NOTE

Two Species of *Bacidia* (Lichenized *Ascomycota*) New to India

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ABSTRACT: Two lichen species, *Bacidia arceutina* (Ach.) Rehm & Arnold and *B. heterochroa* (Müll. Arg.) Zahlbr., from Sikkim are reported as new to India.

KEY WORDS: *Bacidia,* new record, Ramalinaceae, taxonomy.

INTRODUCTION

Bacidia De Not. is a cosmopolitan genus with over 229 species worldwide (Kirk et al., 2008). The Indian species of *Bacidia* are known by the treatment of Awasthi and Mathur (1987) wherein 18 species were dealt, followed by a key of 27 species (Awasthi, 1991). Recently Singh and Sinha (2010) listed 28 species and 2 varieties in checklist of Indian lichens. Ongoing investigation on the microlichen flora of Sikkim revealed two additional species of *Bacidia* new to India. A detailed account comprising taxonomic descriptions and figures are provided.

MATERIALS AND METHODS

The examined specimens are housed at BSA (Botanical Survey of India, Allahabad) herbarium. Morphological and anatomical characters were studied by using Motic SMZ-168 and Nikon Eclipse 50i microscopes. All measurements were made on materials mounted in distilled water. Chemical analysis was performed with usual spot tests and thin layer chromatography following Orange et al. (2001).

TAXONOMIC TREATMENTS

Bacidia arceutina (Ach.) Rehm & Arnold, Verh. Zool.-Bot. Ges. Wien 19: 624. 1869. *Lecidea luteola* var. *arceutina* Ach., Method. Lich.: 61. 1803. Figs. 1A-E

Thallus corticolous, crustose, epiphloedal, pale grey, continuous to rimose, verruculose, ± granular, soredia and isidia absent. Apothecia 0.2-1 mm diam., sessile, ± yellowish when young, reddish brown at maturity, margin slightly raised and concolorous with disc when young, reaching the level of disc and dark brown at maturity, finally excluded; disc slightly concave to plane, pale brown to yellowish brown when young, slightly convex, reddish brown at maturity, finally dark brown in old apothecia, epurniose. Excipulum 60-95 µm thick laterally; upper part pale yellow to pale reddish brown, pale brownish to yellow brown at margin, inner part pale yellowish brown or hyaline; 100-125 µm thick at base, hyaline or pale yellowish, lighter than hypothecium. Epihymenium brownish, K-. Hymenium hyaline, ± brownish yellow in upper part, 70-90 µm high, K-, I+ blue, K/I+ deep blue. Hypothecium ± yellowish, K+ intensifying, 20-35 µm thick. Paraphyses ± branched in upper part, 0.8-1.5 µm thick, not or slightly thickened at apices. Asci 8-spored. Ascospores hyaline, (-5)7-12(-16)-septate, straight, acicular, 48.5-74.5 × 1.5-2.8(-3.4) µm. Pycinidia not seen.

Chemistry: Thallus K-, C-, KC-, PD-, UV-; no lichen substances detected in TLC.

Distribution: North America, Southern Europe (Spain, Italy, Greece), Northern Europe (Norway, Sweden, Estonia), Western Europe (Germany), Eastern Europe (Hungary), Western Asia (Turkey) and East Asia (South Korea).

Remarks: *B. arceutina* is easily to be confused with *B. laurocerasi* (Delise ex Duby) Zahlbr. and *B. salmonea* S. Ekman (Ekman, 1996). *B. laurocerasi,* which is known from India, differs from *B. arceutina* by shorter and narrower spores with fewer septa while *B. arceutina* can be separated from *B. salmonea* by the presence of brown yellow pigment in the apothecia.

Specimen examined: INDIA - Sikkim, Samdruptse, 2138 m, 26.11.2006. *G.P.Sinha* 3818 (BSA).

