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## RESEARCH ARTICLE

***Cinnamomum mathewianum* sp. nov. (Lauraceae) : A new species from Kerala, India.**

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**Abstract**

*Cinnamomum mathewianum* Remya, E.S.S. Kumar, Radhamany, Valsala et Jagadeesan, a new species in Lauraceae from the Agasthyamala Biosphere Reserve is described and illustrated. The new species resembles *Cinnamomum cuspidatum* Miq. in many respects, but clearly different by the short trunk; betel scented coriaceous leaves with gradually acuminate apex, perulate terminal buds, longer inflorescence with dark maroon flowers, usual 2-celled anthers in all three whorls and the ellipsoid ovary with peltate stigma. It is named after Prof. P.M. Mathew for his valuable contribution to the field of Biosystematics.

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**INTRODUCTION**

*Cinnamomum* Schaeffer consists of c. 250 species and is distributed from South East Asia to Australia (Kostermans, 1995). In India, the genus is represented by 40 species (Baruah & Nath, 2007; Geethakumary et al., 2007, 2012; Gangopadhyay, 2008), of these 18 species are reported from southern India and 16 of them are endemic to this region (Kostermans, 1993; Nayar et al., 2006).

During the course of a systematic study on the genus *Cinnamomum* of South India, the senior author collected a curious species first from the Ponmudi hills and later from the Chemungi hills in the Agasthyamala Biosphere Reserve in Kerala. On critical study with relevant literature (Kostermans, 1969, 1983; Geethakumary et al., 2007, 2012; Santhosh et al., 2011, Santhosh and Jabbar, 2014) and type specimens, it turned out to be a species new to science. It is described and illustrated here.

*Cinnamomum mathewianum* Remya, E.S.S. Kumar, Radhamany, Valsala, et Jagadeesan sp. nov. (Fig.1).

Type: INDIA, Kerala, Thiruvananthapuram district, Ponmudi Hills, 700 m, 21.11.2013 Remya Krishnan 6930 (Holotype, TBGT; Isotype, Herbarium, Department of Botany, University of Kerala).

*Cinnamomum mathewianum* is similar to *C. cuspidatum* Miq., but differs by the short trunk, creamy-white bark, perulate terminal buds, coriaceous leaves with undulating margins and gradually acuminate apex, dark maroon flowers with longer green pedicels, the usual 2-celled anthers in all the three whorls of stamens, ellipsoid ovary with peltate stigma and broadly ellipsoid fruits. The new species is further distinguished by several other respects which are tabulated below (Table-1).

Small trees, 2.5-5 m high, bark smooth, creamy-white, slimy, betel scented; branchlets slender, glabrous. Terminal buds perulate. Leaves opposite or sub-opposite, 11-15.5 × 4.5-6.2 cm, ovate-elliptic, acute or obtuse at base, undulating at margin, gradually acuminate at apex, dark green above, pale beneath, glabrous, betel scented; 2-

basal nerves arising approximately 1 cm above the base and reaching just below the acumen, midrib is raised below; petioles 0.8-1.4 cm long, glabrous. Panicles axillary or sub terminal, 4.5-9 cm long, 8-18 flowered, glabrous; main peduncle slender, yellowish green, bearing 4-5 lateral branches. Flowers not wide open during anthesis, glabrous; pedicels 1-1.4 cm long, slender, light green. Perianths broadly ovate, dark maroon in colour; outer perianths  $1.7 \times 1.6$  mm, acute to obtuse at apex; inner perianths  $1.5-1.8 \times 1.3-1.7$  mm, obtuse at apex. Stamens 9 in 3 whorls of three each, fleshy, 2-celled, (very rarely 4 celled), longer than filaments, whorls of I and II with anthers elliptic-ovate, 1-1.5 mm long, introrse; whorls III extrorse, anthers  $\pm$  oblong, 1.4-1.6 mm long, glands subsessile, attached near the base of filaments; staminodes  $\pm$  deltoid, shorter than anthers, 0.8-1.1 mm long. Ovary ellipsoid, 0.9-1.2 mm long, glabrous; style shorter than ovary, thick, 0.3-0.7 mm long; stigma peltate. Fruits ellipsoid,  $12-15 \times 8-10$  mm, cupule cup shaped, cup shallow, base conical, tepals persistent in fruits, obtuse to subacute at apex, indurate, bluish-black at maturity.

