

A new species of *Parmeliella* (*Pannariaceae*) from India

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Abstract: The new species *Parmeliella subfuscata* A. Dube & Makhija, belonging in the *P. mariana* group, is described. It is recognized by its squamulose, loosely attached, spreading, brownish thallus with cylindrical, branched isidia, indistinct, black prothallus of slightly projecting rhizohyphae, and its apothecia with an unusual, fresh green coloured epithecium and proper exiple. It is so far known only from the type locality in Maharashtra, India.

Key words: lichen, lichenized ascomycetes, taxonomy

Introduction

The genus *Parmeliella* Müll. Arg was originally established to accommodate members of the *Pannariaceae* with leceidine apothecia, but, as subsequently shown by Jørgensen & Galloway (1992), this was an artificial concept. On the basis of molecular studies (Ekman & Jørgensen, 2002), the genus can be retained but with a new circumscription. *Parmeliella* is now characterized by a crustose-squamulose to foliose thallus resting on a cottony prothallus; biatorine apothecia, mostly without a thalline margin (except in species of the *Parmeliella mariana* group); hymenium I+ persistent blue; asci with a distinct apical amyloid plug and simple, hyaline ascospores.

The genus comprises c. 100 species mainly from tropical regions of the world. Makhija & Adawadkar (1999) described three species and a variety from the Andaman and the Nicobar islands of India. While revising the tropical and subtropical species of *Parmeliella*, Jørgensen (2003) described the new species, *P. fuscata* P. M. Jørg., from the Karnataka, Kerala, and Maharashtra states of India. In a recent study of the pannariaceous taxa from India

(Upreti *et al.*, 2005), eleven species of *Parmeliella*, viz., *P. allochroa* Makhija & Adawadkar, *P. brisbanensis* (C. Knight) P. M. Jørg. & D. J. Galloway, *P. conopleoides* P. M. Jørg., *P. endomilta* var. *achromatica* Makhija & Adawadkar, *P. fuscata* P. M. Jørg., *P. macrospora* Makhija & Adawadkar, *P. papillata* P. M. Jørg., *P. pannosa* (Sw.) Müll. Arg., *P. philippina* (Vain.) P. M. Jørg., *P. stylophora* (Vain.) P. M. Jørg. and a new species *P. himalyana* Upreti & Divakar were recorded.

During recent studies of the lichens of Western Ghats of South India under the All India Coordinated Project on Taxonomy, Ministry of Environment and Forests, Government of India, we have discovered several interesting lichen taxa. One of them is a new species of *Parmeliella* from Maharashtra state and is described below.

Materials and Methods

Sections of thalli and ascomata were mounted in water, 10% KOH (K), Lugol's solution (I), and lactophenol cotton-blue (LPCB). All measurements were made on material mounted in water. The iodine reaction of the asci was studied in Lugol's solution after pretreatment with K (K/I). Secondary products were identified by thin-layer chromatography using standardized methods (Culberson & Kristinsson 1970; Culberson 1972; White & James 1985) using the solvent systems benzene-dioxane-acetic acid (180:45:5) and toluene-ethyl acetate-formic acid (139:83:8).

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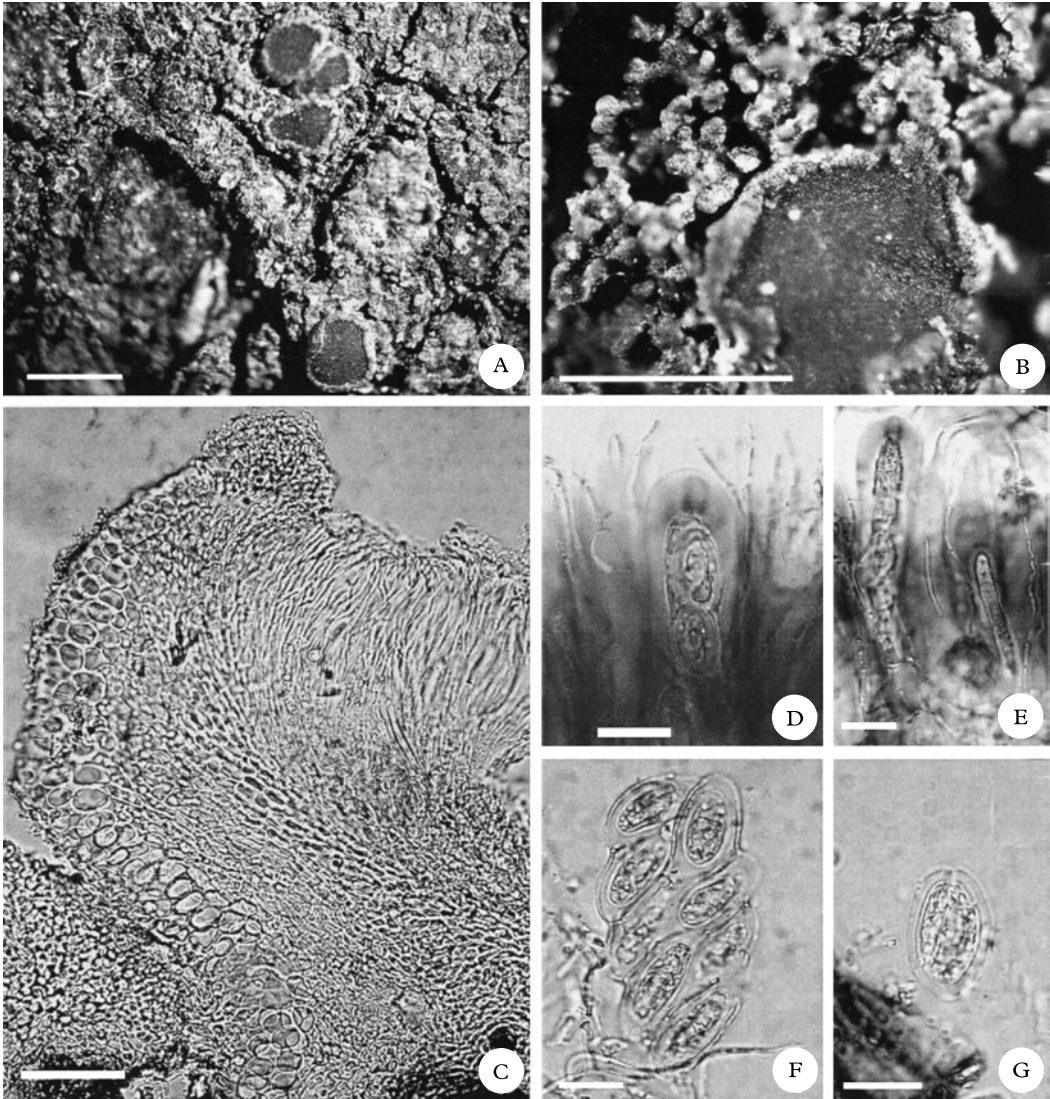


