

***Ganoderma ramosissimum* J.D. Zhao, a New Record to South India from Kerala State**

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**ABSTRACT**

***Ganoderma ramosissimum* J.D. Zhao, a species with laccate pileus and dichotomously branched stipe was collected from Kerala state, India and is described here based on macro-micro morphological characters. It is a new record to South India.**

**Keywords:** Agaricomycetes, Kerala, Polyporales, Taxonomy, White rot

**INTRODUCTION**

The genus *Ganoderma* was established by Karsten (1881) with *Polyporus lucidus* (Curtis) Fr. (= *Ganoderma lucidum* (Curtis) P. Karst.) as the type species (Moncalvo and Ryvarden 1997). Many *Ganoderma* species are pathogenic in nature, causing various diseases to plants including various types of wood rot and wood decay (Ryvarden 2004; Pilotti 2005; Dai *et al.* 2007; Cao and Yuan 2013; Coetzee *et al.* 2015). The genus has a worldwide distribution in the tropical and temperate regions, including Africa, America, Europe, and Asia (Pilotti 2005; Cao *et al.* 2012; Wong *et al.* 2012; Cao and Yuan 2013).

*Ganoderma* is characterized by distinctive laccate or non-laccate, sessile to stipitate basidiomata and double-walled basidiospores with interwall pillars (Karsten 1881; Moncalvo and Ryvarden 1997). There are 495 records in the Index Fungorum (<http://www.indexfungorum.org/>; accessed date: 24 May 2024).

During our ongoing studies on poroid fungi of Thiruvananthapuram District, Kerala, India, an interesting *Ganoderma* species with laccate pileus and dichotomously branched stipe was collected. It was identified as *Ganoderma ramosissimum* J.D. Zhao based on macro-micro morphology and is described here in detail.

**MATERIALS AND METHODS***Morphological studies*

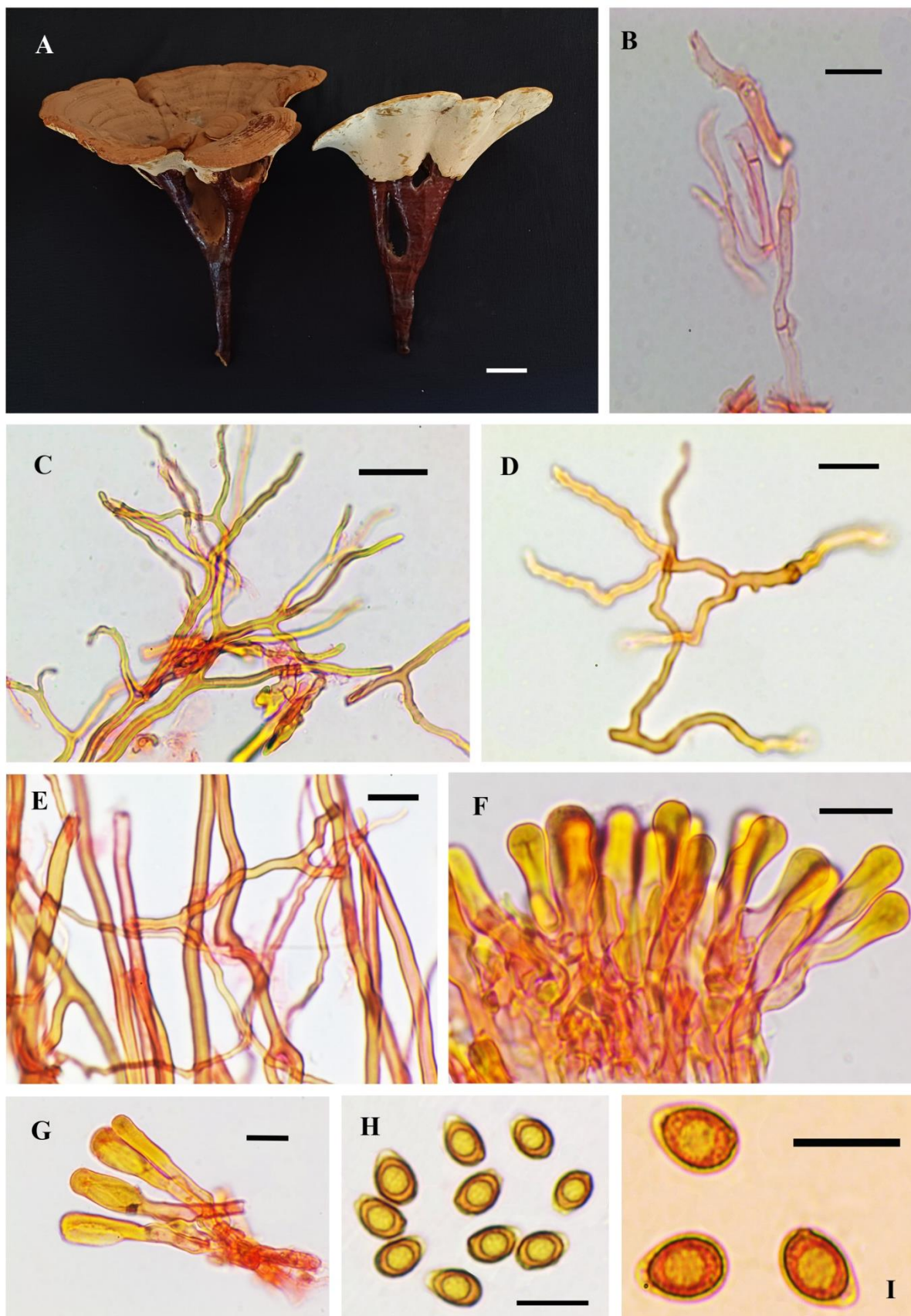
Gross morphological descriptions are based exclusively on fresh materials collected from Kerala State, India. Microscopic characters were

