

Twelve new species of Ascomycetous fungi from Andaman Islands, India

M. Niranjana and V. Venkateswara Sarma*

Department of Biotechnology, Pondicherry University, Kalapet, Pondicherry-605014, India.

Corresponding author Email: sarmavv@yahoo.com

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Abstract:

Andaman and Nicobar Islands, also known as Bay Islands, stretching over 800 km in Bay of Bengal and comprising 572 islands have rich flora and fauna. The biodiversity of filamentous saprophytic ascomycetous fungi colonizing woody plant litter is being investigated. Examination of the dead and decaying twig samples of different tree plant species fallen on the forest floor in South, Middle and North Andaman Islands resulted in 12 new fungal species, which are described and illustrated in this paper. These include *Botryobambusa appendiculispota* sp. nov., *Brunneiapiospora appendiculata* sp. nov., *Cilioplea macrospora* sp. nov., *Cryptascoma shodasabeejae* sp. nov., *Diatrypella macroasca* sp. nov., *Leptosphaeria sadvibhajanabeejae* sp. nov., *Leptosphaeria verruculosa* sp. nov., *Montagnula vakrabeejae* sp. nov., *Ostreichnion beejakoshae* sp. nov., *Rizalia falcata* sp. nov., *Rosellinia attenuata* sp. nov. and *Rosellinia tetraspora* sp. nov. These new fungal species belong to ten genera, ten families, six orders and two classes. Among these six are unitunicate ascomycetous fungi while the other six are bitunicate fungi.

Key words: *Dothideomycetes*, *Sordariomycetes*, taxonomy, terrestrial fungi, woody litter

INTRODUCTION

Many forest formations around the world with a great variety of plants have virtually remained unexplored for fungi. Andaman and Nicobar Islands (A & N Islands) of India is one such formation where no concerted efforts have been undertaken to describe its fungal diversity. There are around 17,000 taxa of phanerogams and 22000 fungal taxa that have been reported from Indian subcontinent (Hosagoudar and Mathew, 2000). The number of fungal species reported from India has risen to 27,000 by 2005 (Manoharachary *et al.*, 2005). The A & N Islands have a rich flora of around 2,395 plant species (Dagar, 1993). The remaining being mangrove and mangrove associated plants or other plant species of marine origin. Though there have been many attempts to document fungi from the subcontinent in India, the same cannot be said to be true of the A & N Islands. A review of the literature shows that very few publications are available on the mycota in A & N Islands. Other than a couple of reports there have been no concerted efforts to study fungal diversity (Niranjana and Sarma, 2018). The A & N islands have very pristine forests, which may host a diverse mycota. Hence efforts have been initiated to investigate the filamentous ascomycetes colonizing woody plant litter in Andaman Islands, India. In the present paper 12 new ascomycetes are described and illustrated.

MATERIAL AND METHODS

Dead and decaying twig samples fallen on the forest floor in the reserved forests of South, Middle and North Andaman Islands, India were collected and transferred into ziplock plastic bags, air dried overnight, and packed into new plastic bags for shipment to the laboratory for further processing. Before undertaking the microscopic examination, the twigs were placed individually into plastic bread boxes lined with sterile tissue paper, rehydrated by sprinkling sterile water and incubated before examination. The samples were then examined under a Stereo Zoom microscope (Optika SZM-LED, Italy) to locate the fungal fruiting structures. Hand sections were taken wherever necessary. The fruit bodies were cut with a razor and the spore constituents were transferred to a microslide mounted with stains like Lactophenol, Lactophenol cotton blue, Loughs reagent and

India ink. These slides were then examined under the Nikon ECLIPSE TiU upright microscope with DIC objectives fitted with Nikon DS-Fi2 digital camera Japan to take photomicrographs. Measurements were taken with Nikon NIS-Elements-Imaging Software version 4.4 program, photo plates were prepared and edited in Microsoft powerpoint, and Adobe Photoshop version 7.0. Morphological identification was carried out by referring to various monographs and individual publications including Ainsworth *et al.* (1973), Hyde *et al.* (2013), Maharachchikumbura *et al.* (2016) and (Pandey, 2008). The herbarium specimens of the holotype were deposited at Ajrekar Mycological Herbarium (AMH), Agharkar Research Institute (ARI), Pune, India. Attempts to isolate single spore pure cultures were unsuccessful.

TAXONOMIC DESCRIPTION

1. *Botryobambusa apiculiformispota* M. Niranjana and V.V. Sarma sp. nov. **Fig.1 (a-k)**

Mycobank MB822463

Diagnosis: This species has larger asci and ascospores when compared to other species in the genus and polar apiculi.

Etymology: The species name refers to the presence of apiculus in ascospores.

Classification: *Botryosphaeriaceae*, *Botryosphaeriales*, *Dothideomycetes*.

Saprobic on decaying twig of *Calamus andamanicus* Kurz. **Teleomorph:** Pseudothecial stroma 200-208 × 177-444 μm, immersed to erumpent, carbonaceous, linearly arranged, multi-loculate, ascomata perithecial, 2-5 per stroma, clustered, sub-globose to rectangular, short-ostiolated, papillate, periphysate. Peridium 25-30 μm wide with outer 2 or 3 brown layers of textura angularis cells and inner 2 or 3 layers of textura angularis cells. Hamathecium: Pseudoparaphyses filamentous, unbranched, septate, cellular, 3.5-5.7 μm. Asci 87.5-130 × 22.5-26.2 μm (\bar{X} = 101.5 × 24.9) (n=10), bitunicate, 8-spored, clavate to cylindrical at maturity, apical thickening with prominent apical chamber, pedicellate, deliquescent. Ascospores (28.7-) 31.2-37.5 × 10-15 μm (\bar{X} = 32.75 × 11.07) (n=25), biseriolate, hyaline, thick-walled (with 2 layers), cylindrical to fusiform when young,

becoming laterally wide at maturity, elliptical to navicular, apically acute, covered with a thin mucilaginous sheath that has an apiculus at both ends. **Anamorph:** Undetermined.

Distribution: India.

Material examined: India, Andaman and Nicobar Islands, North Andaman, Mohanpur (13°11'25.5"N 92°53'23.7"E). Recorded on a twig of *Calamus andamanicus* Kurz. (*Areaceae*), January 6, 2017, M. Niranjana & V.V. Sarma. Holotype AMH 9929, Ajrekar Mycological Herbarium, Agarkar Research Institute, Pune, India.

Remarks: *Botryosphaeriaceae* was introduced by Theissen and Sydow (1915) to accommodate the genus *Botryosphaeria*. The order *Botryosphaeriales* has been recently established by Schoch *et al.* (2006). The Genus *Phaeobotryosphaeria* is characterised with immersed ascostromata, covered by cuticle or epidermis and brown ascospores with hyaline apiculus. Liu *et al.* (2012) raised a new genus *Botryobambusa* in the family *Botryosphaeriaceae* with *Botryobambusa fusicoccum* as the monospecific type species based on the presence of smaller asci and ascospores when compared to *Botryosphaeria*. Further, *Botryobambusa* has erumpent, sub-globose ascostromata when compared to ascostromata that are immersed and globose in *Botryosphaeria*. *Botryobambusa* spp. occur on Bamboo species (*Poaceae*) and palms (*Calamus* spp.) (*Areaceae*).

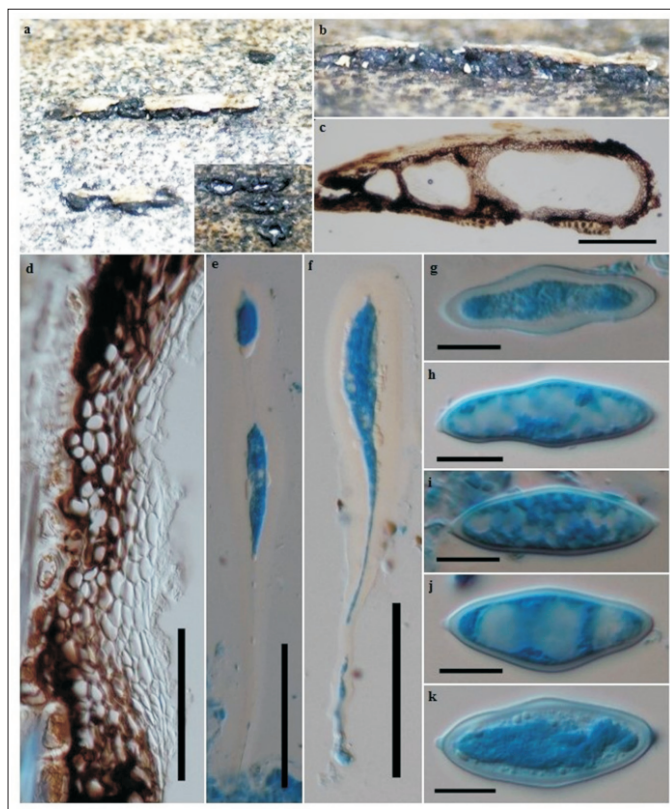


Fig. 1. *Botryobambusa apiculiformispora* (AMH 9929, Holotype): a, b. Ascostromata. c. Ascostromata vertical section. d. Peridium with textura angularis. e-f. Asci. g-k. Ascospores. Scale bars: c=200 μ m. d-f=50 μ m. g-k=10 μ m.

Botryobambusa apiculiformispora fits very well in the genus *Botryobambusa* based on morphological features including smaller asci with thick-walled ascospores and multiloculate ascostromata in a stroma (**Fig. 1**). *Botryobambusa apiculiformispora* differs from *B. fusicoccum* in having larger asci and ascospores and the mucilaginous sheath of ascospores ending with an apiculus. Hence a new species *B. apiculiformispora* is proposed to be accommodated in the genus *Botryobambusa*.

