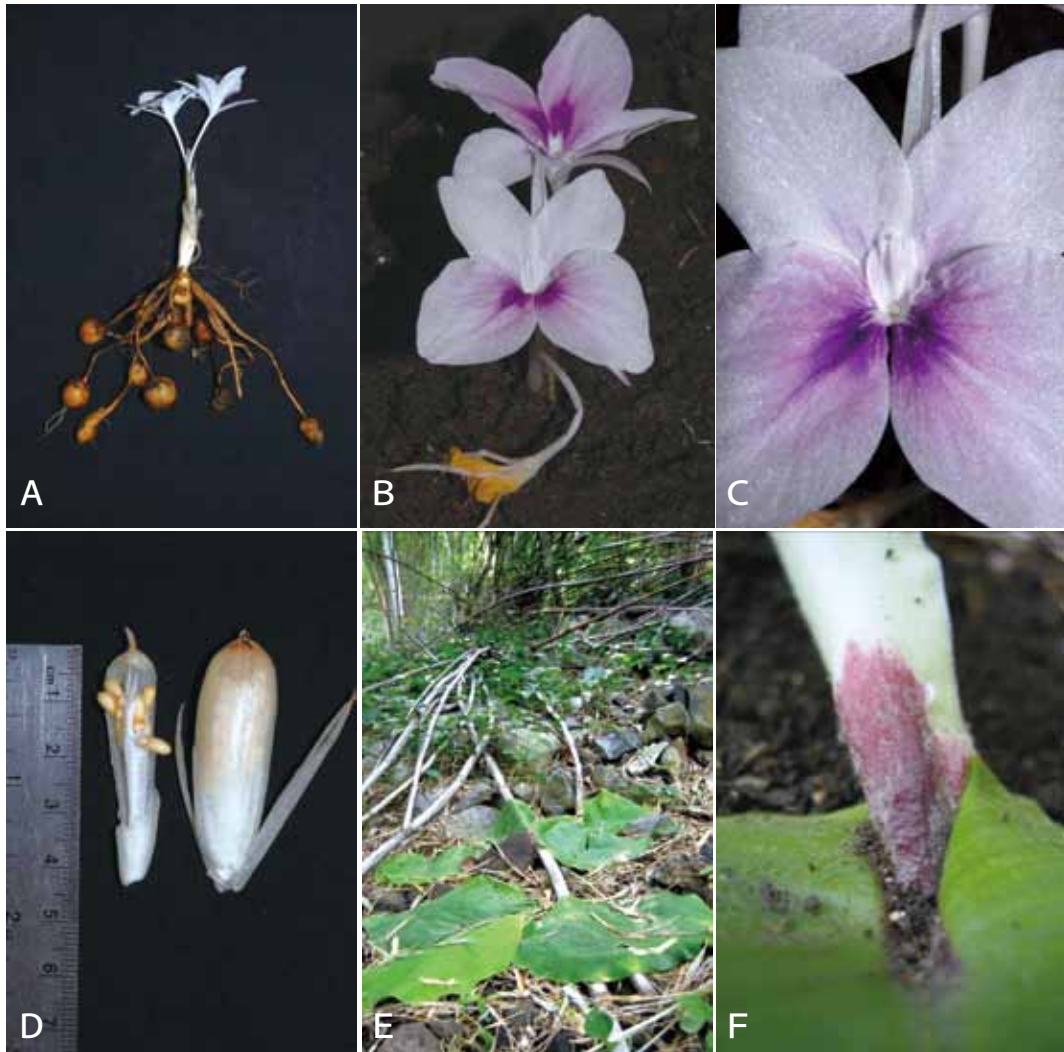


Fig. 2. *Kaempferia lopburiensis* Pichens. A. Habit, showing roots, rhizome and an inflorescence. B. Flowers. C. Top view of flower, showing an anther crest. D. Fruits and seeds. E. The plants in its type location. F. Part of leaf showing the red and hairy ligule. Photographed by Chayan Pichansoonthon (A–E) and Supachai Koonterm (F).

rotundatis, labellis purpureis basi aterioribus, antherae cristis rectangularibus ad late obovatis apicibus tridentatis vel crenatis differt.