**Table 1: Comparison of *Cinnamomum mathewianum* with its allied species.**

Characters	<i>Cinnamomum cuspidatum</i>	<i>Cinnamomum mathewianum</i>
Habit	Small trees upto 6.5-9 m high	Small trees 2.5-5 m high
Bark	Purplish-brown	Creamy white
Terminal buds	Not perulate	Perulate
Lamina	Elliptic	Ovate-elliptic
Leaf apex	Caudate, abruptly constricted	Gradually acuminate, not abruptly constructed
Leaf margin	Entire	Undulating
Texture of leaves	Chartaceous to thinly coriaceous	Coriaceous
Length of inflorescence	4-6 cm long	5-9 cm long
Flowers	Drying greyish, wide open during anthesis	Dark maroon, not wide open during anthesis
Pedicels	3-5 mm long	10-15 mm long
Anthers	2-4 locular	Usually 2-locular, rarely 4-locular
Staminodes	Sagittate	Deltoid
Ovary	Subglobose	Ellipsoid
Stigma	Tri-lobed	Peltate
Fruits	Broadly ellipsoid	Ellipsoid
Cupule	Funnel shaped	Cup shaped
Persistent perianths	Triangular	Obtuse-rounded

**Flowering and Fruiting :— November-February**

**Distribution and Ecology:—** *Cinnamomum mathewianum* grows in evergreen forests between 700-1000 m. Two populations of this species are found in the Agasthyamala Biosphere Reserve with less than 25 mature individuals and several seedlings of varying age within an area of less than 10 sq km. The common associated species are *Actinodaphne malabarica* N.P. Balakr., *Antidesma montanum* Blume, *Aporusa indo-acuminata* Chakrab. & N.P. Balakr., *Cinnamomum filipedicellatum* Kosterman., *Syzygium mundagam* (Bourd.) Chithra and *Xanthophyllum arnotianum* Wight.

**Eponymy:—** This new species is named after Prof. P.M. Mathew, Former HOD, Department of Botany, University of Kerala for honouring his valuable contribution to the field of Biosystematics.

**Notes:—** Kostermans (1969) described *Cinnamomum alexei* from the Western Java in Indonesia. Santhosh et al. (2011) reported it from Ponmudi hills in Kerala. They stated that their plants possessed strong betel scented leaves and bark, and 2-celled anthers in all the stamen whorls. However, these characters were not mentioned by Kostermans in his protologue. Soh (2011) has merged *C. alexei* with *C. verum* J.S. Presl. without providing apposite taxonomic justification. Santhosh and Jabbar (2014) resurrected *C. alexei* back to its original status. Later, Soh (pers. commun.) explicitly expressed his opinion of considering *C. alexei* as the synonym of *C. verum*, hence we followed the taxonomic concept of Soh (2011) here. He further pointed out that *C. alexei* reported from Kerala might be an undescribed species. Perusal of herbarium specimens of *C. alexei* reported from Kerala housed at TBGT showed some similarities with *C. mathewianum*, but found different by several other respects. However, we abstain from describing it as a new taxon pending further investigation in future.

**Additional specimens examined:** — INDIA: Kerala, Thiruvananthapuram district, Chemungi Hills, 1650 m, 07.12.2013 Remya Krishnan 6931(Paratype: Herbarium, Department of Botany, University of Kerala).

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Figure 1: *Cinnamomum mathewianum* Remya, E.S.S. Kumar, Radhamany, Valsala et Jagadeesan sp. nov. a. a flowering twig, b. terminal bud, c. part of an inflorescence, d. a flower, e. an outer perianth lobe, f. an inner perianth lobe, g. an outer stamen, h. stamen (whorl III), i. a staminode, j. a fruit, k. pistil.

