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Three new Foliicolous Ascomycetes from Andaman Islands, India

***A. Sabeena*[*], *H. Biju*[*], *Jacob Thomas*[**], *C. K. Biju*[*] and *Sam P. Mathew*[*]**
[*]*Jawaharlal Nehru Tropical Botanic Garden and Research Institute, Palode 695 562, Thiruvananthapuram, Kerala, INDIA*
[**]*Department of Botany, Marthoma College, Thiruvalla, Pathanamthitta, Kerala, INDIA*

(Corresponding author: Sam P. Mathew, sampmatthew@gmail.com)
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ABSTRACT: Three new foliicolous fungal taxa from Andaman Islands in the Bay of Bengal have been described and illustrated herewith. *Meliola dysoxyli-andamanensis*, as new species and *Asterina miliusae* var. *andamanica* and *Meliola memecyli* var. *andamanica* as new varieties are included in this article.

Keywords: Andaman Islands, foliicolous fungi, new taxa.

INTRODUCTION

The Andaman Islands, located between the latitudes 6° 45'' to 13° 41'' N and the longitudes 92° 12'' to 94° 16'' E, comprises around 325 islands and rock outcrops (islets) which cover an approximate land mass of 6,408 sq km in the Bay of Bengal. These islands are mostly uninhabited and over 86% of the total area has been covered with pristine low land tropical rain forests (Anonymous, 2009). Geologically, this insular region is considered as the emergent peaks of a submerged mountain range in continuation with the Arakan-Yoma Mountains of the Myanmar to the Moluccas Island of the Indonesian group. It undoubtedly indicates that the floristic components of Andaman-Nicobar Islands is 'continental' in origin and evolved to the present status from a totally balanced continental bio-system through evolution over millions of years. Therefore the present bio-system of the Andaman-Nicobar Islands can be referred to as a 'sub continental bio-system'. According to an official estimation, the insular vegetation is known to host about 2645 taxa under 237 families and 1077 genera belonging to Angiosperms, Gymnosperms, Pteridophytes and Bryophytes (Pandey & Diwakar, 2008). Interestingly, it is found that considerable floristic evaluation on higher groups of insular plants have been carried out in Andaman-Nicobar Islands by the Botanical Survey of India and other agencies; nevertheless, the lower groups co-existing with higher group of taxa, especially the micro fungi are rarely known or rather little known until the recent investigation carried out by us (Hosagoudar & Mathew, 2000; Hosagoudar *et al*, 2014). The present investigation added over 100 micro-fungal taxa to the lesser known insular fungal flora of the Andaman-Nicobar Islands and the investigation is in progress.

MATERIALS AND METHODS

Infected plant parts such as leaves and stems were collected in polythene bags along with flowering/fruiting twigs of the host plant species for confirming the identity. Separate field numbers were given to each collections and primary field information on infection pattern, locality, altitude, type of vegetation, date of collection, place of collection, plant association, other special information regarding host plant, etc. were also being recorded in the field book during plant explorations. All plant materials were processed by using standard protocol of dry method with herbarium press and blotting papers for a period of 15 days.

The laboratory research and analysis were carried out with nail polish technique (Hosagoudar and Kapoor, 1985) for ectophytic fungi to accomplish *in situ* studies and also with micro sections for innate fungi. All herbarium specimens have been deposited at JNTBGRI Herbarium (TBGT), Thiruvananthapuram, Kerala. One duplicate set of all specimens were also been deposited at BSI Herbarium (PBL), Andaman-Nicobar Circle, Port Blair.

RESULTS

1. *Asterina miliusae* Hosag & C. K. Biju var. *andamanica* var. nov.
MycoBank No.: MB 815555

Diagnostic characters: Colonies amphigenous, scattered, dense, up to 5mm in diameter. Hyphae straight to substraight, branching opposite to irregular at acute to wide angles, loosely to closely reticulate, cells 20-25 × 5-8 µm.