**Type:** Thailand. Changwat Lopburi, Amphoe Mueang, Khao Sa-ang, 14°49'85.2"N 100°44'87.0", alt. 200 m, 8 April 2008, Pichansoonthon & Koonterm 154 (BKF–holotype; BK, SING–isotype).

Perennial herb. Roots fibrous with globular to fusiform, tuberous storage. Rhizome short,

erect. Bladeless sheaths 3–4, 3.1–7.2 cm long, glabrous. Leaves 2–3, radical, almost horizontal and near the ground; blades suborbicular to orbicular, 22.5–32 × 21.5–25 cm, base cuneate, apex acute to acuminate, upper surface pale green with light purple band along the margin, sparsely hairy, lower surface pale green, pubescent; ligule broadly triangular, 1.0–1.4 cm long, apex obtuse to rounded, hairy. Inflorescences produced towards the end

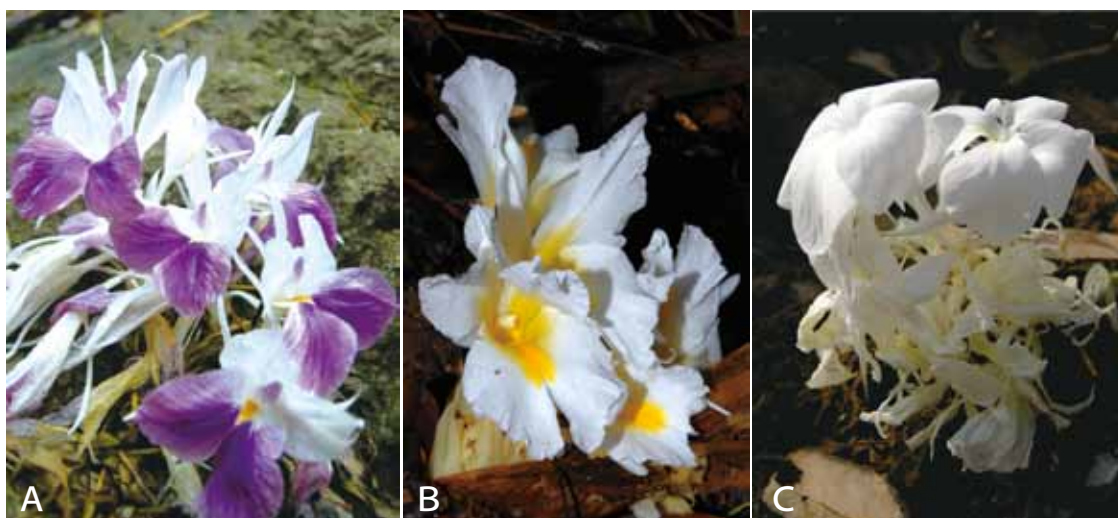


Fig. 3. Comparison in flower among Thai *Kampferia* species. A. *Kaempferia rotunda* L. B. *K. candida* Wall. C. *K. grandifolia* Saensouk & Jenjitt. Photographed by Supachai Koonterm (A) and Chayan Picheansoonthon (B, C)

of the dry season from the leafless rhizomes, peduncle 0.5–1.3 cm long, hairy. Flowers 7–10; sterile bracts 2–3, 4.8–5.2 × 1.8–2.1 cm; bracts lanceolate, apex cuspidate or mucronate, 3.4–4.2 × 0.8–1.2 cm, pale green, hairy; bracteoles membranous, lanceolate, 2.0–2.5 × ca. 5 mm, apex 2-lobed, apex of each lobe acute, hairy; calyx tubular, 5.0–5.5 cm long, split ca. 1 cm on one side, apex 3-lobed, sparsely hairy at apex; corolla tube white, 7.6–8.8 cm long; dorsal corolla lobe lanceolate-oblong, 2.8–3.0 × ca. 0.5 cm, apex hooded with a thorn-like point ca. 5 mm long; lateral corolla lobes white, oblong, incurved, 2.8–3 × 4–5 mm, apex acute; lateral staminodes white to pale purple, obovate, 2.8–3.2 × 1.4–1.8 cm, apex rounded; labellum light purple, deep purple toward the base, obovate to suborbicular, 2.8–3 × 3.0–3.6 cm, apex deeply bilobed, each lobe obovate, 2.4–2.5 × 1.9–2 cm; filament ca. 1 mm long, anther 4–5 × 1–2 mm, anther-crest rectangular or broadly obovate, 0.7–1 cm × 3–5 mm, apex tri-dent to crenate; ovary cylindrical, 5–7 × 3 mm. pubescent toward the upper part, placentation axile; stylodial gland 1, filiform ca. 4 mm long; stigma conical, margin ciliate. Capsule, cylindrical to ellipsoid, 3.5–4 ×

1.2–1.9 cm, whitish to pale reddish, dehiscing by 3 valves from the apex, valves recurving. Seeds greenish to brownish with white aril.

