

Anisomeridium calcicolum sp. nov. and further new records of pyrenocarpous lichens from India

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Abstract: *Anisomeridium calcicolum* Upreti & Nayaka (*Monoblastiaceae*) from India is described as new to science. *Lithothelium hyalosporum* (Nyl.) Aptroot, and *Polymeridium albocinereum* (Krempelh.) R. C. Harris are reported as new records for the Indian lichen flora.

Key words: *Anisomeridium calcicolum*, pyrenocarpous lichens, India

Introduction

Pyrenocarpous lichens form a significant part of the microlichen flora of India. So far, more than 300 species belonging to about 30 genera have been reported by various authors from the subtropical and warm-temperate regions of India (see Upreti 1999). Only a few of them occur on limestone and these belong to the family *Verrucariaceae*. Here, a species of *Anisomeridium* growing on lime plaster is described as new to science, and new records are provided for two other pyrenocarpous lichens.

The Species

Anisomeridium calcicolum Upreti & Nayaka sp. nov.

Thallus calcicola, viridicinerascens, continuus, partim granulatus. Ascomata dispersa, raro aggregata, circa 0.25–0.5 mm diametro. Peridium nigrum incrassatumque superne; centrum pallidum. Asci clavati, 54–60 × 10–12 µm. Sporae decolores, 15–19 × 5–8 µm, 1-septatae, cellula supera latiore.

Typus: India, Uttar Pradesh, Faizabad district, at base of Gulab Bari (monument), on lime plaster, 31 October 2002, D. K. Upreti, P. K. Divakar & A. Ayub 02-002922 (LWG—holotypus).

(Fig. 1)

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Thallus epilithic (lime plaster), green to olivaceous, thin, filmy or somewhat granular in part, continuous, cracked when dry, 60–120 µm thick. Photobiont a green alga, *Trentepohlia*, cells globose, yellowish green.

Ascomata perithecioid, 0.25–0.50 mm diam., solitary or sometimes 2 or 3 confluent, hemispherical, black, glossy, shining, usually naked, sometimes covered by a thal-line layer almost up to the ostiole. Ostiole apical. Perithecial wall complete, black, up to 50 µm thick around ostiole, paler in lower parts, 35–40 µm thick. *Hamathecium* 180–250 µm diam., colourless, not interspersed with oil droplets. *Paraphyses* ± unbranched near the base, branching and anastomosing at upper level. *Asci* 8-spored, cylindrical-clavate, 60–70 × 12–16 µm, apical dome with distinct, broad ocular chamber. *Ascospores* colourless, 15–19 × 5–8 µm, 1-septate, upper cell larger than the lower.

Pycnidia black, hemispherical, superficial to submerged, 0.01–0.3 mm diam. *Microconidia* globose, rarely slightly elongated, 1–1.5 µm diam.

Chemistry. Thallus K–, C–, KC–, Pd–; TLC no substances detected.

Remarks. The new species is characterized by a calcicolous habitat, a green to olivaceous, continuous to granular thallus with mostly solitary or aggregated, 0.25–0.50 mm ascocarps and 15–19 × 5–8 µm ascospores.

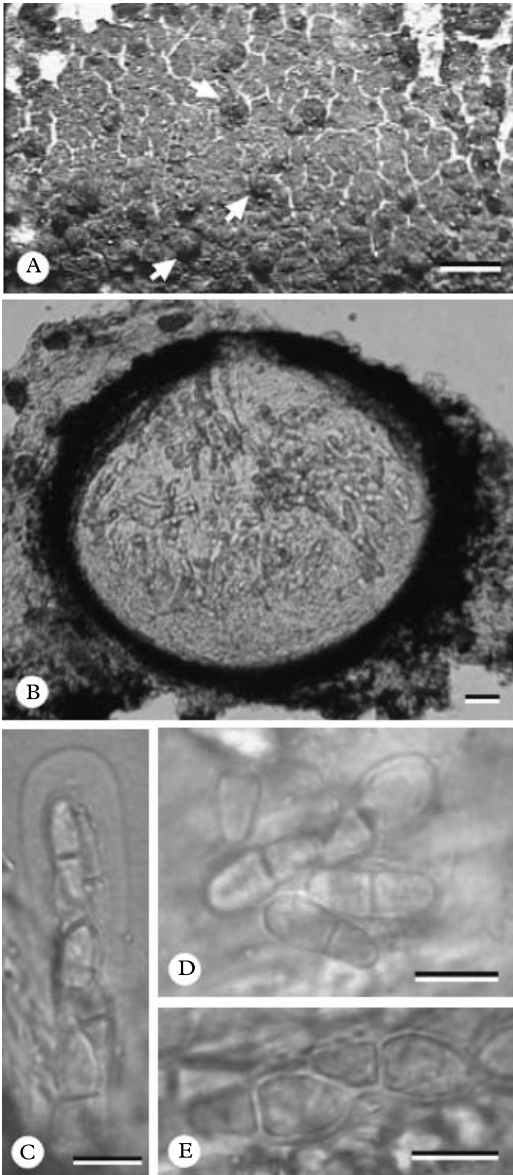


FIG. 1. *Anisomeridium calcicolum* Upreti & Nayaka (holotype). A, habit of thallus, arrows showing perithecia; B, vertical section of perithecium; C, ascus; D & E, ascospores. Scales: A=1.0 mm; B=20 μ m; C–E=10 μ m.