FIG. 1. *Parmeliella subfuscata* (holotype, AMH). A, habitus; B, isidia; C, vertical section of apothecium; D & E, ascus with amyloid structure; F & G, ascospores. Scales: A & B=100 μ m; C=50 μ m; D–G=10 μ m.

The Species

Parmeliella subfuscata A. Dube & Makhija sp. nov.

Parmeliella fuscata similis, sed thallo isidiis cylindricis et ramosis.

Typus: India, Maharashtra, Amboli, near government holiday camp, corticolous, 690 m elev., 29 September 1976, P. G. Patwardhan & A. V. Prabhu 76.1243 (AMH—holotypus).

(Fig. 1)

Thallus corticolous, squamulose, sub-orbicular, brownish, spreading over the substratum, loosely appressed, 60–75 μ m thick, 6–12 cm diam. *Prothallus* black, indistinct, seen as slightly projecting rhizohyphae at the periphery of the thallus. *Squamules* flat, adjacent, imbricate, 0.5–1.2 mm wide. *Margins*

crenate to incised. *Isidia* concolorous with the thallus, cylindrical to coralloid, scattered all over the surface. *Upper surface* slightly scabrid, upper cortex paraplectenchymatous, 12–18 µm thick, with regularly arranged, more or less rounded cells, 6–12 µm diam.; cells thin walled. *Photobiont* a cyanobacterium, forming clusters interwoven by hyphae. *Medulla* hyaline, 37–54 µm thick. *Lower surface* of the thallus pale, brownish; lower cortex absent, pseudocortex present. *Rhizohyphae* present on the lower surface of the thallus.

Apothecia subsessile, laminal. *Disc* flat to convex, reddish orange, lecanorine, epruinose, 0.2–1.9 mm diam. *Thalline exciple* concolorous with the thallus, crenulate isidiate at margins, obscuring the proper exciple, paraplectenchymatous. *Proper exciple* subparaplectenchymatous, fresh green coloured, 9–30 µm high. *Epithecium* fresh yellowish green, 9–15 µm thick. *Hymenium* hyaline, 42–90 µm high, I+ blue. *Hypothecium* hyaline, 9–18 µm high. *Asci* unitunicate, narrow clavate, K/I+ blue, with an apical amyloid plug, 45–60 × 9–12 µm, 8-spored. *Paraphyses* simple, long, thick at apices, septate. *Ascospores* oblong, hyaline, with proper endospore and exospore, with oil droplets, 9–18 × 7–11 µm, including epispore.

Pycnidia not seen.

Chemistry. Thallus K–, C–, KC–, P–; UV–; no lichen substances present.

Remarks. *Parmeliella subfuscata* is characterized by a squamulose, loosely attached, brownish thallus, with cylindrical, branched isidia, indistinct black prothallus seen as slightly projecting rhizohyphae at the periphery of the thallus, and apothecia with a secondary thalline margin and unusual fresh green colour of the epithecium and proper exciple.

A thalline margin is absent in the apothecia of all species of *Parmeliella* except those in the *P. mariana* group. The new species *P. subfuscata*, is clearly distinguished from all the species in this group, and the other species of the genus, especially by its apoth-

ecia with distinct, fresh green epithecium and proper exciple (in section). Moreover, in the other species of the *Parmeliella mariana* group the thallus is rosette-shaped, but in *P. subfuscata* it is spreading on the substratum.

The most closely related species, *Parmeliella fuscata* P. M. Jørg. from the Western Ghats of South India, and also known from Amboli, differs from the new species in having peg-like, flattened isidia and no apothecia. The new species *P. subfuscata* is also somewhat similar to *P. stylophora* (Vain.) P. M. Jørg. in having an isidiate thallus. However, *P. stylophora* has larger squamules up to 2 mm wide, profusely branched coralloid isidia, and smaller apothecia up to 1.0 mm diam. (Upreti *et al* 2005), while *P. subfuscata* has mostly cylindrical, sometimes branched, shorter isidia and larger apothecia.

Parmeliella subfuscata, is so far known only from the semi-evergreen forest of Amboli (700 m alt.) in Maharashtra state, which receives heavy rains during the monsoon in the months of June to September followed by a prolonged, eight months dry period. Amboli has many endemic species and the new species may prove to be restricted to Maharashtra.

Additional specimens examined. **India:** Maharashtra: Amboli, near govt, holiday camp, in semi evergreen forest, 1976, P. G. Patwardhan & A. V. Prabhu, 76.1242, 76.1251 (AMH).

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