Bacidia heterochroa (Müll. Arg.) Zahlbr., Cat. Lich. Univ. 4: 204. 1926. *Patellaria heterochroa* Müll. Arg., Flora 63: 280. 1880. Figs. 1F-J

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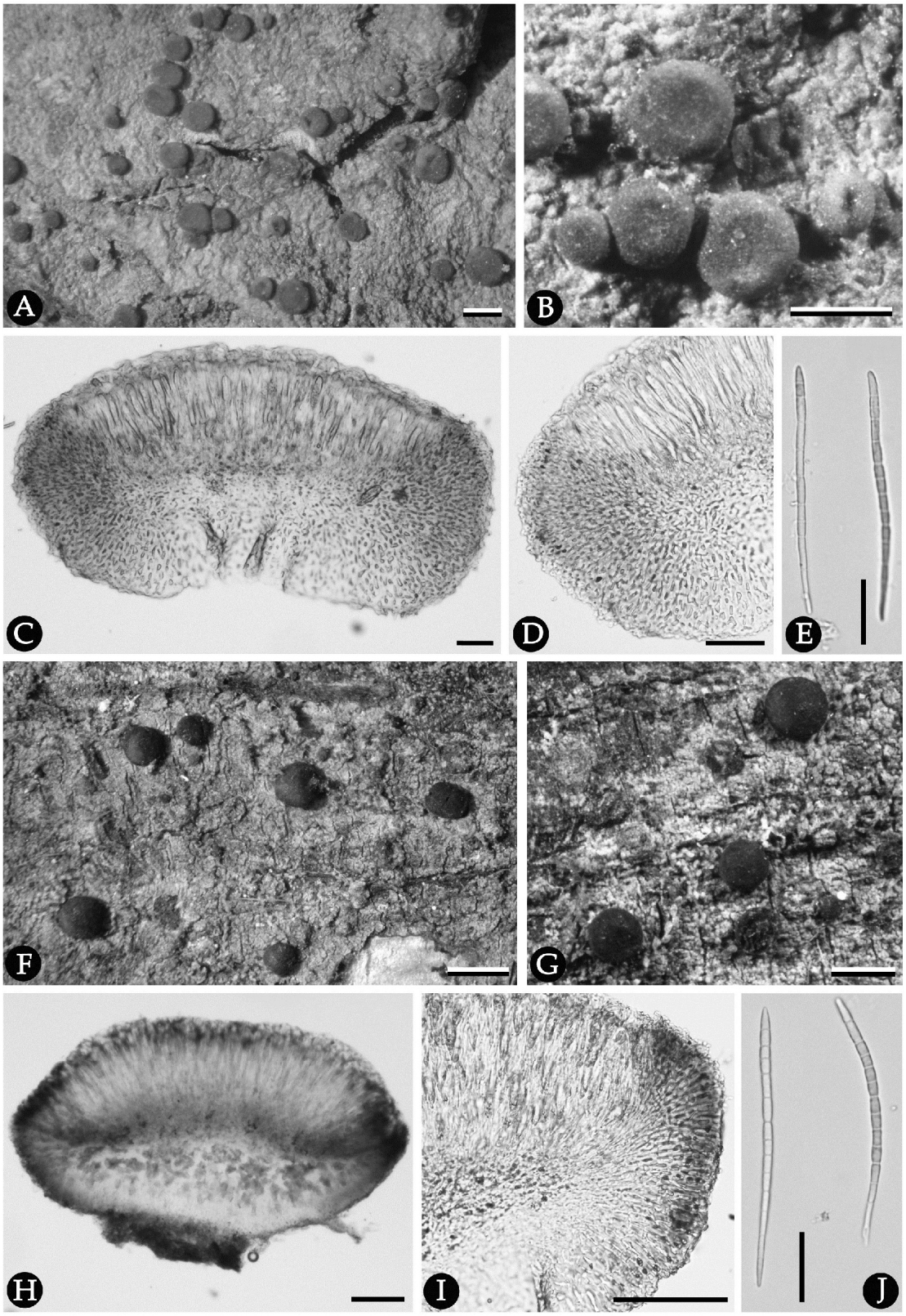


Fig. 1. A-E: *Bacidia arceutina* (Müll. Arg.) Zahlbr. A-B: Habit. C: Section of apothecia. D: Exciple enlarged. E: Ascospores. F-J: *Bacidia heterochroa* (Müll. Arg.) Zahlbr. F-G: Habit. H: Section of apothecia. I: Exciple enlarged. J: Ascospores. Scale bars: A-B & F-G: 1 mm; C-D & H-I: 100 μm; E & J: 15 μm.

