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Some Coelomycetous Fungi from Andhra Pradesh and Telangana, India

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Coelomycetous fungi represent the asexual stages of either Ascomycota or Basidiomycota. Coelomycetous fungi produce mitospores in the cavity of matrix of fruit bodies such as pycnidia and others. In this paper, the authors report around fifty four fungi representing 31 Coelomycetous fungal genera colonizing diversified habitats / substrates of some forests located in Andhra Pradesh and Telangana state, respectively. This report is based on the survey held during August 2021 to July 2022. 29 Coelomycetes out of 54 reported in this paper form new additions to the fungi of Andhra Pradesh and Telangana state, respectively.

Keywords: Andhra Pradesh, Coelomycetes, diversity, forest, fungi, Telangana.

INTRODUCTION

The Coelomycetes are the anamorphic stages of some Ascomycetous and Basidiomycetous fungi. These fungi are widely distributed all over the world and also in India. Coelomycetous fungi are known to colonize diversified habitats / substrates such as soil, submerged litter, wood, petioles, living plant parts and others either as saprophytes or parasites. The Coelomycetous fungi produce their asexual spores or mitospores within some cavity of the matrix on which they grow. Biodiversity and taxonomic studies of this group had been still neglected as they are evidenced by few studies (Watanabe 2002; Muthumary,2003; Nagamani *et al.* 2006; Nalin *et al.* 2012; Wijayawardene *et al.* 2016; Wu *et al.* 2019; Hawksworth *et al.* 2017; Li *et al.* 2020; Manoharachary, 2022; Manoharachary *et al.* 2022).

The above-mentioned studies clearly indicate that most of the studies are confined to some parts of the world and to down South India only and such research did not percolate into other parts. Further, no such elaborate study was conducted in Telangana and Andhra Pradesh, respectively.

Therefore, it has necessitated the authors to work on Coelomycetous fungi in Telangana and Andhra Pradesh to strengthen the biodiversity and taxonomic status of Coelomycetous fungi which has been neglected in this part of the country.

MATERIALS AND METHODS

Forest localities of Anantagiri Hills, Vikarabad, Mannanoor forest, Narsapur and Bhadrachalam forest located in Telangana and Arakuvalley, Pileru forest regions of Eastern Ghats located in Andhra Pradesh were selected for sampling. Yearlong collections at monthly intervals were made during August 2021 to July 2022. The samples were brought to the laboratory and were incubated under moist chambers for a period of 8-20 days. The living and dead plant parts incubated under moist chambers were subjected for frequent observation. The materials with pycnidia, acervuli and other such asexual fruit bodies were rehydrated with distilled water and squash preparations were made. Microtome sections and free hand sections were carefully examined under stereo - binocular microscope. Only good sections with typical fruit bodies and conidia were selected and mounted in cotton blue cum lactophenol. Strains such as 3% erythrosine in 10% KoH solution (Sutton,1980) and lactophenol were used wherever necessary.

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Table. 1: List of Coelomycetes from Andhra Pradesh & Telangana

