

New records of foliicolous lichens from India

Pooja Gupta and G. P. Sinha*

Botanical Survey of India, Central Regional Centre, Allahabad- 211002, India
E-mail: poojaguptafri09@gmail.com; drgpsinha@gmail.com

*Corresponding author

Manuscript received: 03 January 2014
Accepted for publication: 10 March 2014

ABSTRACT

Gupta P. & Sinha G. P. 2014. New records of foliicolous lichens from India. Geophytology 44(1): 69-72.

Five species of foliicolous lichens, viz. *Asterothyrium microsporum* R. Sant., *Coenogonium interplexum* Nyl., *C. minimum* (Müll. Arg.) R. Sant., *Echinoplaca marginata* Lücking, and *Tricharia farinosa* R. Sant. are reported as new to India.

Key-words: Foliicolous lichens, lichenized fungi, taxonomy, Assam, India.

INTRODUCTION

Lichens that colonize usually on surface of live leaves are known as foliicolous lichens. These leaf inhabiting lichens are widely distributed in wet or moist, highly humid or tropical and subtropical forests with ca. 925 species throughout the world (Awasthi 2010). Of these, ca. 136 species are known from India (Singh & Pinokiyo 2014). Further, 5 species have been found as new for Indian lichen flora from Assam which are briefly dealt here to facilitate their identification.

MATERIAL AND METHOD

Morphological and anatomical characters of thalli and ascomata were examined using Olympus SZ61 Stereo microscope and Nikon Eclipse 50i compound microscope. Squash preparations were studied in water or KOH solution (K) and the amyloid reactions were tested with Lugol's reagents, without iodine (I) or with pre-treatment of KOH (K/I). Species were identified mainly with the help of keys and descriptions provided by Santesson (1952) and Lücking (2008). Voucher specimens have been deposited in the herbarium of Botanical Survey of India, Allahabad (BSA).

NEW LICHEN RECORDS FOR INDIA

1. *Asterothyrium microsporum* R. Sant., Symb. Bot. Upsal. 12(1): 320. 1952.

Plate 1, figures A-B

Description: Thallus crustose, foliicolous, 10-15 mm across, dispersed into rounded, confluent patches, 0.5-1.5 mm diameter, corticate, smooth, light silvery grey to white, composed of rectangular cells. Apothecia usually single on each thallus patch, immersed-erumpent, rounded, 0.1-1 mm diameter; disc plane, pale yellow; margin thin, black, prominent, irregularly dissected; exciple colourless, laterally covered by black corticate thalline tissue, 6-9 μ m thick; epithecium indistinct; hymenium colourless, 40-45 μ m high; hypothecium colourless, 5-10 μ m thick; paraphyses simple with clavate apices, ca. 1 μ m thick; asci cylindrical, uniseriate, 8-spored, 25-42 \times 4-6 μ m; ascospores colourless, fusiform-ellipsoid, 1-septate, 7-13 \times 2-6 μ m.

Distribution: Pantropical (Argentina, Brazil, Colombia, Costa Rica, Ecuador, Guatemala, Mexico, Peru, Paraguay).

Specimen examined: India, Assam, Manas Tiger Reserve, 20.04.2010, G. P. Sinha & Pooja Gupta 5521B.

Remarks: The species is characterized by its apothecial disc, which has black irregularly dissected margin. Its apothecia externally resembles with *A. monosporum* Müll. Arg., which has 1-spored asci and 2-septate ascospores.

2. *Coenogonium interplexum* Nyl., Ann. Sci. Nat., Bot., Ser. 4, 16: 92. 1862.

Plate 1, figures C–D

Description: Thallus filamentous, foliicolous; filaments 0.1–1.5 mm long, forming 3–5 mm across loose mats on substrate, yellowish-green. Photobiont *Trentepohlia*; filaments richly branched, cells cylindrical, 8–12 × 5–7 µm. Apothecia sessile to shortly stipitate, rounded, 0.3–0.6 mm diameter; disc plane, yellow to pale orange; margin thin, not prominent, smooth, light brown; exciple colourless, 14–18 µm thick laterally, 19–27 µm thick at base, paraplectenchymatous; hymenium colourless, 46–57 µm high; hypothecium colourless, 16–30 µm thick; asci clavate, 46–48 × 5–7 µm; ascospores biseriate, colourless, ellipsoid, 1-septate, 6–9 × 2–3 µm.

Distribution: Pantropical (Brazil, Costa Rica, French Guiana and Guyana).

Specimen examined: India, Assam, Lakhimpur district, Koilamari Tea Estate, 15.05.2006, V. N. Singh 3271A.

Remarks: The species is characterized by its loosely filamentous thallus that forms irregular crusts on the substrate. It closely resembles with *C. linkii* Ehrenb., which is distinguished by hemispherical cushion-like structures composed of more densely arranged filaments often extended like a shelf along leaf margins with apothecia on under side of the thallus. Externally it is also close to *C. interpositum* Nyl., which has non-septate ascospores (Lücking 2008).

3. *Coenogonium minimum* (Müll. Arg.) Lücking, Fl. Neotrop. Monogr. 103: 572. 2008.

