A new species of *Leiorreuma* Eschw. (lichenized Ascomycota, Graphidaceae) from Christmas Island, Indian Ocean

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Abstract

*Leiorreuma norsticticum* sp. nov. (Graphidaceae) is described from the bark of a rainforest tree in Christmas Island, an Australian territory in the north-eastern Indian Ocean. The pale olive-green thallus contains norstictic acid, and the simple, adnate to subsessile lirellae have a strikingly pruinose disc and a thin thalline margin. The proper excipulum is brown-black and thickest at the ascomatal base, and the heavily granule-inspersed hymenium contains simple paraphyses, 8-spored asci and brownish, 6-locular, non-amyloid ascospores, 19–28 × 5.5–9 µm.

Introduction

*Leiorreuma* Eschw. (Graphidaceae), a genus of at least 21 corticolous and mainly tropical species, is characterized by its pale corticate thallus, adnate to sessile lirellae with an open and often pruinose disc, a carbonized excipulum base that becomes thinner and divergent laterally, and predominately simple paraphyses in a heavily inspersed hymenium and pale brown, non-amyloid and mostly transverselyloculate ascospores (Staiger 2002; Archer 2009). Four mainly pantropical and Palaearctic species are known from eastern Australia (Archer 2009); in this paper a fifth is documented from the bark of a rainforest tree in the Australian territory of Christmas Island in the Indian Ocean.

*Leiorreuma norsticticum* P.M. McCarthy, sp. nov.

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Figs 1 & 2

Thallus corticolous, pale olive-green, continuous, corticate and containing norstictic acid, with unbranched, adnate to subsessile lirellae 0.9–4.8 mm long and 0.40–0.64 mm wide, each with an open and persistently pruinose disc and a thin thalline margin. Proper excipulum brown-black and 50–120 µm thick at the base, ± concolorous, divergent and 25–40 µm thick laterally; hymenium 80–120 µm thick, heavily inspersed with granules and with simple paraphyses. Asci 8-spored, 24–31 × 9–12 µm (Lendemer & Knudsen 2008). Thalline margin black, 50–120 µm thick, ± concolorous, divergent and 25–40 µm thick laterally; a thin thalline margin. Proper excipulum brown-black and 50–120(–150) µm thick, heavily inspersed with minute granules, 1+ orange-brown, K+ very pale lilac (soon fading); granules not dissolving in K, N or H₂SO₄. Hypothecium hyaline, 15–20(–25) µm thick, not inspersed with granules, with or without some, oily globules, 1+ orange-brown, K+ pale lilac to medium blue, this latter colour persisting; cells rounded, thin-walled, 2–3 µm wide, forming a compact paraplectenchyma. Paraphyses predominantly simple, strongly conglutinate in water, not separating in K or N, not constricted at the septa, 1–1.8(–2.2) µm thick, heavily encrusted with granules that are 0.5–1.5 µm wide; apices neither swollen nor pigmented, with or without sparse branches. Ascii narrowly to broadly clavate, 8-spored, 70–85 × 16–20 µm [n = 10], with a short, tapering stalk; apex broadly rounded and moderately thick; wall KI–. Ascospores pale brown or pale greyish brown and 6-locular at maturity, oblong-ellipsoidal or cylindrical, straight, with rounded ends; 1+ deep red-brown, KI–, (19–)24(–28) × (5.5–)7(–9) µm [n = 30]; epispore initially c. 2–3 µm thick, c. 0.5 µm thick or not apparent at maturity; locules lenticiform or more irregular, the end locules often hemispherical; contents clear; post-mature ascospores darker, the locules collapsing, and almost appearing to have true septa. *Pycnidia* not seen.

Chemistry: Thallus containing norstictic acid (major, by TLC, but not producing needle-like crystals in K; Elix 2020).

Etyymology: The epithet refers to the diagnostic occurrence of norstictic acid in the thallus.

Remarks

The new species is distinguished from others in the genus by the thallus containing only norstictic acid, lirellae with an unbranched, open disc, an excipulum base (50–80)100(–120) µm thick, and 6-locular ascospores measuring 19–28 × 5.5–9 µm. Other taxa with 6-locular ascospores include *L. norstictatum* (A.W.Archer & Elix) A.W.Archer, from north-eastern Australia and the Solomon Islands, with a thallus containing non-amyloid, ± concolorous ascospores and a carbonized excipulum base that is 250 µm thick (Archer 2009). *Leiorreuma taiwanense* M.Nakan., Kashiw. & K.H.Moon, from Taiwan, has a chemistry similar to that of *L. norstictatum*, the lirellae have a black, canaliculate disc with tapering ends, a much thicker, carbonized proper excipulum, and shorter ascospores than in *L. norstict-icum* (Moon et al. 2008). Finally, *L叙事onomatensis* Pushp. Singh, from the Nicobar Islands, to the east of the Bay of Bengal, is certainly most similar to the newly described *Leiorreuma*, in terms of morphology and ascomatal anatomy, but it has more prominent ascomata with a considerably thicker thalline margin, a thicker excipular base (100–180 µm), and it contains constictic and stictic acids as major substances in place of norstictic acid (Singh et al. 2017). Incidentally, the only other *Leiorreuma* known to contain norstictic acid, *L. explicans* (Fink) Lendemer from south-eastern U.S.A., has submuriform ascospores that are 24–31 × 9–12 µm (Lendemer & Knudsen 2008).

*Leiorreuma norsticticum* is known only from the type locality in Christmas Island. It occurs on a narrow tree branch in primary forest where it is associated with species of *Letrouitia*, *Physcia*, *Porina*, *Pyrenula* and other genera of Graphidaceae.

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References