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LACTARIUS IGNIFLUUS (RUSSULACEAE), A NEW SPECIES FROM INDIA

K.B. VRINDA, C.K. PRADEEP, SIBI MATHEW & T.K. ABRAHAM

Tropical Botanic Garden and Research Institute, Palode, Thiruvananthapuram 695 562, Kerala, India

Lactarius ignifluus, a new species in the Russulaceae is described and illustrated from Kerala. The combination of lignicolous habitat, bright scarlet, veined basidiomes, unchanging scarlet red latex and lack of sphaerocytes in the hymenophoral and pileal trama characterize this new species.

During a survey of the agaric flora of Western Ghats, we collected a striking agaric with an unusually bright cap growing on the living dicotyledonous herbs and shrubs in one of the sacred groves of Kerala. Part of the material was subsequently sent to Kew for identification, where Dr. D.N. Pegler determined it as a species of *Lactarius* close to *L. adhaerens* Heim, originally described from Madagascar. Since the material has shown to differ from the latter in several features, notably with regard to colour of latex, it is described below as a new species. The observations are based on fresh specimens collected by the authors. Colours in descriptions are based on Kornerup & Wanscher (1967). Microscopical observations are made from sections mounted in 5% KOH and in Melzer's reagent. The specimens are deposited at the Mycological Herbarium of the Microbiology Division, TBGRI (TBGT) and part at the Royal Botanic Gardens, Kew (K).

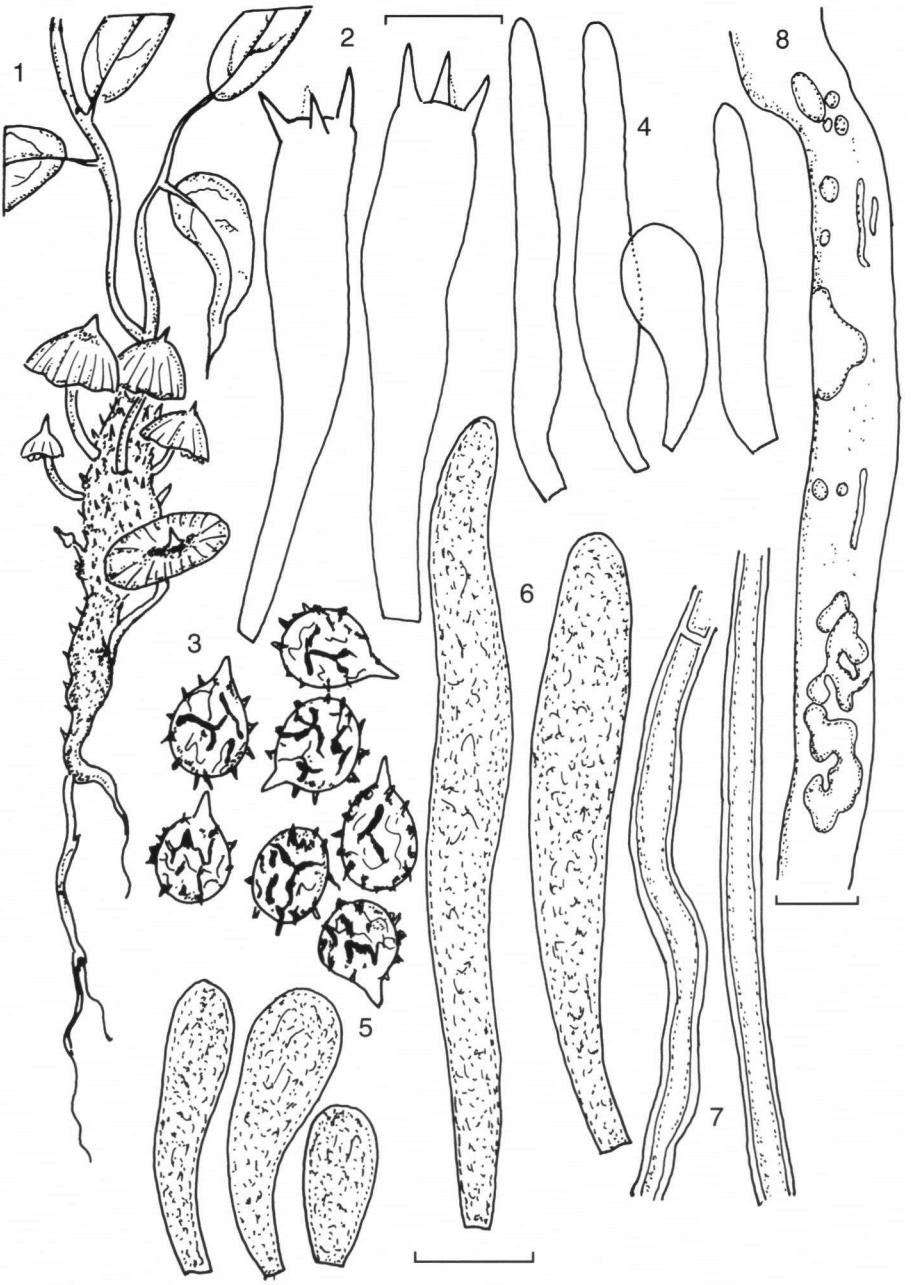
Lactarius ignifluus Vrinda & C.K. Pradeep, *spec. nov.* — Figs. 1–11