Biatorinopsis minima Müll. Arg. in Durand & Pittier, Bull. Soc. Bot. Belg. 30: 74. 1891;

Dimerella minima (Müll. Arg.) R. Sant., Symb. Bot. Upsal. 12(1): 393. 1952.

Plate 1, figures E–F

Description: Thallus crustose, foliicolous, 5–9 mm across, greenish-grey, thin, smooth. Photobiont *Trentepohlia*, cells rounded, 8–13 µm diameter. Apothecia strongly constricted at the base, sessile, 0.1–0.18 mm diameter, 81–112 µm high; disc plane or slightly concave, light yellowish-brown; margin somewhat prominent, thin, pale yellowish, smooth; exciple pale-yellowish, 16–24 µm thick, paraplectenchymatous; epithecium yellowish-green, 6–8 µm thick; hymenium colourless, 40–52 µm high, 1-; hypothecium pale-yellowish, 17–19 µm thick; paraphyses simple, 1 µm thick, apices clavate, 1.5–2 µm thick; asci clavate, 8-spored, 35–42 × 9–12 µm; ascospores biseriate, colourless, ellipsoidal-fusiform, 1-septate, 10–12 × 3–4 µm.

Distribution: Neotropical (Costa Rica, Leeward Islands, Mexico and Panama).

Specimen examined: India, Assam, Manas Tiger Reserve, 20.04.2010, G. P. Sinha & Pooja Gupta 5523F.

Remarks: The species is characterized by its small, concave, brown and usually translucent apothecia. It is close to *C. dilucidum* (Kremp.) Kalb & Lücking, which has rather large apothecia (1–3 mm diam.) and smaller ascospores (6–10 × 2–2.5 µm).

4. *Echinoplaca marginata* Lücking, Biblioth. Lichenol. 65: 57. 1997.

Plate 1, figures G–H

Description: Thallus crustose, foliicolous, 4–7 mm across, continuous, greyish-white, uneven to finely verrucose due to incrustation with calcium oxalate crystals, verrucae 0.07–0.5 mm diam. Apothecia adnate, rounded, spot-like, sometimes bordered by a thin, white thalline margin and emarginate in same patch, 0.1–0.7 mm diam.; disc plane-convex, dark brownish-black; margin absent,