Harris (1995) listed 12 species of *Anisomeridium* from India and its islands and this is the first record of a calcicolous species from the country. *Anisomeridium calcicolum* has a unique habitat as it is found growing

on a man-made substratum, lime plaster, on a monument more than 200 years old in tropical central India. It grows on a moist, vertical surface near the base of the monument, in association with unidentified species of *Lichinaceae*.

The new species is compared with other calcicolous *Anisomeridium* species, although it is theoretically possible that species described from other substrata might grow occasionally on limestone. *Anisomeridium finkii* (R. C. Harris) R. C. Harris, has larger spores, *A. gregale* R. C. Harris has smaller spores (Harris 1995) and *A. hydei* Aptroot has more symmetrical spores (Aptroot & Seaward 1999).

The new species is known only from its type locality.

***Lithothelium hyalosporum* (Nyl.) Aptroot**

Bibl. Lichenol. 44: 58 (1991).—*Verrucaria hyalospora* Nyl., *Mém Soc. Sci. Nat. Cherbourg* 5: 337 (1857).

This species is characterized by a whitish grey, endophloeodic thallus, completely carbonized solitary ascomata, 0.3–0.5 mm diam. with a lateral ostiole, 8-spored asci, 80–110 \times 11–15 μ m, and ascospores that are 3-septate, colourless, fusiform, 15–17 \times 8–11 μ m, with subacute ends. The ascospores are symmetrically septate and not constricted at the septa.

Lithothelium hyalosporum is widespread in eastern North America, common on deciduous trees, and on palm trees in the Maldives (Aptroot 1991a) and Papua New Guinea (Aptroot & Sipman 1991). In India it is known only from Tamil Nadu State, found growing on the bark of trees at altitudes of 1000–2000 m.

Awasthi (2000) listed five species of *Lithothelium* from the Indian subcontinent. However, two, *L. indicum* Patw., Makh. & Rane, and *L. neoindicum* A. Singh, were synonymized with *Lithothelium obtectum* (Müll. Arg.) Aptroot by Aptroot (1991b).

Specimens examined. **India:** Tamil Nadu: Dindigal district, Oothu, alt. 1150 m, on bark, 1984, A. Singh & V. Nath L81500, L81505 (LWG); Trinelveli district, Pothechai Hills, Pappasum, near upper Tamrabarni

dam, alt. 1000–1200 m, on bark, 26 xii 1990, D. K. Upreti & G. N. Hariharan 202291 (LWG).

Polymeridium albocinereum
(Krempelh.) R. C. Harris

Bol. Mus. Paraense Emilio Goeldi, Ser. Bot. 7: 625 (1993) [‘1991’].—*Verrucaria albocinerea* Krempelh., *Flora* 59: 524 (1876).

This species is characterized by white, smooth, UV – thallus, 0.5–1.0 mm diam., black, naked, shining, single-chambered ascomata, apical to slightly eccentric ostiole, hymenium lacking oil globules, ascospores 8–11-celled and $36\text{--}40 \times 5\text{--}8 \mu\text{m}$.

Harris (1991) reported the occurrence of this species in Brazil, Jamaica, Mexico, Puerto Rico, United States and Tanzania. McCarthy (1995) reported it from Australia. In India it is recorded from the temperate Himalayan region of Himachal Pradesh, where it was found growing on trees at altitudes of 1400–2000 m.

Specimens examined. **India:** Himachal Pradesh: Kangra district, Palampur, Bagh Nalla, alt. 1400–2000 m, on bark, 1994, D. K. Upreti 213654 (LWG).

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REFERENCES

- Aptroot, A. (1991a) The lichen flora of the Maldives. *Lichenologist* 23: 57–60.
- Aptroot, A. (1991b) A monograph of the Pyrenulaceae (excl. *Anthrothecium* and *Pyrenula*) and Requinellaceae, with notes on the Pleomassariaceae, the Trypetheliaceae and *Mycomicrothelia* (lichenized and non-lichenized Ascomycetes). *Bibliotheca Lichenologica* 44: 1–178.
- Aptroot, A. & Seaward, M. R. D. (1999) Annotated checklist of Hong Kong lichens. *Tropical Bryology* 17: 57–101.
- Aptroot, A. & Sipman, H. J. M. (1991) New lichens and lichen records from New Guinea. *Willdenowia* 20: 221–256.
- Awasthi, D. D. (2000) *Lichenology in Indian Subcontinent*. Dehra Dun, India: Bishen Singh Mahendra Pal Singh.
- Harris, R. C. (1991) A revision of *Polymeridium* (Müll. Arg.) R. C. Harris (Trypetheliaceae). *Bol. Mus. Para. Emilio Goeldi, sér. Bot.* 7: 619–644.
- Harris, R. C. (1995) *More Florida Lichens: Including the 10c Tour of the Pyrenolichens*. Bronx, New York: Privately Published.
- McCarthy, P. M. (1995) Additional lichen records from Australia 20. *Australasian Lichenological Newsletter* 36: 11–19.
- Upreti, D. K. (1999) Studies on pyrenocarpous lichens in India. In *Biology of Lichens* (K. G. Mukerji, B. P. Chamola, D. K. Upreti & R. K. Upadhyay, eds): 387–405. India: Arvali Books International.

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