Pileus 5–30 mm latus, conico-convexus, expansus, papillatus dein applanatus vel depressus, scarletinus. Lamellae decurrentes, subdistantes, salmoneae. Latex scarletinus, immutabilis. Stipes 1.5–3 cm longus, 1–3 mm crassus, glaber, mycelio albido basale praeditus.

Sporae 6–7.5 × 6–7.5 µm, globosae ad subglobosae, amyloideae, verrucis et cristis ornate, reticulatae. Acies lamellarum sterilis. Cystidia 27–49.5 × 3–6 µm, hyalina, tenuitunicata. Pseudocystidia 33–144 × 6–10.5 µm, clavata vel fusiformia. Trama hymenophoralis subregularis. Cellulae cuticulae pilei globosae vel subglobosae.

Holotypus: India, Kerala state, Iringole sacred grove, 1 Oct. 1996, *Vrinda 3624* (TBGT, isotypus K).

Pileus 5–30 mm diam., convex, becoming applanate, always with an acute papillate umbo; surface 'scarlet' (9A8), fading to 'pastel red' or 'greyish red' (7A5-8B6) when exposed to rain, immediately turning bright scarlet when cut or bruised, dry, non-viscid, veined, with a non-separable cuticle; margin entire. Lamellae decurrent, 'salmon' (6A4), 2–3 mm wide, ventricose, subdistant with lamellulae of 3 lengths, immediately turning bright scarlet when cut; edge concolorous with the sides, entire. Stipe 15–30 × 1–3 mm, central, cylindrical, equal, fistulose; surface concolorous with pileus, whitish below, hirsute at the base, with abundant aborted basidiomata arising from an extensive



Figs 1–8. *Lactarius ignifluus*. — 1. Habit × 1; 2. basidia; 3. spores; 4. cheilocystidia; 5. cheilomacrocystidia; 6. pleuromacrocystidia; 7. hyphae of the stipe hairs; 8. laticiferous hypha. Bar = 10 µm.