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Thallus corticolous, crustose, epiphloedal, continuous to rimose, verruculose, pale yellowish, soredia and isidia absent. Apothecia 0.5-1 mm diam., sessile, dark brownish, margin slightly raised, concolorous to disc when young, ± dark at maturity; disc slightly concave to plane, pale yellow brown when young, becoming slightly convex, brownish to black at maturity, epruinose. Excipulum 57-107 µm thick laterally, red brown at margin and upper part, K+ intensifying or purple, inner part hyaline to pale yellow, lighter than margin; 90-154(-220) µm thick at base, hyaline with some aggregations. Epihymenium K+ intensifying. Hymenium 82-112(-130) µm high, lower part hyaline, I+ blue, K-, upper part reddish brown, K+ intensifying or purple, I+ vinose red. Hypothecium pale yellowish, K+ intensifying, 40-70 µm thick. Paraphyses ± branched in upper part, 0.6-1.6 µm thick, not or slightly thickened at apices. Asci 8-spored. Ascospores hyaline, 8-15-septate, not coiled within asci, straight or ± curved, acicular, 54.2-77.4 × 2.2-3.0(-3.5) µm. Pycinidia not seen.

Chemistry: Thallus K+ pale yellow, C-, KC-, PD-, UV-; atranorin (trace) detected in TLC.

Distribution: Pantropical species, extending into warm-temperate, coastal areas of the world, known from all continents and possibly the most widespread species of *Bacidia* on earth (Ekman, 2004).

Remarks: The specimens containing traces of atranorin were reported from the eastern U.S. (Ekman 1996). However, atranorin is reported to be absent in specimens from other areas.

Specimen examined: India-Sikkim, Tendong Biodiversity Park, 2009 m, 26.11.2006. *G.P. Sinha* 3812 (BSA).

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LITERATURE CITED

Awasthi, D. D. 1991. A Key to the microlichens of India, Nepal and Sri Lanka. Biblioth. Lichenol. **40**: 1-337.

Awasthi, D. D. and R. Mathur. 1987. Species of the lichen genera *Bacidia*, *Badimia*, *Fellhanera* and *Mycobilimbia* from India. Proc. Indian Acad. Sci., Pl. Sci. **97**: 481-503.

Ekman, S. 1996. The corticolous and lignicolous species of *Bacidia* and *Bacidina* in North America. Opera Bot. **127**: 1-148.

Ekman, S. 2004. *Bacidia*. In: Nash III, T.H. et al. (eds.), Lichen Flora of the Greater Sonoran Desert Region, **2:** 18-28. Tempe: Lichens Unlimited, Arizona State University.

Kirk, P. M., P. F. Cannon, D. W. Minter and J. A. Stalpers (eds.). 2008. Ainsworth and Bisby's Dictionary of the Fungi. 10th ed. CAB International Publishing. 771 pp.

Orange, A., P. W. James and F. J. White. 2001. Microchemical Methods for the Identification of Lichens. British Lichen Society. 101pp.

Singh, K. P. and G. P. Sinha. 2010. Indian Lichens: An Annotated Checklist. Botanical Survey of India. 571pp.

印度的兩種桿孢衣屬（子囊菌門）新紀錄種

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摘要：本文報導了在印度錫金邦發現的兩個地衣新紀錄分佈：*Bacidia arceutina* (Ach.) Rehm & Arnold 和 *B. heterochroa* (Müll. Arg.) Zahlbr.

關鍵詞：桿孢衣屬、新紀錄種、樹花科、分類學。

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