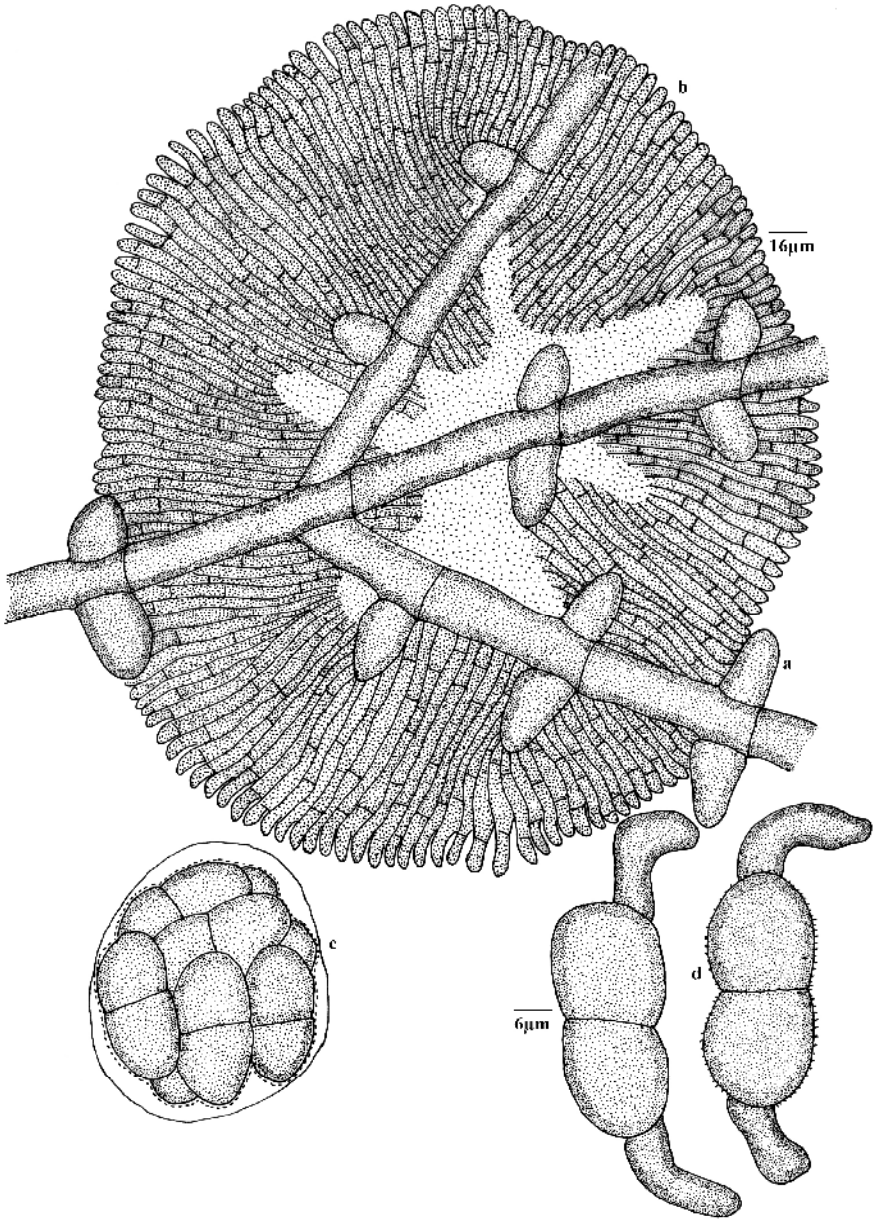


Fig. 1. *Asterina miliusae* Hosag. *&* C. K. Biju var. *andamanica* var. nov.
a. Appressoriate mycelium, b. Thyriothecium, c. Ascus, d. Ascospores

Appressoria opposite, less than 10% alternate, unicellular, ovate, taper and broadly rounded towards apex, oblong, entire, 8-13 × 4-5 µm. Thyriothecia scattered orbicular, up to 310 µm in diameter, stellately dehisced at the center, margin crenate; asci ovate to globose, octosporous, up to 38-40 × 28-30 µm in diameter; ascospores conglobate, uniseptate, constricted at the septum, 28-33 × 13-15 µm, wall smooth to slightly echinulate.

Remarks: The new taxon is closely allied to *Asterina miliusae* Hosag. & C.K. Biju (2004: 177) in having conglobate and equal sized ascospores. However, it differs in having more than 90% opposite and entire appressoria, larger thyriothecia.

Etymology: The new taxon is named after the insular locality of its occurrence, the Andaman Islands.

Specimen examined: SOUTH ANDAMAN. Shoal Bay, on leaves of *Goniothalamus macranthus* (Kurz 1872: 291) Boerlage (1899:137) (Annonaceae), 8 December 2012, V. B. Hosagoudar & al 6814 (holotype TBGT!).