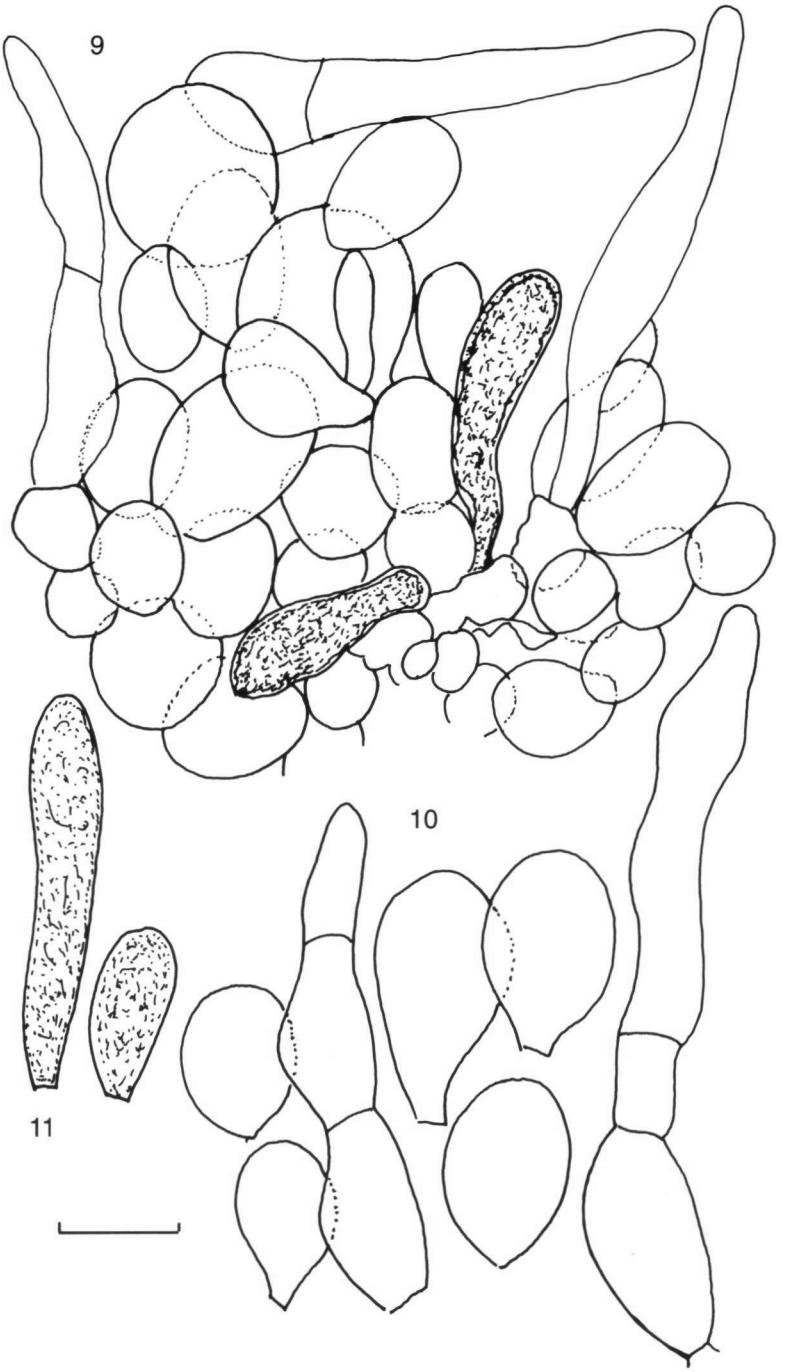
thick, white mycelial mat covering the woody substrate on which it grows. Annulus none. Odour pleasant. Latex 'scarlet' (9A8) from the beginning, unchanging, watery, acrid to taste, very irritating to the tongue. Context thin, up to 0.5 mm at centre, concolorous with pileus. Spore print white.