Sl. No	Name of the Fungus	Substrate / Host	Place of Collection	Accession No.
1*	<i>Amerosporium concinnum</i> Petraik	<i>Dalbergia</i> leaf	Hyderabad	# OUFH 1401
2*	<i>Aplosporella beaumontiana</i> Ahmad	Dead wood	Araku Valley	1402
3*	<i>Ascochyta caricae</i> Pat	<i>Carica papaya</i> litter	Tirumala Hills	1403
4*	<i>Ascochyta graminicola</i> Sacc	<i>Cymbopogon</i> sp.	Vikarabad	1404
5*	<i>Ascochyta lycopersici</i> (Plour) Brun	<i>Lycopersicon esculentum</i>	Rajendranagar	1405
6*	<i>Ascochyta sorghi</i> Sacc	<i>Sorghum vulgare</i>	Nalgonda	1406
7	<i>Asterama</i> Pad. Dc. Ex Fr.	Dead wood	Vikarabad	1407
8	<i>Bartalinario billardooides</i> Tassi	Dead wood of <i>Aegle</i> sp.	Ananthagiri	1408
9	<i>Botryodiplodia theobromae</i> Pat	Dead wood	Hyderabad	1409
10*	<i>Chaetomella acutiseta</i> Sutton & Sarbhoy	Litter	Ananthagiri	1410
11	<i>Chaetomella raphigera</i> Swift	Soil	Hyderabad	1411
12*	<i>Ciliochorella mangiferae</i> Syd. Apud Syd. & Mitter	<i>Mangifera indica</i>	Vishakapatnam	1412
13*	<i>Coleophoma cylindrospora</i> (Desm.) Hohn	Dead wood	Rajahmundry	1413
14	<i>Colletotrichum capsici</i> (Syd.) Butl. & Bisby	<i>Capsicum</i> sp.	Hyderabad	1414
15	<i>Colletotrichum dematium</i> (Pers. ex Fr.) Grove	Dead wood	Kadapa	1415
16	<i>Colletotrichum gleoeosporoides</i> (Benz.) Sacc	Dead wood	Tirumala Hills	1416
17	<i>Colletotrichum graminicola</i> (Ces.) Wilson	Grass	Hyderabad	1417
18*	<i>Coniothyrium fuckelii</i> Sacc	Dead wood	Narsapur	1418
19*	<i>Coryneum indicum</i> Sutton & Rizwi	Dead wood	Narsapur	1419
20*	<i>Coryneum modonium</i> (Sacc.) Griff. & Maubl	<i>Ficus benghalensis</i>	Hyderabad	1450 1420
21*	<i>Cytospora chrysosperma</i> Pers. ex Fr.	Dead wood	Tirumala Hills	
22*	<i>Dinemasporium graminum</i> (Berk.) Lev.	<i>Saccharum</i> sp.	Ananthagiri	1421
23*	<i>Diplodia punctata</i> Lev.	Dead wood	Narsapur	1422
24*	<i>Discosia strobilina</i> Lib.	Dead wood	Simhachalam	1423
25*	<i>Harknessia thujina</i> Ell. & EV.	<i>Thuja</i> sp.	Tirumala Hills	1424
26*	<i>Heterospatella indica</i> Muthumary	<i>Eugenia jambolana</i>	Kadapa	1449
27	<i>Macrophomina phaseolina</i> (Tassi.) Gold	Soil	Rajendranagar	1425
28*	<i>Pestalotiopsis carissae</i> Guba	<i>Carrissa</i> sp.	Ananthagiri	1426
29	<i>Pestalotiopsis ixorae</i> Rangel	<i>Ixora</i> sp.	Ananthagiri	1427
30	<i>Pestalotiopsis javanica</i> Guba	Soil	Hyderabad	1428
31	<i>Pestalotiopsis mangiferae</i> (Hennings) Stey	<i>Mangifera indica</i>	Hyderabad	1429
32	<i>Pestalotiopsis palmarum</i> (Cooke) Stey	<i>Phoenix sylvestris</i>	Mulugu	1430
33	<i>Pestalotiopsis phoenicis</i> Vize	Dead wood	Narsapur	1431
34	<i>Pestalotiopsis versicolor</i> (Speg.) Stey	<i>Butea</i> sp.	Mannanoor	1432
35	<i>Phomane bulosa</i> (Pers.) Berk	Coriander rhizosphere soil	Vikarabad	1433
36	<i>Phoma fimeti</i> Brunaud	Forest Soil	Vikarabad	1434

(Contd. part table 1)