2. *Meliola dysoxyli-andamanensis* sp. nov.
MycoBank No.: MB 815552

Diagnostic characters: Colonies amphigenous, dense, scattered, up to 5 mm in diameter, confluent. Hyphae straight to alternate, branching opposite to alternate at acute to wide angles, loosely to closely reticulate, cells 30-45 × 5-10 µm. Appressoria alternate to unilateral, antrorse to subantrorse, straight to curved, 27-32 µm long; stalk cells cylindrical to cuneate, 10-12 µm long; head cells straight to curved, ovate to oblong, entire, rarely angular, 17-22 × 12-15 µm. Phialides mixed with appressoria, opposite to alternate, ampulliform, 20-32 × 5-10 µm. Mycelial setae numerous, scattered, simple, straight, acute at the tip, up to 350 µm long.

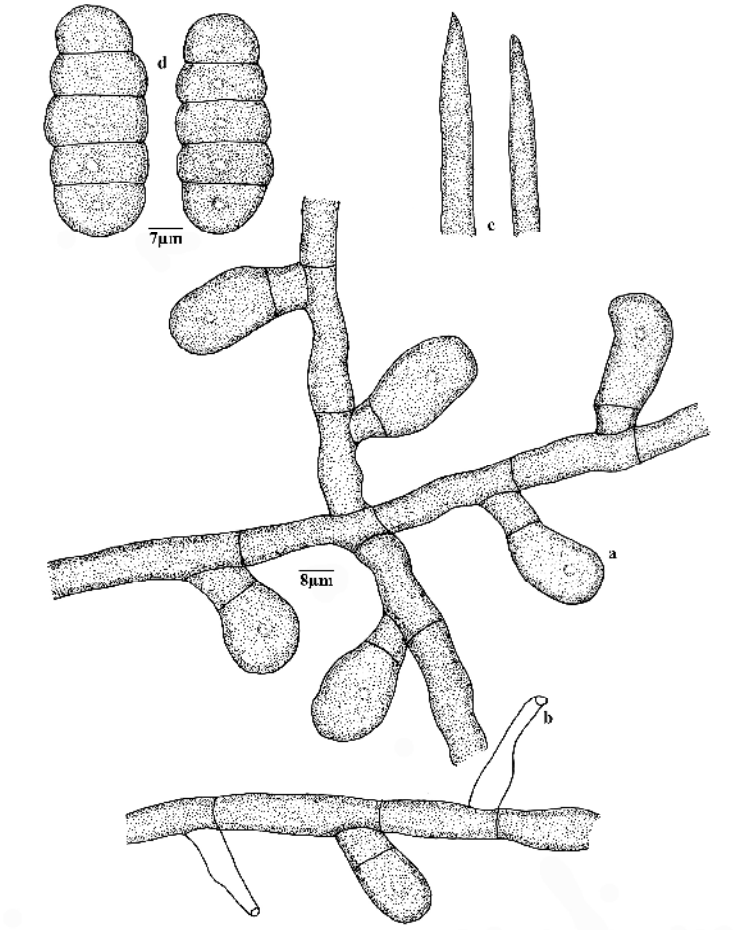


Fig. 2. *Meliola dysoxyli-andamanensis* sp. nov.
a. Appressoriate mycelium, b. Phialides, c. Mycelial setae, d. ascospores.

Perithecia scattered, globose, up to 190 µm in diam.; ascospores oblong, 4-septate, constricted at the septa, 47-52 × 18-20 µm, wall smooth.

Remarks: The new species is allied to *Meliola dysoxyli-malabarici* Hosag. & Kamar., (2002: 749) but differs in having only alternate and unilateral appressoria, entire to angular head cells, shorter mycelial setae and larger ascospores. The Beeli formula of current species is 3111.5222 whereas in *Meliola dysoxyli-malabarici* it is 3113.3224.

Etymology: The new taxon is named after its endemic host plant species, *Dysoxylum andamanicum* King (1895: 49).

Specimen examined: SOUTH ANDAMAN. Wright Myo, on leaves of *Dysoxylum andamanicam* King (1895: 49) (Meliaceae), 8 December 2012, V.B. Hosagoudar & al 6861 (holotype TBGT!).

3. *Meliola memecyli* Syd. & P. Syd. var. ***andamanica*** var. nov.