2. *Brunneiapiospora appendiculata* M. Niranjana and V.V. Sarma sp. nov. **Fig.2 (a-o)**

Mycobank MB822469

Diagnosis: *B. appendiculata*, like other species of the genus, has apiospores with larger apical cell that are brown at maturity and small hyaline lower cells. However, it differs from other species of the genus in having a cap-like appendage attached to the apical cell.

Etymology: The species name is based on the appendage attached to larger apical cell of the ascospores.

Classification: *Clypeosphaeriaceae*, *Xylariales*, *Sordariomycetes*.

Saprobic on decaying *Gliricidia sepium* twig. **Teleomorph:** Ascostromata 336 - 408 μ m high x 300 - 413 μ m wide (\bar{X} = 371.2 x 350 μ m), perithecial, conical, semi-immersed to erumpent, slightly raised, gregarious, clypeate, short-papillate. Peridium 17.5 μ m wide, 2-layered, outer thick, dark brown-black layer containing 2 or several layers of textura angularis cells, inner thin hyaline layer consisting of 2 layers of textura angularis cells. Hamathecium: Paraphyses 1.7-5 μ m wide, filamentous, septate, unbranched. Asci 8-spored, 100-120 x 5-7 μ m (\bar{X} = 109 x 7.3) (n=25), unitunicate, cylindrical, persistent, pedicellate, smooth-walled, apical ring truncate, (1.1-) 1.6 - 2.8 μ m high x (1-) 1.2-1.6 μ m wide (\bar{X} = 2.3 x 1.4) (n=25), thin, J+ positive in Lough's reagent. Ascospores 9.8 - 14.2 x 4.6 - 5.9 μ m (\bar{X} = 11.9 x 5.2) (n=25), uniseriate, 1-septate, septum sub-median (apiosporous), constricted at the septum, asymmetrical, apical cell larger, pale brown when young to brown at maturity, ellipsoidal with obtuse ends, polar cap-like appendage at the apex of the larger apical cell, basal cell small, hyaline, with acute end, uni or bi-guttulate, smooth-walled.

Anamorph: Undetermined.

Distribution: India.

Material examined: India, Andaman and Nicobar Islands, Middle Andaman, Near Kausalya Nagar (12°31'35.0"N 92°49'7.1"E). Recorded on twig of *Gliricidia sepium* (Jacq.) Kunth ex Walp. (*Fabaceae*). January 5, 2017, M. Niranjana & V.V. Sarma. Holotype AMH 9922, Ajrekar Mycological Herbarium, Agarkar Research Institute, Pune, India.

Remarks: The genus *Brunneiapiospora* was established by Hyde *et al.* (1998), based on the type species *B. javensis*, to accommodate taxa that have immersed, clypeate ascostromata, asci with J+ apical ring and apiospores with larger apical brown and basal hyaline to pale brown cells. Presently this genus comprises 9 species (Hyde *et al.*, 1998, Vitoria *et al.*,

Table 1. A synopsis of different characters of *Brunneiapiospora* species.

Sr. No.	Species name	Ascospore	Basal cell	Ascal apical ring
1	<i>B. aequatoriensis</i>	12.5-17.5×4.5-6.25 µm, with sheath	Brown	Discoid subapical ring
2	<i>B. appendiculata</i>	9.8 – 14.2 × 4.6 – 5.9 µm, with cap-like appendage	Hyaline	Cylindrical
3	<i>B. australiensis</i>	13.3-17(-18.6) × 7.5-10.5 (-12) µm, with sheath.	Pale brown	Discoid subapical ring
4	<i>B. austropalmicola</i>	19-30×3-5, basal cell 3-4 µm	Hyaline	Cylindrical
5	<i>B. brasiliensis</i>	15-24×5-8 (-8.8) µm	Hyaline-light brown	Discoid subapical ring
6	<i>B. daemonoropis</i>	10.5-14.4×4.5-5.8 µm	Hyaline-light brown	Wedge Shaped subapical ring
7	<i>B. deightoniella</i>	22-32×7.5-10 µm	Hyaline or very pale brown	Discoid subapical ring
8	<i>B. jesseniae</i>	22.5-27.5(-30) × 7-8(-9) µm, remnants of mucilage	Brown	Discoid subapical ring
9	<i>B. javensis</i>	12-14.4×4.8-6 µm with sheath	Hyaline	Discoid subapical ring

2012; Crous *et al.*, 2012). A synopsis of different species of *Brunneiapiospora* is presented in **Table 1**. Among the different species of *Brunneiapiospora*, the present taxon *B. appendiculata* closely resembles *B. javensis* and *B. daemonoropis* in having overlapping dimensions of asci and ascospores. However, *B. appendiculata* differs from both these species in having a cap-like appendage attached to the larger apical cell, a constriction in the septum of the ascospores and in having a cylindrical apical ring in the asci

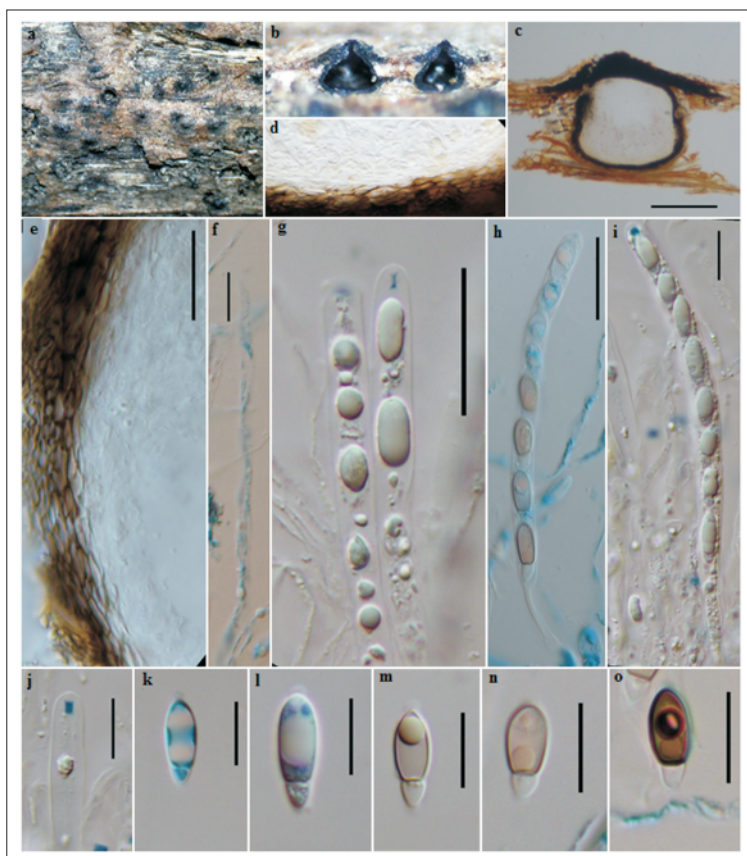


Fig. 2. *Brunneiapiospora appendiculata* (AMH 9922, Holotype): a. Ascomata. b-c. Vertical section of an Ascoma. d,e. Peridium. f. Hamathecium-Paraphyses. g-i. Asci. j. Apical ring. k-o. Ascospores. Scale bars: c = 200 µm. d, e, g, h = 20 µm. f, i-o = 10 µm.

(**Fig. 2**). While *B. javensis* has a mucilaginous sheath around the ascospores and a discoid apical ring in the asci, *B. daemonoropis* has hyaline to brown basal cell and a wedge-shaped apical ring in the asci, characters that distinguish these two species from *B. appendiculata*. Based on the morphological differences discussed above and also included in **Table 1**, a new species *B. appendiculata* has been proposed to be accommodated in the genus *Brunneiapiospora*.

3. *Cilioplea macrospora* M. Niranjana and V.V. Sarma sp. nov.

Fig. 3 (a-p)

Mycobank MB822461

Diagnosis: Ascomata pseudothecial, covered apically with brown to black setae, muriform, brown ascospores with hyaline end cells that are biserially arranged.

Etymology: The presence of larger ascospores in this species as compared to other species of the genus forms the basis for erection of a new species.

Classification: *Dothideomycetes incertae sedis*.

Saprobic on decaying twig. **Teleomorph:** Ascomata 208-300 × 233-280 µm, pseudothecia globose to sub-globose, superficial, corticolous, solitary to gregarious, black, covered at the apex with short, brown to black setae, 7.7-10.3 µm wide, coriaceous, ostiolate. Peridium 41.6 µm, 2-layered, comprising outer brown and inner hyaline cells of textura angularis. Hamathecium comprises of filamentous, loosely interconnected, septate and branched pseudoparaphyses, 0.5-1 µm wide. Asci 83-122 × 15.6-23 µm (\bar{X} = 97 × 8.2) (n=10), bitunicate, 8-spored, clavate to broadly-clavate, thick, with an indistinct apical chamber, short pedicellate. Ascospores 41-55 (-60) × 11-22.4 µm (\bar{X} = 45.4 × 15.7) (n=25), biserial to overlapping triseriate, hyaline when young, becoming brown at maturity, fusiform when young, elliptical to ovate at maturity, muriform, 8-13 transverse septate, 2-4 longitudinal septa in each segment, end cells hyaline. **Anamorph:** Undetermined.

Distribution: India

Material examined: India, Andaman and Nicobar Islands, South Andaman, Kalatan (11°47'59.1"N 92°42'46.8"E), on an unidentified twig, January 4, 2017, M. Niranjana & V.V. Sarma. Holotype AMH 9925, Ajrekar Mycological Herbarium, Agarkar Research Institute, Pune, India.