studied on dried material using hand cut sections of basidiomata stained with 1% Congo red and mounted in 3% solution of KOH and examined under an Olympus CX43 optical microscope (Olympus, Japan). For evaluation of the range of spore size, 20 basidiospores were measured for length and width. Spore quotient ( $Q = L/W$ ) was also determined. Color coding follows that of Kornerup and Wanscher (1978). Microphotographs were made with a Magcam DC10 digital camera attached to the same microscope (Olympus, Japan). The Specimen is deposited in the Mycological Herbarium of Postgraduate and Research Department of Botany, Government College for Women, Thiruvananthapuram.

**RESULTS***Taxonomy*

***Ganoderma ramosissimum* J.D. Zhao, *Acta Mycologica Sinica*, **8(1)**:29, 1989. **Figure 1****

*Basidiomes:* annual, pileate, stipitate. *Pileus* upto 19 cm in length, 13 cm broad, and 0.8 cm thick; *Pileus* shape suborbicular, dimidate, irregular, corky; *Pileus* surface laccate, radially sulcate; *Pileus* color dark brown (7F8/8F8) towards the disc and henna to reddish brown (7E8/8E8) elsewhere; *Pileus* margin wavy to regular, cognac to brown (6E7/6E8), zonate. Hymenophore poroid; Pores 4–6 in number per mm, round to angular; Dissepiments upto 60µm thick; Pore surface white to yellowish white (4A1/4A2) when fresh, turning raw sienna (6D7) on bruising; Pore tube 5 mm in length. Context upto 5 mm thick, with a brown coloured 1 mm thick resinous band.



**Figure 1:** *Ganoderma ramossissimum*. A, Habit; B, Generative hyphae; C, Arboriform skeletal hyphae; D, Skeletoligative hyphae; E, Skeletal hyphae and Skeletoligative hyphae together; F and G, Cuticular elements; H, Basidiospores; I, Basidiospores enlarged. Scale bars: A=30 mm; C=20 μm; B, D-I=10 μm.

*Stipe* eccentric, upto 15 x 6 cm including dichotomies (upto 10 x 3 cm excluding dichotomies), 1-2 times dichotomously branched. Stipe surface laccate, dark brown to photo brown (8F8/9F8), solid, subcylindrical to compressed.

**Pileal crust:** hymeniodermis; *cuticular elements* 30–62 × 4.5–6.5 µm, cylindrical, cylindroclavate, clavate, rarely lobed, thick walled, smooth.

**Hyphal structure:** hyphal system trimitic; generative hyphae upto 3.5 µm broad, hyaline, and unbranched, thin-walled, with clamp connections; skeletal hyphae upto 4.3 µm broad, occasionally with arboriform branching, light brown, aseptate, thick-walled; skeletoligative hyphae upto 3 µm broad, branched, brown, aseptate, thick-walled.

**Basidia:** Not observed.

**Basidiospores:** (7.5–)8–9.5(–10) × (4.5–)4.7–5.7(–6), AvL=8, AvW=5, Q=1.4–1.6, ellipsoid, truncate at the apex, acyanophilous, inamyloid, exospore thin, subhyaline, smooth, endospore thick, brown, with inter-wall pillars. Spore print eye brown (7F6).

**Habitat:** On *Adenanthera pavonina* L. (Mimosaceae) tree, at its base, in the campus of Government College for Women, Thiruvananthapuram.

**Specimens examined:** INDIA. Kerala State, Thiruvananthapuram district, Vazhuthacaud, 23 August 2023, MHGCWT002; Vazhuthacaud, 24 December 2023, MHGCWT003.

## DISCUSSION

*Ganoderma ramosissimum* was first described from China (Zhao, 1989). This species is peculiar in having dichotomous to trichotomous to irregularly branched stipe. From India, it has earlier been described from Northern regions viz. Punjab (Kaur, 2017), Himachal Pradesh (Kaur, 2013), Uttarakhand (Singh, 2016), and Union Territory of Chandigarh (Kaur, 2017; Kaur *et al.*, 2017). This species is hereby reported as a new South Indian record from Kerala State.

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