MycoBank No.: MB 815556

Diagnostic characters: Colonies epiphyllous, thin up to 2 mm in diameter. Hyphae straight to substraight, branching opposite to alternate at acute to wide angles, loosely to closely reticulate, cells 20-25 × 7-8 µm. Appressoria alternate to unilateral, straight to curved, antrorse subantrorse to retrorse, 17-22 µm; stalk cells cylindrical to cuneate, 5-7 µm long; head cells ovate to oblong, clavate, entire, 12-17 × 10-12 µm. Phialides mixed with appressoria, alternate, ampulliform, 17-22 × 5-6 µm. Mycelial setae scattered, straight, simple, acute, dentate to furcate up to 700 µm long.

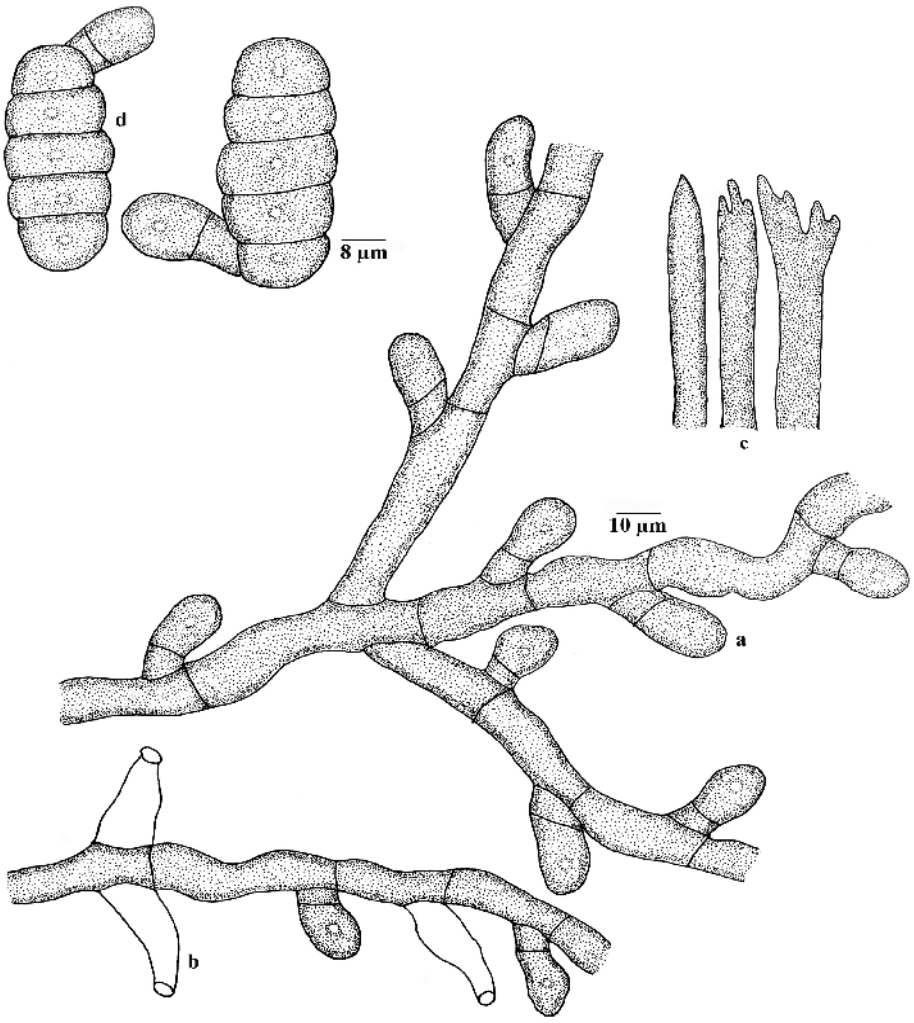
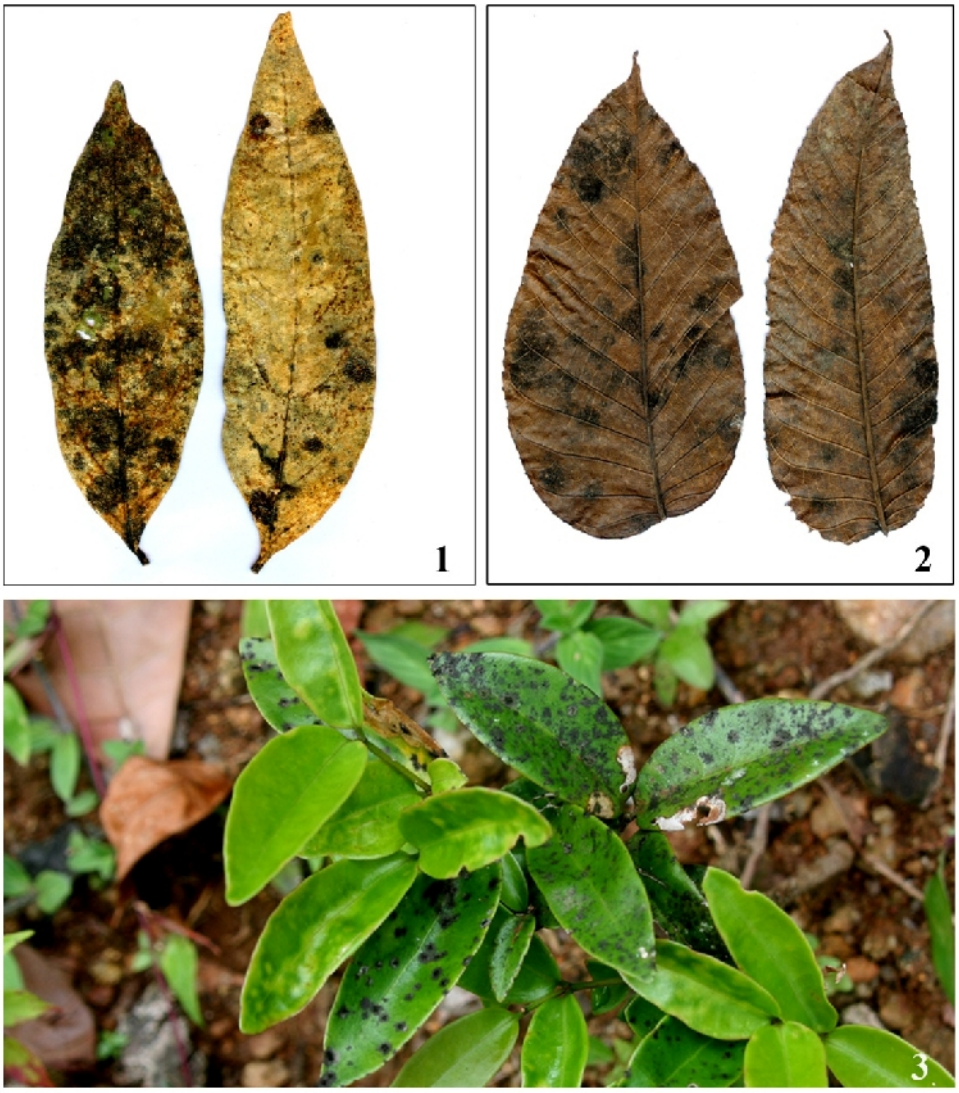