Remarks: Munk (1953) has established the genus *Cilioplea* Munk in *Dothideomycetes* genera *incertae sedis* based on type *C. coronata* (Niessl) Munk. The taxa belonging to this genus occur as saprobes and are terrestrial. The asexual morph is unknown (Thambugala *et al.*, 2015). While Lumbsch and Hündorf (2007) accepted this genus in *Lophiostomataceae*, Hyde *et al.* (2013) did not accept this genus under *Lophiostomataceae* and Wijayawardene *et al.* (2014, 2018) have accepted it as a genus in *Dothideomycetes*, genera *incertae sedis*.

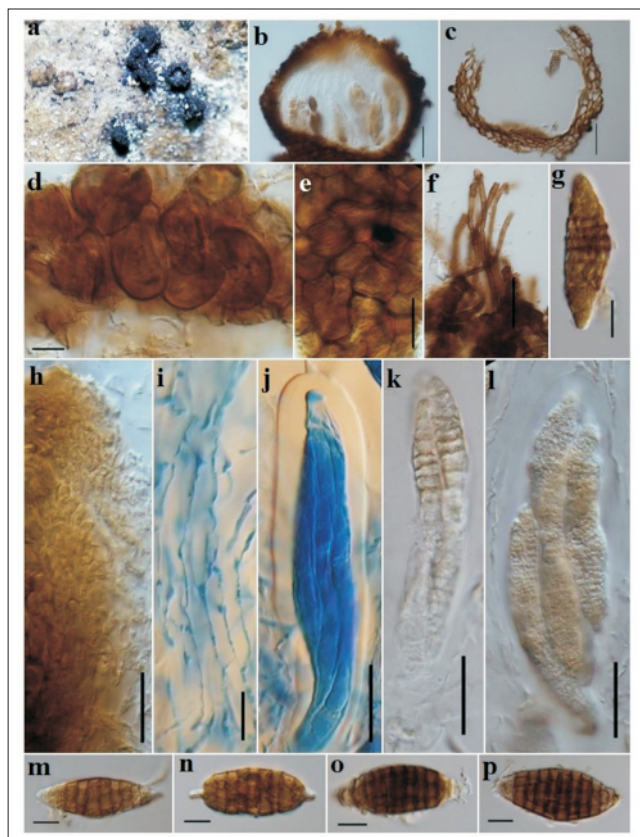


Fig. 3. *Cilioplea macrospora* (AMH 9925, Holotype): **a,b.** Ascomata. **c.** Peridium of textura angularis. **d,e.** Outer globose cells. **f.** Apical setae. **h, i.** Asci. **g, j-p.** Ascospores. Scale bars: **b, c, f**=50 μm . **e, h, j-l**=20 μm . **d, g, i, m-p**=10 μm .

This genus is characterized by having ascomata that are immersed erumpent, usually gregarious, sphaeroid, collabent, apex short, papillate, with short brown or dark blackish brown setae; peridium comprising outer narrow, brown, pseudoparenchymatous cells, and a few internal rows of compressed, hyaline cells; presence of numerous, narrowly cellular pseudoparaphyses above the asci (Barr, 1990). The present collection has these characters and hence fits very well into this genus (Fig. 3). There are nine species listed under this genus in Mycobank. Since all the existing species have ascospores that are smaller than the present taxon, a new species *Cilioplea macrospora* has been proposed under the genus *Cilioplea*.

4. *Cryptascoma shodasabeejae* M. Niranjana and V.V. Sarma sp. nov. **Fig. 4 (a-n)**

Mycobank MB822459

Diagnosis: This species has ascomata in pseudostroma covered with hair-like hyphal structures, asci with 16 ascospores and 1-septate ascospores with polar appendages.

Etymology: The presence of 16 ascospores per ascus forms the basis for naming the species. In Sanskrit - 'Shodasa' means sixteen and 'beejae' means spores.

Classification: *Valsaceae, Diaporthales, Sordariomycetes.*

Table 2. A synopsis of different characters of *Cryptascoma* species.

Sr. No.	Species name	Ascomata	Asci	Ascospore
1	<i>C. shodasabeejae</i>	230-240 × 260 μm	42-58.6 × 7.5-11.2 μm	7.5-10 × 3-4.2 μm
2	<i>C. bisetula</i> (Ananthapadmanabhan, 1988)	500-545 × 500-545 μm	40.2-48.4 × 12.8-21.5 μm	15-22.5 × 4.5-6.0 μm

Saprobic on an unidentified decaying twig. **Teleomorph:** Stromata pseudostromatic, ascomata surrounded by hyphae that are hair-like, hyphae 3.7-5.2 μm wide, brown, septate. Ascomata 230-240 × 260 μm , perithecial, sub-globose, superficial, solitary to gregarious, ostiolate, short-papillate, in bark (corticolous), soft, subciliate. Peridium composed of textura angularis cells, Hamathecium: Paraphyses filamentous, loosely connected, 1.7-2 μm wide, septate, unbranched. Asci 42-58.6 × 7.5-11.2 μm (\bar{X} = 51.5 × 10) (n=25), unitunicate, 16-spored, clavate, long-pedicellate, J-ve apical ring in Lougal's reagent, broadly obtuse apical end. Ascospores 7.5-10 × 3-4.2 μm (\bar{X} = 8.4 × 3.5) (n=25), triseriate, hyaline, fusoid, 1-septate, with 2 polar appendages 7.5-10 × 1 μm long at each end.

Anamorph: Undetermined.

Distribution: India.

Material examined: India, Andaman and Nicobar Islands, South Andaman, Chidiyatapu, Badabhalu (11°30'36.5"N 92°41'23.4"E). Recorded on an unidentified twig, January 8,

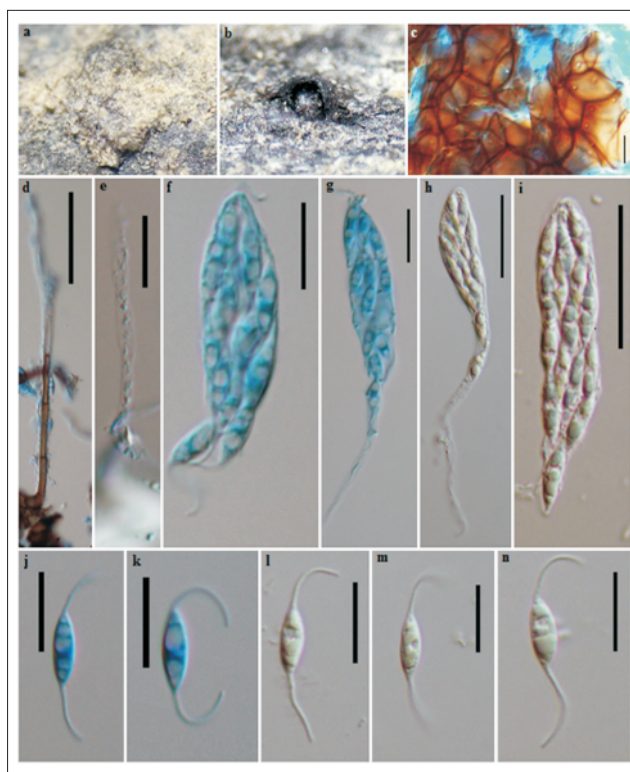


Fig. 4. *Cryptascoma shodasabeejae* (AMH 9923, Holotype): **a.** Ascomata. **b.** Vertical section. **c.** Brown cells on ascomata. **d.** Hyphae. **e.** Paraphyses **f-i** Asci. **j-n** Ascospores. Scale bars: **d,** = 50 μm . **h-i**=20 μm . **c, e, f, j-n**=10 μm .

2017, M Niranjana & V.V. Sarma. Holotype AMH 9923, Ajrekar Mycological Herbarium, Agarkar Research Institute, Pune, India.

Remarks: *Cryptascoma*, a monotypic genus, based on type species *C. bisetula*, was established by Ananthapadmanabhan (1988). It has aseptate ascospores with polar appendages, J-apical ring in asci, and was placed in *Diaporthales*. *Cryptoascoma shodasabeejiae* sp. nov. resembles *C. bisetula* in ascospore and ascus characteristics. *C. shodasabeejiae* has hyphae covering sub-immersed ascostoma and fusiform 1-septate ascospores with polar appendages. *C. shodasabeejiae* differs from type species *C. bisetula* in having 16 ascospores (Fig. 4, Table 2). It also differs from *Oxydothis* species in not having lateral ascostoma and J+ ascus apical rings; and from *Ceriospora bicalcarata* in not having a J+ apical ring in asci (Hyde, 1993). Based on the above differences, mainly the sixteen spored asci, a new species *C. shodasabeejiae* has been proposed to be accommodated in the genus *Cryptascoma*.

5. *Diatrypella macroasca* M. Niranjana and V.V. Sarma sp. nov. **Fig. 5 (a-o)**

Mycobank MB822435

Diagnosis: This species has stromata with black and pale green layers, ascostoma sub-globose, asci polysporous, ascospores, allantoid, sub-hyaline. It could be distinguished from other species of the genus based on broader asci.

Etymology: The species name is based on the occurrence of broader asci

Classification: *Diatrypaceae*, *Xylariales*, *Sordariomycetes*.