37*	<i>Phomopsis abdita</i> (Sacc.) Trav.	Dead wood	Mannanoor	1435
38*	<i>Phomopsis dalbergiae</i> Sahnii	<i>Dalbergia sissoo</i>	Ananthagiri	1436
39*	<i>Phomopsis dracaenae</i> Sahnii	<i>Dracaena</i> sp.	Hyderabad	1437
40*	<i>Phomopsis lantanae</i> (Costa & Camara) Sutton	<i>Lantana camara</i>	Hyderabad	1438
41	<i>Phomopsis mangiferae</i> Ahmad	<i>Mangifera indica</i>	Hyderabad	1439
42*	<i>Phomopsis terminaliae</i> (P. Henn) Sutton	<i>Terminalia chebula</i>	Ananthagiri	1440
43	<i>Phyllosticta murrayicola</i> Van der Aa	<i>Murrayakoenigii</i>	Narsapur	1441
44	<i>Phyllosticta</i> State of <i>mangiferae</i> Roy	<i>Mangifera indica</i>	Mannanoor	1442
45*	<i>Pilidium macerinum</i> Kunze	<i>Calophyllum</i> <i>inophyllum</i>	Hyderabad	1448
46	<i>Pyrenochaeta</i> sp.	Rice Rhizosphere soil	Hyderabad	1443
47	<i>Robillardasessilis</i> (Sacc.) Sacc	Scrub jungle soil	Vikarabad	1452
48	<i>Robillardasuxenii</i> Manoharachary & Rama Rao	Pond mud	Vikarabad	1453
49*	<i>Scyphospora phyllostachydis</i> Kantschaveli	<i>Bambusa</i> <i>arundinacea</i>	Hyderabad	1451
50	<i>Septoria achyranthis</i> Chona & Munjal	<i>Achyranthus aspera</i>	Tirumala Hills	1444
51*	<i>Septoria chrysanthemella</i> Sacc	<i>Chrysanthemum</i> sp.	Mannanoor	1445
52	<i>Sphaeronema allahabadensis</i> Sudhir Chandra & Tandon	Pond mud	Hyderabad	1454
53*	<i>Tetranacrium gramineum</i> Hudson & Sutton	<i>Cynodon dactylon</i>	Tirumala Hills	1446
54*	<i>Tiarosporella graminis</i> (Pirozynskii & Shoemaker) Nagraj	Unknown Host	Mannanoor	1447

#:OUFH : Osmania University Fungal Herbarium, Department of Botany, Hyderabad.

.: New additions to the Fungi of Andhra Pradesh and Telangana.

These sections were observed under Trinocular microscope (Olympus). The morphology and measurement of fruit bodies and conidia were taken. Not less than 50 fruit bodies and 100 conidia were measured from each collection and average was recorded. Only few fungi representing *Phoma* (2), *Pestalotiopsis* (3), *Chaetomella* (1), *Colletotrichum* (2), *Pyrenochaeta* (1), *Robillarda* (2) and *Sphaeronema* (1) have been cultured on PDA. All these are deposited in the culture collection centre of Mycology laboratory, Department of Botany, Osmania University, Hyderabad. Majority of the fungi could not be grown on agar media. The fungi have been identified using the keys provided in different Manuals and Monographs (Sutton, 1980).

RESULTS AND DISCUSSION

Hawksworth and Lucking (2017) have made an estimate of 2.2 – 3.8 million of fungi. Wu *et al.* (2019) have made an estimate of 12 million fungi from world. However, only 1,40,000 fungi are reported as authentic fungal species world over, out of which 30,000 fungal species

are reported from India. 1/3 of Global fungal diversity exists in India. Therefore, it is pertinent to mention that, there is a hidden wealth of fungi in India which needs to be explored. Further, the survey of literature shows that, Coelomycetous fungi have not been surveyed in Telangana and Andhra Pradesh in greater depths (Manoharachary *et al.* 2022 b).

Therefore, authors have taken up in depth survey of Coelomycetous fungi colonizing diversified habitats in some forest localities of Andhra Pradesh and Telangana respectively for the period August 2021 to July 2022. In this one year of survey, around 54 Coelomycetous fungi are reported, of which, 29 fungi form new additions to the fungi of Andhra Pradesh and Telangana state respectively (Table 1). The habitats which got colonized by Coelomycetous fungi include living plant parts, litter, dead wood and soil. It is interesting to note that though soil fungi, Hyphomycetes and aquatic fungi in Andhra Pradesh and Telangana were worked out elaborately by Manoharachary *et al.* (2022), meagre reports exist on Coelomycetous fungi from Andhra Pradesh and Telangana, respectively.

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