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## A new species of *Hygroaster* (Hygrophoraceae) from Kerala State, India

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*Hygroaster* is a small genus in the Hygrophoraceae family with only seven species known worldwide. *Hygroaster fucatus* sp. nov. is described, illustrated and compared with related species.

**Key words** – Agaricales – Basidiomycota – taxonomy – Western Ghats

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### Introduction

*Hygroaster* Singer is a small genus of the family Hygrophoraceae comprising seven species that are differentiated mainly on the basis of basidiospore morphology and presence or absence of clamp connections. In an investigation to understand the agaric diversity of Western Ghats of Kerala, a remarkable *Hygroaster* species was encountered. On detailed examination and comparison, it was found to be distinct from all previously known species and hence described here as new.

### Methods

Macroscopic descriptions are based on fresh specimens collected by the authors. Colour codes are cited according to Kornerup & Wanscher (1978). Microscopical analysis was carried out following standard techniques. Thin free-hand sections were mounted in 3% KOH stained with 1% Congo red. The mean quotient (Q) of spore length divided by spore width was calculated from measurements of 30 mature basidiospores including ornamentation. The specimens are deposited at the Herbarium of the Royal Botanic Gardens, Kew (K).

### Results

*Hygroaster fucatus* Vrinda & Pradeep, **sp. Nov.** Figs 1 & 2

MycoBank 564806

(<http://www.mycobank.org>).

Etymology – *fucatus* (Latin), due to the presence of coloured gills.

Characterized by small to medium basidiocarps; lilaceous gills; versiform hymenial cystidia and small spores. Distinct from *Hygroaster cleefi* Franco-Molano & López-Quintero in having brownish orange pileus, nodulose smaller spores, and habitat apparently on soil.

Basidiomata small to medium sized, fleshy. Pileus 5–45 mm in diam., convex with an obtuse umbo, becoming plano-convex; surface brownish orange (5C4) to clay (5D5) with mustard brown (5E6) centre, dry, smooth, non-hygrophanous; margin incurved when young becoming straight and finally uplifted with age. Lamellae subdecurrent, dull violet (15D3) to violet grey (17B2), ventricose, up to 5 mm wide, crowded, with lamellulae of different lengths; edge concolorous with the



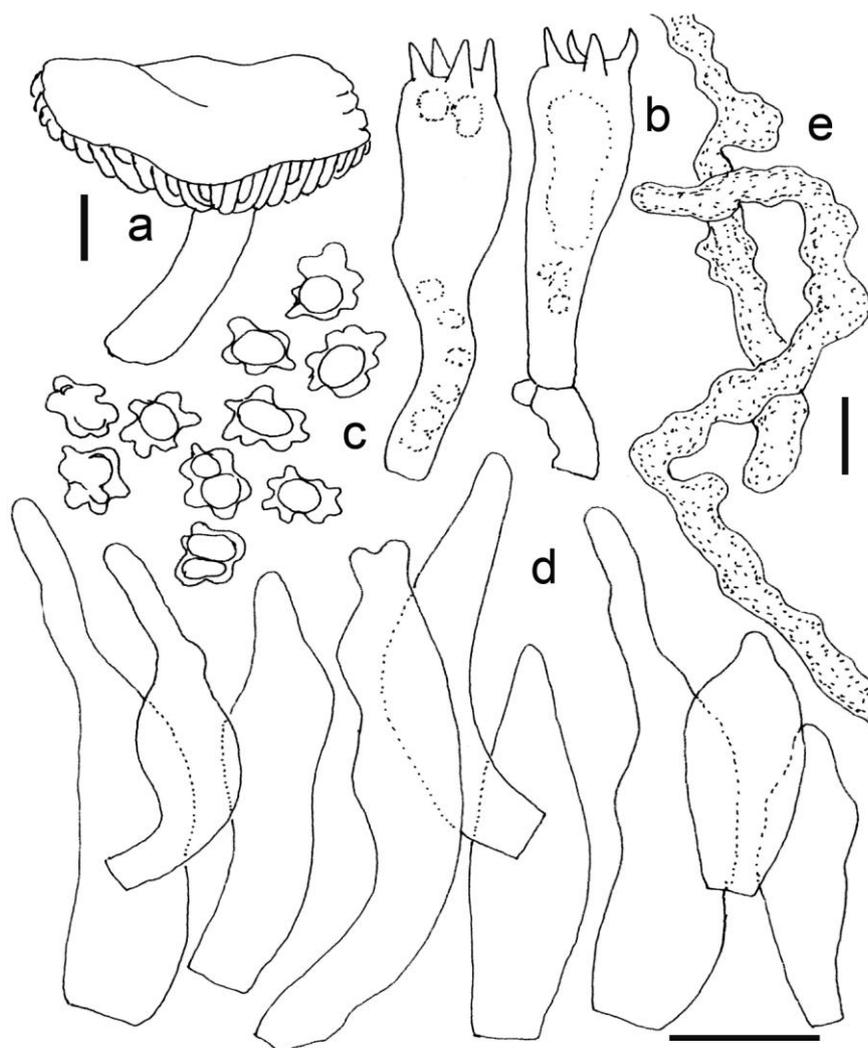
**Fig. 1** – *Hygroaster fucatus*. **a–b** Basidiomata *in situ*. Bars = 10 mm.