Saprobic on an unidentified twig. **Teleomorph:** Stromata 1-2 mm dia, erumpent, eutypoid, pulvinate, corticolous, consists three strata: outer thin carbonaceous, thick middle pale green coloured cell layer and an inner parenchymatous stratum, 10-15 perithecia in each stroma. Ascostoma 350-520 μ m high (excluding necks) x 330-380 μ m wide (\bar{X} = 424 x 356 μ m) (n=5), perithecial, broadly ovoid or subglobose, gregarious, immersed in stroma, erumpent, ostiolated, papillate. Neck 400-550 μ m high x 130-170 μ m wide (\bar{X} = 478 x 152 μ m), periphysate, periphyses 1-3.8 μ m wide. Peridium 22.5 μ m wide, outer layer consists of 3-4 layers of brown to dark-brown textura angularis cells and inner layer of 2-3 layers of hyaline cells of textura angularis. Hamathecium: Paraphyses 1.7-2 μ m wide, aseptate when young, septate at maturity. Asci (130-) 145-180(-190) x 18.7-30.5 μ m (\bar{X} = 156 x 21.25 μ m) (n=25), unitunicate, clavate to broad-clavate, J-ve apical ring in Lugol's reagent, apex often getting invaginated, smooth-walled, pedicellate. Ascospores 7.5-15 x 2.5 μ m (\bar{X} =11.6 x 2.5 μ m) (n=25), polysporous, allantoid, sub-hyaline, smooth-walled.

Anamorph: Undetermined.

Distribution: India.

Material examined: India, Andaman and Nicobar Islands, South Andaman, Mundaphad Beach, View Point (11°28'56.5"N 92°42'35.9"E); On an unidentified twig, January 8, 2017, M. Niranjana & V.V. Sarma. Holotype AMH 9914, Ajrekar Mycological Herbarium, Agarkar Research Institute, Pune, India.

Table 3. A synopsis of different characters of closely related *Diatrypella* species.

Sr. No.	Species name	Ascostromata	Ascostoma	Asci	Ascospores
1	<i>D. macroasca</i>	1000-2000 μ m More than 10 perithecia	350-520 x 330-380 μ m	115-170 x 18.75-23.75 μ m	7.5-15 x 2.5 μ m
2	<i>D. iranensis</i>	3000 μ m diameter 4-57 perithecia	200-500 μ m diam	(55-)70-110 (-130) x 6-9 (-10) μ m	(5-)6-7(-8) x 1-1.3(-1.5) μ m
3	<i>D. leguminacearum</i>	4000-7000 x 400-1700 μ m	250-625 x 250-650 μ m	80-150 x 10-20 μ m	6-18 x 2.5-3.5 μ m
4	<i>D. macrospora</i>	1500-2500 μ m diam 3-10 perithecia	400-700 μ m diam	110-150 (-160) x 10-15 μ m	(10-) 12-20 (-23) x 1.7-3 (-3.7) μ m
5	<i>D. tectonae</i>	100-1300 μ m wide, bi- to multi-perithecial	240-440 x 255-389 μ m diam	(107-) 120-150 (-173) x (13.5-) 15.5-21.5 (-39.5) μ m (\bar{X} = 138 x 19 μ m)	(5-) 7-9 (-12) x (1.5-) 2-2.5 (-3) μ m (\bar{X} = 8 x 2.3 μ m)

Remarks: The family *Diatrypaceae* consists of a wide variety of genera with allantoid ascospores (Vasilyeva and Stephenson, 2005). The genera *Diatrypella* and *Cryptovalsa* belonging to this family produce polysporous asci (Maharachchikumbura *et al.*, 2016). New species and new

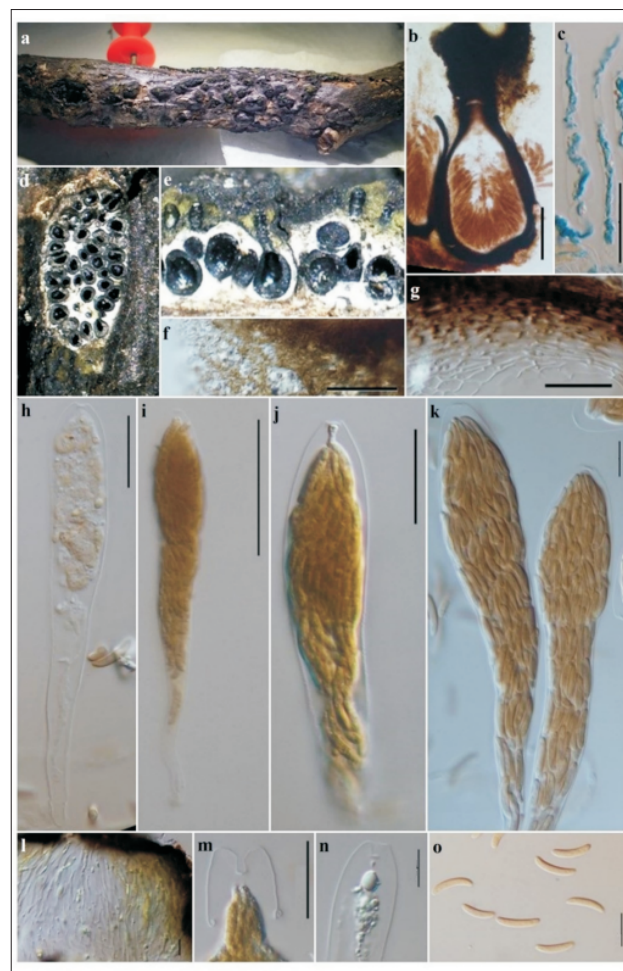


Fig. 5. *Diatrypella macroasca* (AMH 9914, Holotype): a. Ascostromata. b, e. Vertical section of ascostroma. c. Paraphyses. d. Horizontal section of ascostroma. f, g. Peridium. h-k. Asci. i. Periphyses. m, n. J- Apical ring in asci. o. Ascospores. Scale bars: b=200 μ m. f, i=50 μ m. c, g, h, j, m 20 μ m. k, l, n, o = 10 μ m.

host records in the genus *Diatrypella* have recently been published by Mehrabi *et al.* (2015, 2016). *Diatrypella betulina*, *D. decorata*, *D. discoidea*, *D. favacea*, *D. iranensis*, *D. major*, *D. melaleuca*, *D. placenta* and *D. verruciformis* have smaller spore range (6-8 μm) when compared to *D. macroasca*. The closely resembling taxa are presented in **Table 3**. *Diatrypella leguminacearum* and *D. macrospora* have larger ascospores when compared to *D. macroasca*. Ascostromata of *D. macroasca* are unique when compared to other species of the genus in having pale green inner stromatic layer and fusoid asci. Further the width of asci of *D. macroasca* is much larger than any of the existing species of this genus. Though the dimensions of asci of *D. macroasca* are only slightly larger than *D. tectonae* (Shang *et al.*, 2017) the ascospores are shorter in the latter species when compared to the former (**Fig. 5**, **Table 3**). Hence a new species *D. macroasca* has been proposed to be accommodated in *Diatrypella*.

6. *Leptosphaeria sadvibhajanabeejae* M. Niranjana and V.V. Sarma sp.nov. **Fig. 6 (a-q)**

Mycobank MB822462

Diagnosis: Ascromata perithecioid, erumpent, neck narrow towards apical end, bitunicate, fissitunicate, 8-spored asci, 6-septate ascospores with larger second or third cells having constriction at the septa.

Etymology: The species name is based on the presence of six septate ascospores. In Sanskrit language. 'Sad' means six, 'vibhajan' means partition or septa and 'beejae' means spores.

Classification: *Leptosphaeriaceae*, *Pleosporales*, *Dothideomycetes*.

Saprobic on decaying twig. **Teleomorph:** Ascromata 200-270 x 480-550 μm , pseudothecia perithecioid, solitary to rarely gregarious, immersed to erumpent, flat to sub-globose, conical at apices. Neck 180 - 450 x 160 - 280 μm , black, conical, ostiolated, periphysate. Peridium 27.5-30 μm wide, an outer thick carbonaceous layer and an inner pale brown layer of textura angularis cells. Hamathecium: Pseudoparaphyses 1.7 μm wide, cellular, septate, branched. Asci 55-95 (-115) x 7-10.5 μm (\bar{X} = 73.4 x 9.3) (n=25), bitunicate, fissitunicate, 8-spored, cylindric-clavate, apical ocular chamber, rounded ends, smooth-walled, short-pedicellate. Ascospores 16-20 x 3.7-5.5 μm (\bar{X} = 18.1 x 4.8) (n=25), overlapping uniseriate or biseriata, hyaline when young, brown at maturity, frequently with hyaline end cells, fusiform, mostly 6-septate, rarely 5-septate, 2nd cell in 5-septate ascospores and 3rd cell in 6-septate ascospores are broader, constricted at the 2nd or 3rd apical septa, in 5 and 6 septate ascospores, respectively, apical cells cone shaped, acute ends, straight or sometimes slightly curved.

Anamorph: Undetermined

Distribution: India.

Material examined: India. Andaman and Nicobar Islands, South Andaman, Kalatan (11°47'59.1"N 92°42'46.8"E); On an unidentified twig; collected on January 4, 2017, M. Niranjana & V.V. Sarma. Holotype AMH 9927, Ajrekar Mycological

Table 4. Synopsis of different characters of *Leptosphaeria* spp. having 6-septate ascospores

Sr. No.	Species name	Ascromata	Asci	Ascospore
1	<i>L. agnita</i>	175-250 x 225-400 μm	95.6-120.5 x 11-14.1 μm	25.6-30.4 x 4.7-6.2 μm
2	<i>L. sadvibhajanabeejae</i>	380-550 x 380-650 μm	55-88.75 x 7-10.5 μm	16-20 x 3.5-5.5 μm
3	<i>L. anemanes</i>	—	—	27-34 x 3.5-5.5 μm
4	<i>L. apsingensis</i>	114-152 x 190-266 μm	60-75 x 15-19 μm	14-16 x 10-11 μm
5	<i>L. fockelii</i>	—	—	21-35 x 4.5-6.5 μm

Herbarium, Agarkar Research Institute, Pune, India.

