Kaempferia lopburiensis (Zingiberaceae), a New Species from Central Thailand

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A new species of Kaempferia L. (Zingiberaceae) from Central Thailand, K. lopburiensis, 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 lopburiensis, 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 lopburiensis 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 lateralis obovatis albis ad dilute purpureis apicibus

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rotundatis, labellis purpureis basi aterioribus, antherae cristas 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, Picheansoonthon & 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.

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**Fig. 2.** *Kaempferia lopburiensis* Picheans. 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 Picheansoonthon (A–E) and Supachai Koonterm (F).
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, placenta 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.*
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 apeces; purple labella, deeper at bases; and rectangular or broadly obovate anther crests with tri-dent or crenate apeces (Table 1).

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

<table>
<thead>
<tr>
<th>Leaf</th>
<th>K. grandifolia (Saensouk &amp; Jenjitt.)</th>
<th>K. lopburiensis (Picheans.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>3–4</td>
<td>2–3</td>
</tr>
<tr>
<td>Shape</td>
<td>obovate or elliptic</td>
<td>suborbicular to orbicular</td>
</tr>
<tr>
<td>Surface</td>
<td>upper surface glabrous</td>
<td>upper surface sparsely hairy</td>
</tr>
<tr>
<td>Ligule</td>
<td>broadly triangular, 6–8 mm long, apex 2–4-lobed, glabrous</td>
<td>broadly triangular, 1–1.4 cm long, apex obtuse or rounded, villous</td>
</tr>
</tbody>
</table>

Inflorescence

<table>
<thead>
<tr>
<th>Lateral staminodes</th>
<th>white with yellow spots at base, apices deeply divided to the base</th>
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<tbody>
<tr>
<td>Labellum</td>
<td>purple, deeper purple at the base, apices deeply divided to the base</td>
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</tbody>
</table>

References