Phenology: Flowering from March to April; fruiting from April to May.

Distribution: Central Thailand (Changwat Lopburi).

Ecology: This new species grows on decayed limestone soil under bamboo shade in dry deciduous forest at the altitude of 200–220 m.

Vernacular name: Pro Hu Chang.

Use: The roots and rhizomes of this new taxon are used medicinally by local healers.

Etymology: The specific epithet of this new species is referred to the type location, Changwat Lopburi in Central Thailand.

Note: Including this new taxon, the *K. rotunda* group in Thailand comprises four species: *K. rotunda* (Fig. 3A), *K. candida* (Fig. 3B), *K. grandifolia* Saensouk & Jenjitt. (Fig. 3C), and *K. lopburiensis* Picheans. They can further be divided into two subgroups: the *K. rotunda* subgroup characterized by the erect petiolate leaves and the *K. grandifolia* subgroup. Two species, *K. candida* and *K.*

Table 1. Morphological comparison of *Kaempferia grandifolia* Saensouk & Jenjitt. and *K. lopburiensis* Picheans.

	<i>K. grandifolia</i>	<i>K. lopburiensis</i>
Leaf		
Number	3–4	2–3
Shape	obovate or elliptic	suborbicular to orbicular
Surface	upper surface glabrous	upper surface sparsely hairy
Ligule	broadly triangular, 6–8 mm long, apex 2–4-lobed, glabrous	broadly triangular, 1–1.4 cm long, apex obtuse or rounded, villous
Inflorescence		
Lateral staminodes	white	white to light purple
Labellum	white with yellow spots at base, apices deeply divided to the base	purple, deeper purple at the base, apices deeply divided to the base

*rotunda*, belong to the first subgroup and the other two species (*K. grandifolia* and *K. lopburiensis*) belong to the latter subgroup. In the latter subgroup this new taxon can be easily distinguished from *K. grandifolia* by its glabrous bladeless sheaths; 2–3 suborbicular to orbicular leaves, upper surface sparsely hairy; broadly triangular and hairy ligules with obtuse or rounded apices; obovate, white to pale purple lateral staminodes with rounded apices; purple labella, deeper at bases; and rectangular or broadly obovate anther crests with tri-dent or crenate apices (Table 1).

This research project is a part of the five-year project entitled “Studies on fundamental botanical knowledge and DNA fingerprints of the Thai medicinal Wan”, financially supported by the Thai Traditional Medical Knowledge Fund of the Ministry of Public Health. The

author would like to thank Dr. J. F. Veldkamp (Leiden) for the Latin diagnosis, staffs of K, BM, P, SING, BK, BKF, PSU and QSBG for herbarium accesses, staff of our research group: Mr. Chalermchoke Boonchit, Mr. Supachai Koonterm, Mr. Jeeradej Mayoe, Mr. Piyapong Yupparach, Mr. Vit-ya Karndee and Miss. Pompimon Wongsuwan for field assistances

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### C. ピチエアンズーントン：タイ中部産 *Kaempferia* (ショウガ科) の1新種

タイ中部からショウガ科 *Kaempferia* の1種, *Kaempferia lopburiensis* Picheans. を記載し, 図示した. この新種は花序が偽茎よりも先に地下茎から伸びるシュートにつくことで特徴付けられる *Kaempferia rotunda* 群に所属し, この群の他の種からは, 円形の葉が2~3枚付き, 先端が鈍形あるいは円形となる, 赤色かつ広三角形で有

毛の葉舌をもち, 先端が三裂するかあるいは波状縁となる葯隙 anther crest をもつことで容易に区別できる. 本種に最も近縁な *K. grandifolia* Saensouk & Jenjitt. との関係についても論議した.

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