Remarks: Cesati and de Notaris (1863) introduced the genus *Leptosphaeria* based on the fusoid multiseptate ascospores, hyaline to brown in color and it has been placed under *Leptosphaeriaceae* (Barr, 1987; Hyde *et al.*, 2013). *Leptosphaeria* is comprised of fungi that produce uniloculate perithecioid pseudothecia with narrow, thin-walled asci and septate pseudoparaphyses (Barr, 1987). There are 4 species in *Leptosphaeria* that have 6-septate ascospores. A synopsis of different characteristics of the 6-septate *Leptosphaeria* species is provided in **Table 4**. While the new taxon *L. sadvibhajanabeejae* has smaller ascospores when compared to *L. agnita*, *L. anemanes* and *L. fockelii*, its ascospores are larger when compared to *L. apsingensis*. Further, *L.*

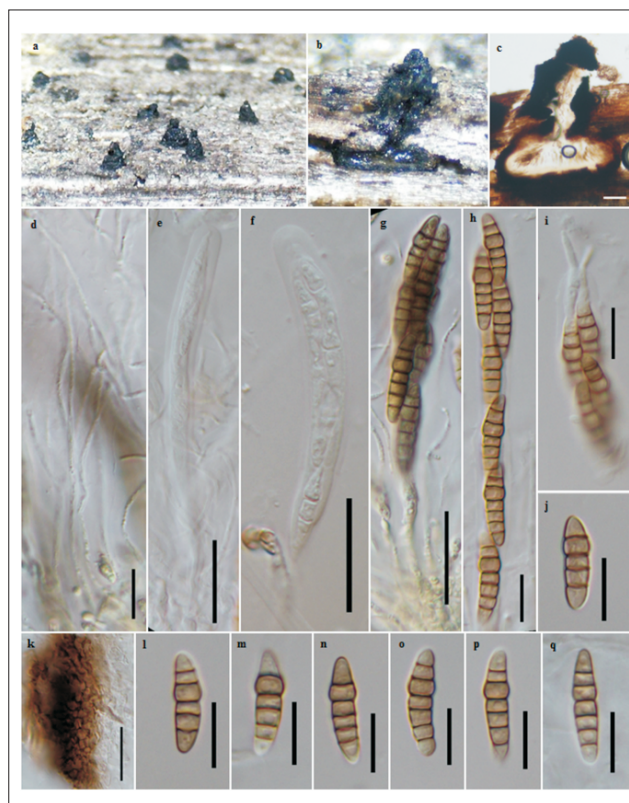


Fig. 6. *Leptosphaeria sadvibhajanabeejae* (AMH 9927, Holotype): a Ascomata on wood. b-c Vertical section. d Paraphyses. e-h Asci. i Germinating spores. k Peridium. j, l-q Ascospores. Scale bars: c = 100 μm . e-g, k = 20 μm . d, h, i, j, l-q = 10 μm .

sadvibhajanabeejae sp. nov. is different from the above existing species in having larger ascomata with erumpent apical neck and hyaline end cells of ascospores (Fig. 6). Based on the above mentioned morphological differences a new species *L. sadvibhajanabeejae* has been proposed to be accommodated for the new taxon in the genus *Leptosphaeria*.

7. *Leptosphaeria verruculosa* M. Niranjan and V.V. Sarma sp. nov. **Fig.7 (a-q)**

Mycobank MB822460

Diagnosis: This species has parallelly oriented, immersed ascomata with small papillate necks, septate, filamentous pseudoparaphyses, asci 8-spored, bitunicate, fissitunicate, 3-septate ascospores that are verruculose in nature.

Etymology: Verruculose nature of ascospores surface forms the basis for naming the species.

Classification: *Leptosphaeriaceae*, *Pleosporales*, *Dothideomycetes*.

Saprobic on decaying twig. **Teleomorph:** Ascomata 60-100 × 250-300 μm, pseudothecial, parallelly oriented on host bark, immersed, glabrous, ostiolate, periphysate, small papillate neck 160-170 × 70-80 μm, black, ascomatal surface is associated with brown, unbranched, septate hairs 2.5 μm wide. Peridium pale brown to brown, textura angularis cells, laterally 25 μm wide, apical and basal region 7.5 μm wide. Hamathecium: Pseudoparaphyses 1.7 μm wide, septate, filamentous, unbranched. Asci 55-87.5 (-112) × 7.5-10 μm (\bar{X} = 69 × 8.5) (n=25), bitunicate, fissitunicate, 8-spored, cylindrical to clavate, smooth-walled, apical chamber at the apex, pedicellate. Ascospores 10-12.5 × 3.5-5 μm (\bar{X} = 11.2 × 4.5) (n = 25), overlapping biseriata, elliptical to fusiform, 1-septate without constriction when young, becoming 3-true septate at maturity with a constriction at the middle septum, brown, verruculose.

Anamorph: Undetermined.

Distribution: India.

Material examined: India, Andaman and Nicobar Islands, South Andaman, Chidiya Tapu (11°29'20.1"N 92°42'36.6"E), On unidentified twig, January 8, 2017, M. Niranjan & V.V. Sarma. Holotype AMH 9924, Ajrekar Mycological Herbarium, Agarkar Research Institute, Pune, India.

Remarks: *Leptosphaeria verruculosa* has smaller ascomata that are parallel to the host and smaller ascospores (Fig. 7) when compared to the closely related species *L. muehlenbeckiae-platycoideae* and *L. zizyphi*. Though *L. typharum* has 3-septate ascospores they are larger in size than *L. verruculosa*. A synopsis of dimensions of ascomata, asci and ascospores of closely related species of *Leptosphaeria* is

Table 5. A synopsis of dimensions of closely related species of *Leptosphaeria verruculosa*

Sr. No.	Species name	Ascomata	Asci	Ascospores
1	<i>L. muehlenbeckiae-platycoideae</i>	163-225 × 100-182 μm	55-81 × 8-10 μm	13-16 × 3-5 μm
2	<i>L. typharum</i>	—	70-100 × 20-25 μm	20-33 × 9-13 μm
3	<i>L. zizyphi</i>	200-300 × 165-265 μm	72-95 × 7.6-11.4 μm	11.2-14.4 × 6.4-8 μm
4	<i>L. verruculosa</i>	60-100 × 250-300 μm	60- 87.5 × 7.5-10 μm	10-12.5 × 3.5-5 μm

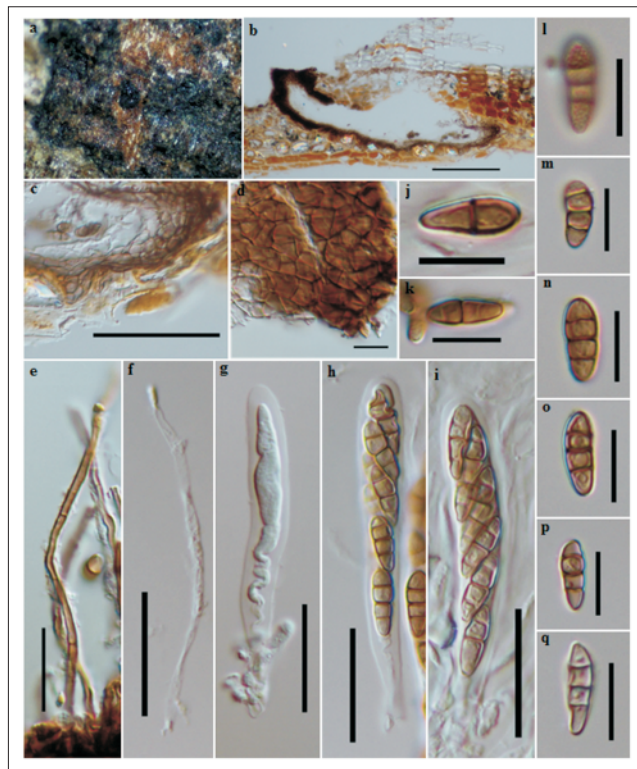


Fig. 7. *Leptosphaeria verruculosa* (AMH 9924, Holotype): a. Ascomata. b. Vertical section of ascoma. c. Peridium. d. Textura angularis. e. Hairs. f. Paraphysis. g-i. Asci. j-q. Ascospores. Scale bars: b = 100 μm. c = 50 μm. e-i = 20 μm. d, j-q = 10 μm.

provided in **Table 5**. Based on the morphological differences of the present taxon, a new species *L. verruculosa* has been proposed to be accommodated in the genus *Leptosphaeria*.

8. *Montagnula vakrabeejae* M. Niranjan and V.V. Sarma sp. nov. **Fig. 8 (a-m)**

Mycobank MB822436

Diagnosis: The species could be identified based on characters of globose ascomata that are ostiolated, asci 8-spored, bitunicate, fissitunicate, long-pedicellate, ascospores 1-septate, constricted at the septum, asymmetrical, slightly curved, verruculose.

Etymology: The species name is based on the asymmetrical shape and size of cells of ascospores. In Sanskrit language. 'vakra' means disorderly and 'beejae' means spores.

Classification: *Didymosphaeriaceae*, *Pleosporales*, *Dothideomycetes*.