sides, entire. Stipe 15–45 × 1.5–6 mm, central, cylindric, curved, slightly tapering upwards, solid; surface concolorous with the pileus, smooth and glabrous, dry. Context orange-white, up to 5 mm thick, soft. Odour not characteristic. Spore print white.

Basidiospores (4.2–)4.6–6.3 × (3.3–)3.6–5(5.3 ± 0.62 × 4.1 ± 0.51) μm, Q = 1.1–1.6, Q<sub>av.</sub> = 1.3, ellipsoid to subglobose with broad conical to obtuse nodules up to 3.4 μm long, hyaline, guttulate, inamyloid. Basidia 26.4–34 × 6–7.3 μm, clavate to cylindro-clavate, thin-walled, hyaline. Lamella-edge heteromorphous with basidia, basidioles and cystidia. Cheilocystidia 26.7–47.8 × 5.6–12.5 μm, cylindro-clavate to fusiform, mucronate, often bifid, occasionally flexuous, thin-walled, with yellowish-brown vacuolar pigments. Pleurocystidia scattered at the sides of the

lamellae, similar to cheilocystidia in size and shape. Hymenophoral trama divergent from a mediostratum of medium to elongate thin-walled cells, 14–170 μm long and 3.5–11 μm wide, inflated up to 23.5 μm, with obtuse or pointed ends, rarely branched. Subhymenium composed of interwoven hyphae, 8 μm in thickness, thin-walled, hyaline. Pileipellis an epicutis of parallel to interwoven gelatinized hyphae 2.4–4 μm wide, thin-walled with yellowish-brown contents. Stipitipellis a cutis of longitudinal hyphae, 2.5–5 μm wide, thin-walled with yellowish-brown contents. Stipe trama composed of parallelly arranged hyphae, 3.3–18 μm wide, inflated up to 25 μm, thin-walled with yellowish brown contents. Caulocystidia absent.

Habitat – Solitary to scattered on forest floor, October–November.



**Fig. 2** – *Hygroaster fucatus* **a** Habit **b** Basidia **c** Spores **d** Cystidia **e** Oleiferous hyphae. Bars a = 10 mm, b–e = 10  $\mu$ m.

Known distribution – Known only from Kerala State, India.

Material examined – INDIA, Kerala State, Wayanad District, Nadavayal, 6 November 2007, Shibu P. Varghese TBGT10685 (K(M) 175076, holotype); Kollam District, Thenmala, 13 October 2004, K.B. Vrinda TBGT 8208.

### Discussion

Within *Hygroaster*, this species is distinguished by brownish orange pileus, violet lamellae, presence of hymenial cystidia, small nodulose spores, divergent hymenophoral trama and clamp connections.

Of the seven species known within the genus, the Neotropical *H. cleefi* described from Colombia is the most closely related one (Franco-Molano & López-Quintero 2007).

However, *H. cleefi* is distinct by virtue of its small, thin, olive-brown to yellowish brown basidiomes, brownish lamellae, large broadly ellipsoid to subglobose spores with broad conical spines and habitat on decayed wood.

*Hygroaster nodulisporus* (Dennis) Singer, the type species of the genus (Singer 1955, Pegler 1983) can be differentiated on account of its medium sized brownish basidiocarps, whitish lamellae, large subglobose, stellate spores, subregular hymenophoral trama and clampless hyphae.

*Hygroaster trachysporus* Z.S. Bi (Bi & Li 1988) known from China differs markedly from *H. fucatus* in its yellow to pinkish basidiocarps, large rugulose spores and irregular hymenophoral trama.

*Hygroaster agumbensis* Sathe & S.M. Kulk. is the only previous report of this genus

in India (Sathe & Kulkarny 1980) and can easily be separated from *H. fucatus* by its pale brown lamellae, homoiomerous trama, lack of hymenial cystidia and clamp connections.

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