Spores 6–7.5 × 6–7.5 µm, globose to subglobose (Q = 1.03; n = 50) hyaline, with a strongly amyloid ornamentation composed of ridges, fine lines and verrucae forming a subcomplete reticulum; hilar appendix 1.3–2.4 × 1.2–1.8 µm, hyaline. Basidia 30–52.5 × 7.5–18 µm, clavate, 4-spored. Lamella edge sterile, marginal cells 27–49.5 × 3–6 µm, versiform, mostly narrowly fusoid to lageniform, thin-walled, hyaline. Cheilomacrocystidia subclavate, 20–25 × 7–9 µm, thin-walled, with dense granular content. Pleuromacrocystidia fairly abundant, 33–144 × 6–10.5 µm, clavate to fusiform with granular amorphous contents. Hymenophoral trama subregular with thin-walled subparallel hyphae, 3–12 µm diam., non-gelatinized, lacking any sphaerocytes. Subhymenium well-developed, composed of short, cylindrical, multiseptate elements. Pileipellis an epithelium to palisade, 25–50 µm thick, composed of isodiametric to irregular cells of 9–21 × 7.5–15 µm, which are densely packed; terminal cylindrical elements scarse, thin-walled, 16.5–56 × 3–6 µm, intermixed with scattered dermatomacrocystidia 13.5–30 × 4.5–7.5 µm. Context composed of radially arranged, interwoven, hyaline, thin-walled hyphae of 1.5–16.5 µm diam., lacking sphaerocytes. Trama of stipe composed of densely packed, thin-walled, parallel hyphae, hyaline and non-gelatinized, occasionally septate. Basal mycelial mat, stipe hairs and the aborted basidiomata are made up of compactly arranged, thick-walled, hyaline, non-septate, unbranched, parallel hyphae, 1.5–3 µm diam. Caulocystidia absent. Lactiferous hyphae rather common. All hyphae lacking clamp-connections.

Habitat — Growing on living, standing stems of dicotyledonous herbs and shrubs (members of Annonaceae and Piperaceae), in groups occasionally scattered on soil at the base of these plants.

Specimens examined. INDIA: Kerala state, Iringole sacred grove, 1 Oct. 1996, *Vrinda 3624* (holotype, TBGT; isotype K (M) 47290); 16 Aug. 1994, *Pradeep 1377*; 15 Aug. 1995, *Pradeep 2441*; 23 Aug. 1997, *Sibi 4080*; 30 July 1999, *Pradeep 4793*; 9 Oct. 2000, *Pradeep 5213*.

Lactarius ignifluus is characterized by a distinctive combination of features such as the small, acutely umbonate, reddish, centrally stipitate basidiomes arising from an extensive thick mycelium, covering the woody substrate on which it grows, globose to subglobose spores with a strongly amyloid, almost reticulate ornamentation, sterile lamella edge, abundant pleuromacrocystidia and the total absence of sphaerocytes in the trama and context. Another characteristic feature of the present taxon is its pileipellis, which is an epithelium to palisade (Verbeken, 1998). Its tropical origin, lignicolous habitat, the presence of thin-walled elements in the epicutis, the filamentous hymenophoral trama lacking sphaerocytes, the nearly globose spores and the presence of pseudocystidia on the sides of the lamellae are indicative of section *Venolactarius* (R. Heim) Sing. *Lactarius adhaerens* R. Heim from Madagascar (Heim, 1938) seems to be related to *L. ignifluus* in the hirsute nature of the stipe base, subglobose spores and the epithelial pileipellis. *Lactarius ignifluus,* however, differs from *L. adhaerens* in the size, colour, and shape of the basidiomes, colour and taste of the exudation, size of the spores and the nature of basidia and cystidia. The lignicolous basidiomes invite



Figs. 9–11. *Lactarius ignifluus*. — 9. Surface view of the pileipellis; 10. epithelial elements; 11. dermatomacrocystidia. Scale bar = 10 µm.

comparison with the section *Panuoidei* (Singer, 1984), but apart from the habitat, there are no other significant similarities between them. The most important macroscopic features distinguishing *L. ignifluus* are the bright scarlet, acutely umbonate pileus and its latex that is invariably bright scarlet.

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REFERENCES

Heim, R. 1938. Diagnoses Latines d'espèces et varietés nouvelles de Lactario-Russules du domaine oriental de Madagascar. Candollea 7: 374–393.

Kornerup, A. & J.H. Wanscher. 1967. Methuen Handbook of Colour. Ed.2. Methuen, London.

Singer, R. 1984. Tropical Russulaceae II. Lactarius section Panuoidei. Nova Hedwigia 40: 435–447.

Verbeken, A. 1998. Studies in Tropical African Lactarius species. 5. A synopsis of the subgenus Lactifluus (Burl.) Hesler & A.H. Sm. emend. Mycotaxon 66: 363–386.