Saprobic on decaying twig. **Teleomorph:** Ascomata 400-500 × 450-480 μm, pseudothecia perithecioid, globose, immersed to slightly raised, solitary or gregarious, carbonaceous, dark brown to black, ostiolate, papillate. Peridium 7-25 μm wide, outer layer of brown cells and inner layer of sub-hyaline textura angularis cells, thin at base and broader towards apex. Hamathecium: Pseudoparaphyses 2-5 μm wide, septate, unbranched, longer than asci. Asci 8-spored, 97- 135 × 7-9.7 μm (\bar{X} = 112 × 9 μm) (n=25), bitunicate, fissitunicate, cylindro-

clavate, long-pedicellate. Ascospores $9-14 \times 4-6.1 \mu\text{m}$ ($\bar{X}=11.7 \times 5.3 \mu\text{m}$) (n=25), overlapping uniseriate, pale brown to brown, 1-septate with a constriction at the septum, asymmetrical, apical cell broader with an obtuse end, basal cell narrower, slightly curved, verruculose, without a sheath or appendage.

Anamorph: Undetermined.

Distribution: India.

Material examined: India, Andaman and Nicobar Islands, Middle Andaman, near Kausalya Nagar ($12^{\circ}31'35.0''\text{N}$ $92^{\circ}49'7.1''\text{E}$), On an unidentified twig, January 5, 2017, M. Niranjana & V.V. Sarma. Holotype AMH 9921, Ajrekar Mycological Herbarium, Agarkar Research Institute, Pune, India.

Remarks: The family *Didymosphaeriaceae* was introduced by Munk (1953) based on *Didymosphaeria* to accommodate species with 1-septate ascospores and trabeculate pseudoparaphyses which anastomose mostly the above asci (Aptroot, 1995, Ariyawansa *et al.*, 2014). At present this family has 22 genera placed under the sub-class Massarineae (Wanasinghe *et al.*, 2016). The genus *Munkovalsaria* Aptroot was established by Aptroot in 1995 to accommodate *M. donacina* (Niessl) Aptroot based on valloid ascomata, bitunicate, fissitunicate asci and 1-septate, asymmetrical ascospores. However, the genus *Munkovalsaria* has recently

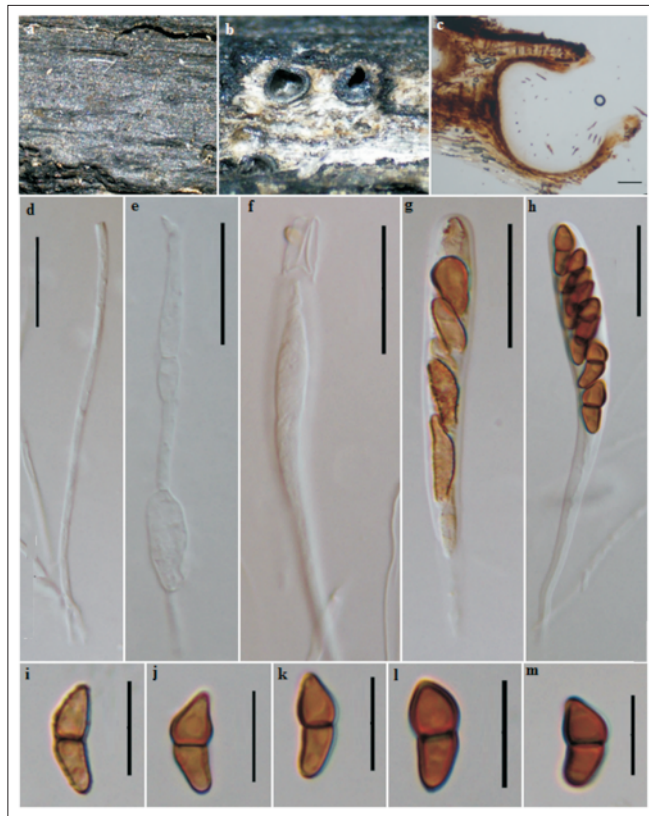


Fig. 8. *Montagnula vakrabeejiae* (AMH 9921, Holotype): a. Ascomata. b. Transverse section. c. Vertical section. d-e. Pseudoparaphysis. e-h. Asci. i-m Ascospores. Scale bars: c = 100 μm . d-h = 20 μm . i-m = 10 μm .

Table 6. A synopsis of different characters of *Montagnula* species

Sr. No.	Name of fungi	Ascomata	Asci	Ascospores
1	<i>M. vakrabeejiae</i>	400-500 $\mu\text{m} \times$ 450-480 μm	97- 135 \times 7- 9.7 μm	9-14 \times 4-6.1 μm
2	<i>M. appendiculata</i>	0.1-0.2 μm	_____	12-15 \times 4-5 μm with appendages.
3	<i>M. donacina</i>	_____	_____	(13.6-)14.8-15.2 (-17.3) \times (6.6-) 7.5 -7.7 (-8.3) μm , with genlatinous sheath

been synonymized with *Montagnula* Berl. based on molecular studies (Wanasinghe *et al.*, 2016) and accordingly two species of *Munkovalsaria* have been transferred to *Montagnula*. The genus *Montagnula* is characterized by globose or spherical immersed ascomata with a clypeus, clavate, bitunicate asci, fusoid or ellipsoid ascospores with transverse septa and one or more longitudinal septa (Barr, 1990, Ariyawansa *et al.* 2014, Wanasinghe *et al.*, 2016). The genus *Montagnula* comprises species that have uniseptate to several septate, phragmosporous to muriform ascospores. Future molecular studies, incorporating a large number of strains belonging to different species, may separate this genus into several new genera based on septation of the ascospores. *Montagnula vakrabeejiae* sp. nov. closely resembles *Montagnula donacina* but differs in lacking multiloculate ascomata under one clypeus (**Fig. 8**). In *M. donacina* the ascospores have gelatinous sheath, which is lacking in *M. vakrabeejiae* (Pitt *et al.*, 2014). In *M. appendiculata* (Aptroot, 2004, Wanasinghe *et al.*, 2016) the ascospores have appendages and hence differs from *M. vakrabeejiae*. Hence a new species *M. vakrabeejiae* has been proposed to be accommodated in the genus *Montagnula*. A synopsis of important characteristics of closely related species of *M. vakrabeejiae* is provided in **Table 6**.

9. *Ostreichnion beejakoshae* M. Niranjana and V.V. Sarma, sp. nov. **Fig. 9 (a-p)**

Mycobank MB822688

Diagnosis: Ascomata apothecial with a central cleft, asci 8-spored, ascospores 1-septate with a constriction, surrounded by a mucilaginous sheath.

Etymology: In Sanskrit '-beej'a' means seed or spore and 'kosha' means outer covering (sheath).

Classification: *Hysteriaceae*, *Hysteriales*, *Dothideomycetes*.

Saprobic on a decaying twig. **Teleomorph:** Ascomata 250-350 \times 430-600 μm ($\bar{X}=310 \times 490 \mu\text{m}$) (n=3), apothecioid with central cleavage, become 2-equal halves, elongated cleft till the lateral end, laterally compressed, erumpent through bark, superficial, scattered. Peridium 38.5-39.3 μm , scleroparenchymatous cells. Hamathecium: Pseudoparaphyses 1.3-1.5 μm wide, filamentous, septate, thin, long-septate, branched, longer than asci. Asci 112.5-156.2 \times 23.7-35 (-37.5) μm ($\bar{X}=136.60 \times 28.75 \mu\text{m}$) (n=21), bitunicate, 8-spored, clavate, rarely cylindrical, ocular chamber at apical end, absent at maturity, smooth-walled, short-pedicellate, terminated with horse shoe end. Ascospores 42.5-57.5 \times 10.5-13.7 μm ($\bar{X}=49.18 \times 12.7 \mu\text{m}$) (n=26), mostly biseriolate, rarely triseriate, hyaline to pale brown when young, becoming gray at maturity, 1-central septum with a strong constriction,

cylindrical, both ends are rounded, obtuse, smooth-walled, surrounded by a mucilaginous sheath.

Anamorph: Undetermined.

Distribution: India.

Material examination: India, Andaman and Nicobar Islands, North Andaman, Mohanpur, (13°11'25.5"N 92°53'23.7"E). Recorded on unidentified thorny twig, January 6, 2017, M. Niranjana & V.V. Sarma. Holotype AMH 9928, Ajrekar Mycological Herbarium, Agarkar Research Institute, Pune, India.

Remarks: *Ostreichnion* was established as a new genus by Barr (1975) who has placed it in *Mytiliniaceae*. Later this genus was transferred to *Hysteriaceae* by Boehm *et al.* (2009). Barr (1990) differentiated *Ostreola* from *Ostreichnion* based on the smaller ascospores found in the former. Within the *Mytiliniaceae*, one-septate ascospores are found in the genera *Ostreichnion* and *Ostreola*. Originally *Ostreola* was described for those species that produce muriform ascospores (Pandey, 2008), but now the genus circumscription has been expanded to include both phragmospore and dictyospore producing taxa. *Ostreichnion curtisii* (Barr, 1990) has larger ascospores (62-68 × 13-15 μm), with a sub-median septum when compared to *O. beejakoshae* (42.5-57.5 × 10.5 -13.7 μm)

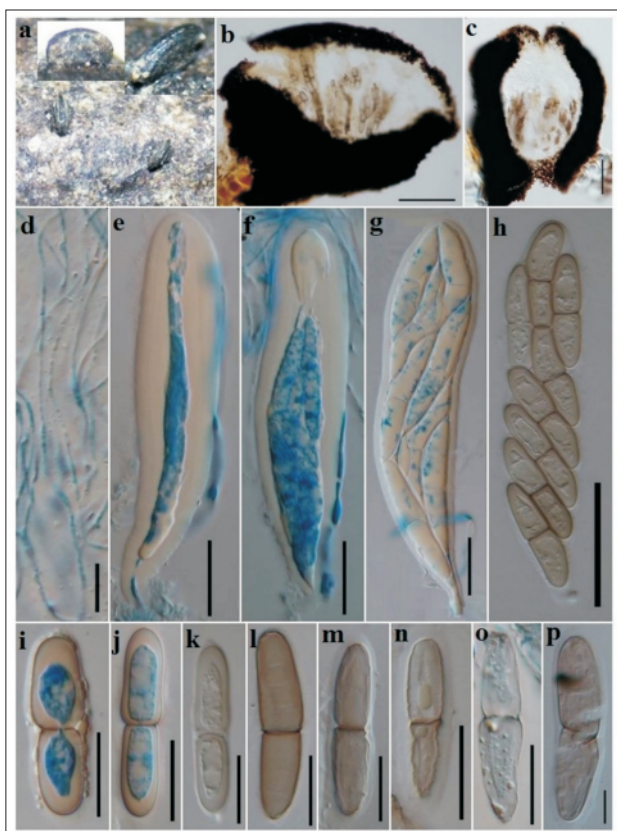


Fig. 9. *Ostreichnion beejakoshae* (AMH 9928, Holotype): **a.** Ascstromata. **b.** Ascomata in section. **c.** Peridium. **d.** Pseudoparaphyses. **e-h.** Asci. **i-p.** Ascospores. Scale bars: **b** = 100 μm. **c, h** = 50 μm. **e-g, i-p** = 20 μm. **d, p** = 10 μm.