Fig. 3. *Meliola memecyli* Syd. & P. Syd. var. *andamanica* var. nov.
a. Appressoriate mycelium, b. Phialides, c. Mycelial setae, d. Ascospores.



1. *Asterina miliusae* Hosag. *et al* var. *andamanica* var. nov. on *Goniothalamus macranthus*; 2. *Meliola dysoxyli andamanensis* sp. nov. on *Dysoxylum andamanicam*; 3. *Meliola memecyli* Syd. & P. Syd. var. *andamanica* var. nov. on *Memecylon edule*.

Perithecia scattered, globose up to 180 µm in diameter, ascospores obovoidal, 4 septate, mainly constricted at the septa 40-45 × 15-20 µm, wall smooth.

Remarks: The new taxon is closely allied to *Meliola memecyli* Sydow & Sydow (1917: 189) in having alternate appressoria, phialides mixed with appressoria and simple setae (Hosagoudar 1996); but the new variety differs from *Meliola memecyli* Sydow & Sydow in lacking opposite appressoria and having shorter mycelial setae and smaller ascospores. The Beeli formula of current species is 31⅔1.4223 whereas in *Meliola memecyli* it is 31⅓3.5334.

Etymology: The new taxon is named after the insular locality of its occurrence, the Andaman Islands.

Specimen examined: SOUTH ANDAMAN. Ferrar Gunj, on leaves of *Memecylon edule* Roxburgh (1795: 59) (Melastomaceae), 4 December 2012, V.B. Hosagoudar & al 6812 (holotype TBGT!).

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