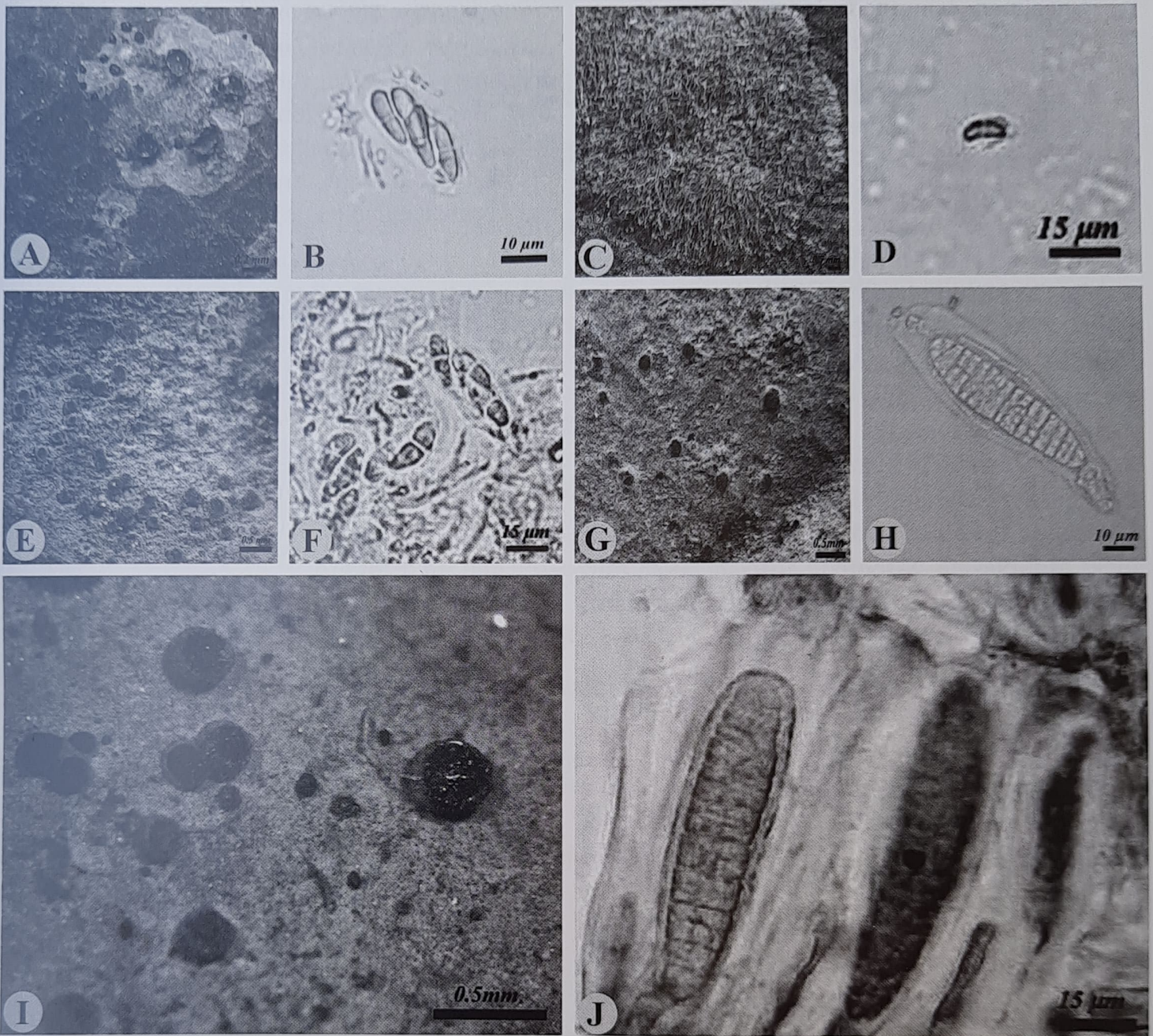


Plate 1

A-J. Habit and ascospores of new records of foliicolous lichens. A-B. *Asterothyrium microsporium* R. Sant. C-D. *Coenogonium interplexum* Nyl. E-F. *Coenogonium minimum* (Müll. Arg.) Lücking. G-H. *Echinoplaca marginata* Lücking. I-J. *Tricharia farinosa* R. Sant. Scales: C, E, G and I = 0.5 mm; B and H: 10 μm; D, F and J: 15 μm.

or a thin, slightly prominent, white, thallose margin present; exciple pale, 12-28 μm thick; epithecium brownish, 5-7 μm thick; hymenium colourless, 52-85 μm high, I+ blue; hypothecium pale to brownish, 12-14 μm thick; asci clavate, 1-spored, 47-72 × 16-30 μm; ascospores colourless, ellipsoid-ovoid, muriform, 6-9 × 2-3 locular, 45-62 × 14-24 μm.

Distribution: Pantropical (Brazil, Costa Rica, Ecuador, French Guiana, Leeward Islands, Peru,

Puerto Rico, Trinidad and Tobago).

Specimen examined: India, Assam, Manas Tiger Reserve, 20.04.2010, G. P. Sinha & Pooja Gupta 5522C.

Remarks: The species is easily distinguished from other species of *Echinoplaca* by dark brownish-black, spot like apothecia often bordered by a white thallose margin.

5. *Tricharia farinosa* R. Sant., Symb. Bot. Upsal.
12(1): 387. 1952.

Plate 1, figures I–J

Description: Thallus crustose, foliicolous, 8-10 mm across, 55-58 μm thick, continuous, coarsely verrucose due to incrustation with calcium oxalate crystals, white, furnished with black, tapering 0.8-1 mm long hairs. Apothecia sessile, lecideine, strongly constricted at the base, 0.3-0.6 mm diameter, 86-135 μm high; disc plane to slightly concave, with brown farinose covering; margin slightly prominent; exciple thin, prosoplectenchymatous; epithecium greenish-brown, 5-7 μm thick; hymenium colourless, 78-92 μm high; hypothecium colourless, 20-27 μm thick; paraphyses branched and anastomosing, 1.5 μm thick; asci clavate, 8-spored, 72-92 \times 20-28 μm ; ascospores colourless, ellipsoid-oblong, muriform, 9-14 \times 2-4 locular, 68-84 \times 18-25 μm .

Distribution: Neotropical (Argentina, Brazil, Costa Rica, Columbia, Ecuador, French Guiana, Guyana, Guatemala and Venezuela).

Specimen examined: India, Assam, Manas Tiger Reserve, 20.04.2010, G. P. Sinha & Pooja Gupta 5523E.

Remarks: The species is easily distinguished by its small, brownish farinose apothecial disc and a reduced excipulum. Morphologically it is close to *T. sublancicarpa* Herrera-Campos & Lücking, which has smooth thallus lacking calcium oxalate crystals, somewhat erumpent apothecia with paraplectenchymatous exciple.

ACKNOWLEDGEMENT

The authors are thankful to Dr. Paramjit Singh, Director, Botanical Survey of India, Kolkata, for providing facilities, to Dr. K. P. Singh, Emeritus Scientist, Botanical Survey of India, Allahabad for his keen interest and suggestions and to Ministry of Environment and Forests, New Delhi for financial assistance under All India Co-ordinated Project on Taxonomy (AICOPTAX).

REFERENCES

- Awasthi D. D. 2010. Foliicolous lichens of the World. Indian J. Forest., Addit. Ser. III. pp. 113.
- Lücking R. 2008. Foliicolous lichenized fungi. Fl. Neotrop. Monogr. 103: 1-867.
- Santesson R. 1952. Foliicolous lichens I. A revision of the taxonomy of the obligately foliicolous lichenized fungi. Symb. Bot. Upsal. 12(1): 1-590.
- Singh K. P. & Pinokiyo A. 2014. Foliicolous lichens of India. Indian J. Forest., Addit. Ser. IV. pp. 335.