(**Fig. 9**). *Ostreichnion beejakoshae* sp. nov. differs from *O. nova-caesariense*, *O. sassafras*, and *Ostreola consociata* and *O. formosa* in having single septate ascospores. The recently discovered *Hysterium centramurum* has similar characters with respect to ascomata, asci and ascospores but has longer ascospores (110-130 × 9 20-25 μm) (Tibpromma *et al.*, 2017) when compared to *O. beejakoshae*. Hence, based on the morphological differences discussed above, a new species *O. beejakoshae* has been proposed to be accommodated in the genus *Ostreichnion*.

10. Rizalia falcata M. Niranjana and V.V. Sarma sp. Nov.

Fig. 10 (a-n)

Mycobank MB822638

Diagnosis: This species is diagnosed as having ascomata aggregated in a stroma, asci 8-spored and unitunicate, ascospores multiseriately arranged, hyaline, 1-septate, curved with acute ends.

Etymology: The presence of sickle shaped ascospores forms the basis for naming the species.

Classification: *Trichosphaeriaceae*, *Trichosphaeriales*, *Sordariomycetes*.

Saprobic on decaying twigs. **Teleomorph:** Stromata 0.5 x 1-1.5 mm, immersed to erumpent and opening into periderm of bark, pulvinate, black, spongy, shining, corticolous, circular to irregular in shape. Ascomata 380 x 450 μm, multiperithecial, ascomata 5-13 per stroma, coriaceous, globose to sub-globose. Neck 300-450 x 110-120 μm, slightly raised through stroma, ostiolate, individual necks protruding beyond stroma. Peridium 37.5 μm wide, 2-layered, thin, black outer layer and an inner wider layer with textura angularis cells. Hamathecium: Paraphyses 1.8 - 2.5 μm wide, indistinct, aseptate. Asci 67.5-97.5 x 10-22.5 μm (\bar{X} = 82.7 x 18) (n=25), unitunicate, 8-spored, sub-globose to broad-clavate, with obtuse ends, J-ve in Lugol's reagent, long-pedicellate, persistent. Ascospores 25-35 x 2.5-4.5 μm (\bar{X} = 33.2 x 3.2 μm) (n=25), multiseriate (all ascospores parallelly arranged) or irregular, hyaline, falcate, 5-pseudo-septate when young, 1-septate at maturity, septum median, smooth-walled, both ends acute.

Anamorph: Undetermined.

Distribution: India.

Material examined: India, Andaman and Nicobar Islands, South Andaman, Kalatan (11°47'59.1"N 92°42'46.8"E), On an unidentified twig, January 4, 2017, M. Niranjana & V.V. Sarma. Holotype AMH 9926, Ajrekar Mycological Herbarium, Agarkar Research Institute, Pune, India.

Remarks: The family *Trichosphaeriaceae* was established by Winter (1885). It is morphologically characterized by immersed to superficial ascomata with setae-like hairs, peridium with textura angularis cells, clavate-cylindrical asci with or without apical rings, ellipsoid-fusiform, brown to hyaline, 1-3 septate ascospores. It differs from the family *Gnomoniaceae* in lacking a long neck in ascomata. There are very few references of the genus *Rizalia* in the literature. Arx

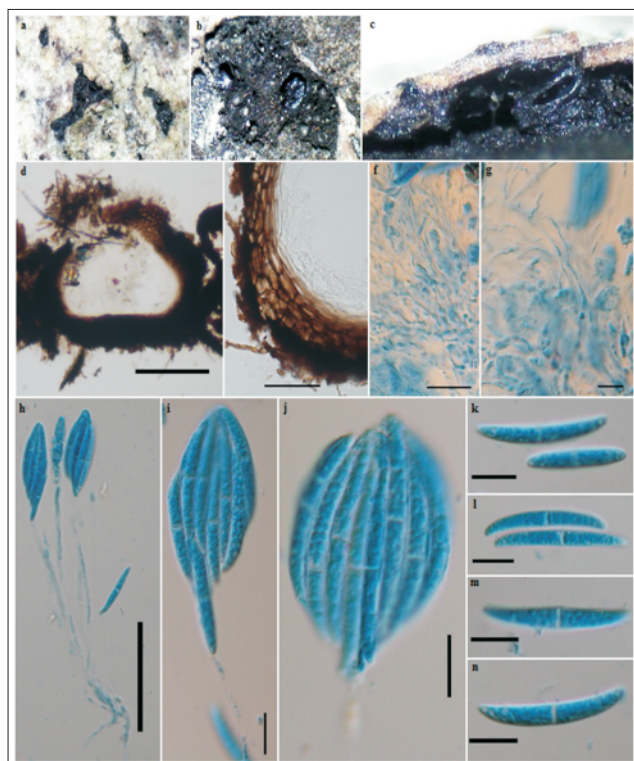


Fig. 10. *Rizalia falcata* (AMH 9926, Holotype): a. Ascomata. b. Transverse section. c-d. Vertical section. e. Peridium. f-g. Paraphyses. h-j. Asci. k-n. Ascospores. Scale bars: d=200 μ m, e, h=50 μ m. f=20 μ m. g,i-n=10 μ m.

and Muller (1954) have illustrated *Rizalia glazioui*. The drawings show that the genus has very short necks when compared to the genus *Gnomonia*. However, according to Pirozynski (1977), *Rizalia* is characterized by coriaceous or membranaceous stromata interspersed with long ascomatal necks and setae, clavate asci, fusiform or falcate ascospores, sometimes with the apical mucilaginous frills. *Rizalia falcata* sp. nov. is different from *R. glazioui* in having flat ascostromata, short necks and curved, acute ended ascospores, arranged in multiseriate asci (Fig. 10). Hence a new species *R. falcata* has been proposed to be accommodated in the genus *Rizalia*.

11. *Rosellinia attenuata* M. Niranjan & V.V. Sarma sp. nov.

Fig. 11 (a-p)

Mycobank MB822635

Diagnosis: This species could be identified based on characters: ascomata perithecial, stromatic, superficial, rough surface, asci 8-spores, unitunicate with prominent, cylindrical, J+ apical rings, ascospores brown, aseptate, fusiform with long apical extensions, surrounded by a mucilaginous sheath.

Etymology: The species name is based on the presence of long tapering ends of the ascospores in the taxon.

Classification: *Xylariaceae*, *Xylariales*, *Sordariomycetes*.

Saprobic on decaying twigs. **Teleomorph:** Ascomata 1.05-

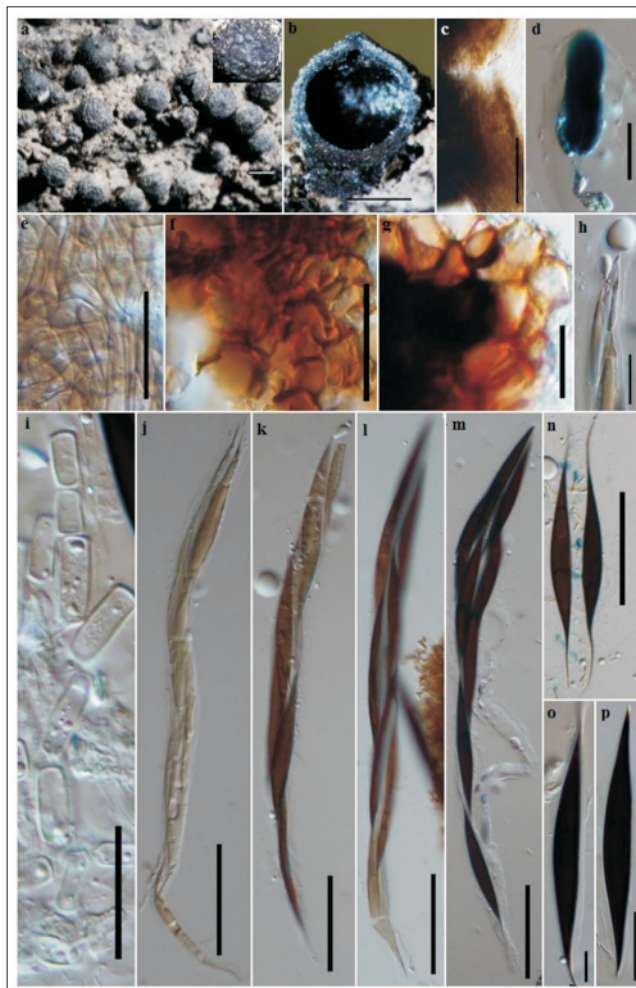


Fig. 11. *Rosellinia attenuata* (AMH 9917, Holotype): a. Ascomata b. Vertical section of ascoma. c. Peridium. d. Apical ring. e. Textura angularis cells of Peridium. f. Outer globose cells. l. Cellular paraphyses. h, j-m. Asci. n-p. Ascospores. Scale bars: a=1 mm. b=0.5 mm. c, j-n=50 μ m. e, f, h, i, p=20 μ m. d, g, n, o=10 μ m.

1.22 x 0.95-1.29 mm (\bar{X} = 1.17 x 1.21 mm) (n=5), perithecial, aggregated or scattered, superficial, globose, on a subiculum that is 230 μ m in height, myceliated, rough surface of ascoma, smoothed at neck region, ostiolate, short papillate. Peridium 130 μ m in width, black, thick-walled, with several compressed cell layers, carbonaceous. Hamathecium: Paraphyses septate, unbranched. Asci 250-355 x 20-27.5 μ m (\bar{X} = 290.3 x 22.7 μ m) (n=25), 8-spored, unitunicate, cylindrical, smooth-walled, rounded apical apex with cylindrical J+ve apical ring, ring (15-) 16.1-24.3 (-25.5) x 6.2-10.9 μ m (\bar{X} = 19.8 x 8.1 μ m) (n=25) in Lugol's reagent, with central pore, deliquescent, short-pedicellate. Ascospores 112.5-142.5 x 9.5-12.5 μ m (\bar{X} = 124.5 x 10.2) (n=28), overlapping biseriate, hyaline when young, brown to black at maturity, one-celled, elongate-fusiform, long and sharp-tapering ends, with a short straight germ slit in the middle, sometimes mono-guttulate, with a mucilaginous sheath, often thickened laterally on any one side or both sides.

Anamorph: Undetermined.

Distribution: India.

Material examined: India, Andaman and Nicobar Islands, North Andaman, Ram Nagar (13°12'0.3"N 93°2'8.0"E), on an unidentified twig, February 4, 2016, M. Niranjan & V.V. Sarma. Holotype AMH 9917, Ajrekar Mycological Herbarium, Agarkar Research Institute, Pune, India.

Remarks: *Rosellinia* De Not. is characterized by superficial uniperithecial ascostromata, J+ apical rings in asci and brown aseptate ascospores that have germ slits or germ pores (Petrini, 1992). Currently 142 species have been accepted belonging to this genus (Petrini, 2013). *Rosellinia* species are saprobic on wood (Petrini, 2003) and plant pathogens as well (Kim *et al.*, 2017). *Rosellinia attenuata* sp. nov. is closely related to *R. bunodes* (Rogers and Ju, 2015), with reference to rough ectostromata except around apical papilla, fusiform ascospores with tapering bipolar spines and a centrally located short straight germ slit (**Fig. 11**). *R. attenuata*, however, differs from *R. bunodes* in having elongated ascospores surrounded by mucilaginous sheaths. Hence a new species (*R. attenuata*) has been proposed to be accommodated for the new taxon in the genus *Rosellinia*.

12. *Rosellinia tetraspora* M. Niranjan & V.V. Sarma sp. nov.

Fig. 12 (a-q)

Mycobank MB822636

Diagnosis: The species could be delineated based on globose uniperithecial ascomata in a stroma, Asci that have 4 ascospores and larger apical ring and ascospores with apical cap-like appendage.

Etymology: The presence of 4-spored asci forms the basis for naming this species.

Classification: *Xylariaceae*, *Xylariales*, *Sordariomycetes*.

Saprobic on decaying twig. **Teleomorph:** Ascomata 0.92 - 1.08 x 1.03-1.12 mm (\bar{X} =0.98 x 1.07 mm) (n=5), perithecial, globose, superficial, sub-globose, conical, narrowing apical end, seated on myceliated subiculum covering 40% of ascomata, subiculum brown, septate, branched 2.3-4.5 μ m (\bar{X} =3.1) (n=5) wide, two concentric constricted white rings surrounding neck region, ostiolate, short papillate. Peridium 100 μ m wide, two-layered, outer wall carbonaceous, inner layer comprising textura angularis cells. Hamathecium: Paraphyses 3.4-8.4 μ m wide, aseptate, unbranched, uneven in width. Asci 120-190 x 20-37.5 μ m (\bar{X} = 149.53 x 27.26 μ m) (n=27), 4-spored, rarely 2-spored, unitunicate, cylindrical, sometimes obclavate, thick, rounded end, smooth-walled, apical ring J+ ve, (5.5) 8.2-14.5 μ m high x 6.5-9 μ m wide (\bar{X} = 11.3 x 7.7 μ m) (n=25), ring cylindrical, wider at apex, a central canal observed through the ring, short pedicellate. Ascospores (62.5-) 77.5 - 150 x 10 - 13.75 (-22.5) μ m (\bar{X} = 101 x 12.34 μ m) (n=26), biseriolate, hyaline to brown, ends slightly black, cylindrico-fusoid, straight full length germ slit, smooth-walled with acute ends, straight or curved, apical mucilaginous cap at both poles.

Anamorph: Undetermined

Distribution: India.

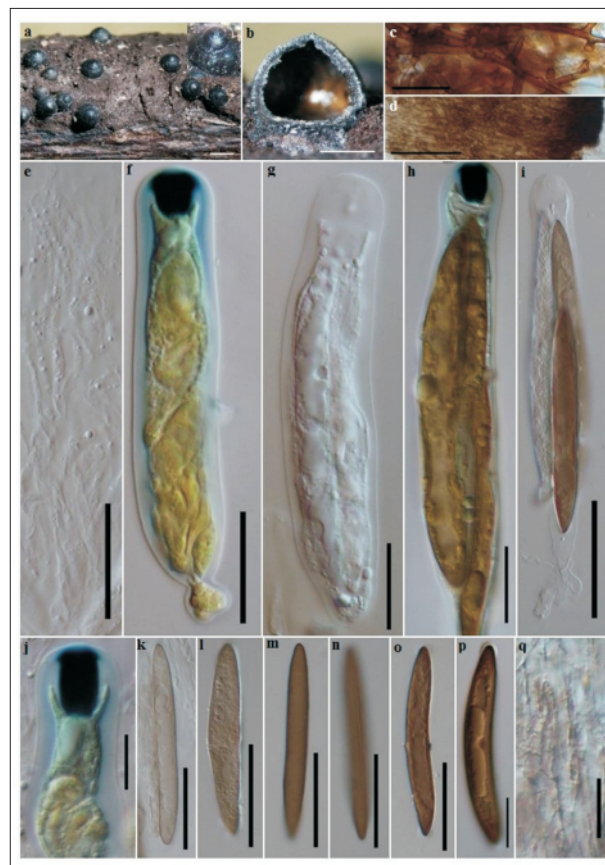


Fig.12. *Rosellinia tetraspora* (AMH 9918, Holotype). a. Ascomata. b. Vertical section of ascoma. c. Hairs. d. Peridium. e. Paraphyses. f-i Asci. j. Apical ring. k-p. Ascospores. q. Compressed inner cells in Peridium. Scale bars: a = 1 mm. b = 0.5 mm. d, i, k-o, = 50 μ m. c, e-h, p = 20 μ m. J, q = 10 μ m.

Material examined: India, Andaman and Nicobar Islands, North Andaman, Ram Nagar (13°11'45.2"N 93°59'0.5"E), on an unidentified twig, February 4, 2016, M. Niranjan & V.V. Sarma. Holotype AMH 9918, Ajrekar Mycological Herbarium, Agarkar Research Institute, Pune, India.

Remarks: *Rosellinia tetraspora* sp. nov. is closely related to *R. procera* and *R. camphorae* (Li *et al.*, 2015). These three fungi have common characteristics such as fusiform ascospores with straight germ slit and apical caps, distinctly having larger ascomata, smaller asci and cylindrical ascospores instead of oval-shaped ascospores. However, *R. tetraspora* has four ascospores per ascus when compared to the other two species. *R. tetraspora* is similar to *R. procera* with small apical ring but differs in having a straight germ slit in the ascospores (Petrini, 2013). *R. tetraspora* also is similar to *R. camphorae* with cylindrical ascospores and a prominent apical ring in the asci but differs in having the cylindrical short asci and brown ascospores with apical caps in addition to asci having four ascospores (**Fig. 12**). Hence a new species *R. tetraspora* has been proposed to be accommodated in the genus *Rosellinia* based on four-spored asci and other characteristics discussed above.

DISCUSSION

A recent compilation of fungi from Andaman and Nicobar Islands lists 446 fungal species. Most of them belong to *Meliolales*, lichenized fungi and marine fungi (Niranjana and Sarma, 2018). There is not much of an information on the filamentous ascomycetous fungi colonizing the woody litter from Andaman and Nicobar Islands, India. In fact, this area could be said to be virtually unexplored. We have initiated studies on the diversity of filamentous ascomycetous fungi colonizing woody litter (mostly small twigs) fallen on the forest floor in the terrestrial forests of Andaman Islands. In the present paper twelve new species have been described. Of these six belong to *Sordariomycetes* (unitunicate ascomycetes) and another six belong to *Dothideomycetes* (bitunicate ascomycetes). The morphological characterization and the differences based on which the new species proposed have been discussed in the 'remarks' section at the end of each of the individual new fungal description. The present work shows that the Islands have rich fungal diversity with several novelties and worth for further exploration.

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