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Chalara indica sp nov. and *Sorocybe indicus* sp. nov. from India

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Abstract – Two new hyphomycetes, *Chalara indica* and *Sorocybe indicus,* collected from the forests of Western Ghats in Goa, India, are illustrated and described in this paper. *Chalara indica* sp. nov., based on a fungus isolated from fresh leaves of *Areca catechu* (Arecaceae), is characterized by fasciculate, mononematous conidiophores with percurrently regenerating phialidic condiogenous cells and cylindrical conidia which are rounded at the tip and truncate at the base. *Sorocybe indicus* sp. nov., characterized by white, terminally olivaceous to median brown synnemata and hyaline, fusiform conidia developing in branched, acropetal chains on holoblastic conidiogenous cells, was isolated from hanging, dead twigs of *Anacardium occidentale* (Anacardiaceae).

Anamorphic fungi / biodiversity / taxonomy / tropical fungi

INTRODUCTION

During the course of an on-going study of fungi of the Western Ghats in southern India, we encountered two new fungal species. One, a species of *Chalara* (Corda) Rabenh., was present on leaf spots on fresh and intact leaves of *Areca catechu* (Arecaceae) in a plantation. The second, a synnematous fungus of the genus *Sorocybe* Fr., was found on dead, hanging twigs of *Anacardium occidentale* (Anacardiaceae) about 2 m above the ground level. The fungi were compared with previously described similar taxa in respective genera and found to be distinct and warrant taxonomic disposition as two new species.

Attempts to culture the fungi were partially successful. The synnematous fungus was recovered in culture by single spore isolation method. The sample, slide and culture are deposited at the Goa University Fungus Culture Collection. The fungi are described and illustrated below.

TAXONOMY

Chalara indica Pratibha, K.D. Hyde et Bhat, sp.nov. (Figs 1-2)

Leaf spots amphigenae, sphaericae vel infra-sphaericae, brunneae, 0.7-2 cm diam. Coloniae effusae, brunneae, mycelium immersum, ex hyphis ramosis, septatis,

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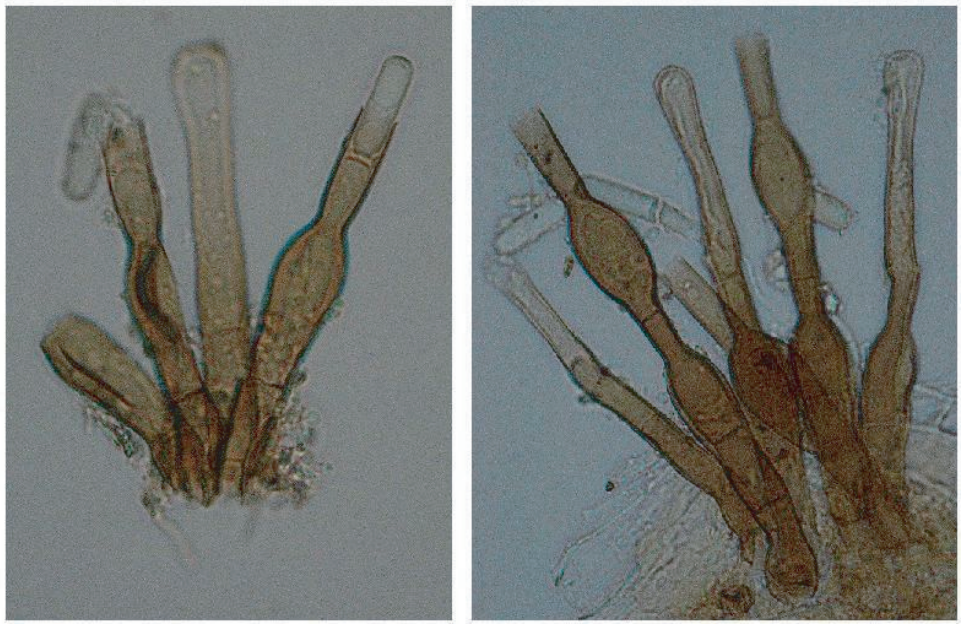

Fig 1, a and b: *Chalara indica*: conidiophores and conidia.

2-3 µm latis compositum. Conidiophora fasciculata, mononematosa, brunnea, 1-3-septata, non-ramosa, laevia, 70-170 × 6-10 µm. Cellulae conidiogenae monophialidicae, regenerance purcurrentibus, palescentiorae vel brunneae, laeviae, 55-70.5 µm longae; venter rotondatae vel sub-cylindricae, 32.5-40 µm longae, 11-16.5 µm latae; collarette cylindricae, 25-32.5 × 8-10 µm. Conidia mucosa, endogena, hyalina, cylindrica, laevia, eseptata, apice rotundata, basi truncata, 20-30 × 5-6.5 µm, in basipetale pseudo-catenis facile.

Holotypus on leaves of *Areca catechu* Linn. (Arecaceae), J. Pratibha, 12 July 2003, Kesarval, Goa, India, Herb. GUFC No. P49.

Paratypus: from the same origin, HKU(M) 17495.

Leaf spots amphigenous, circular to sub-circular, brown, 0.7-2 cm in diam. *Colonies* effuse, brown, composed of immersed mycelium with branched, septate, 2-3 µm wide hyphae. *Conidiophores* fasciculate, mononematous, brown, 1-3-septate, unbranched, smooth, 70-170 × 6-10 µm. *Conidiogenous cells* phialidic, purcurrently regenerating, pale to moderately brown, smooth, 55-70.5 µm long; *venter* round to sub-cylindrical, 32.5-40 µm long, 11-16.5 µm wide at the broadest part; *collarette* cylindrical, 25-32.5 × 8-10 µm. *Conidia* slimy, endogenous, hyaline, cylindrical, smooth, aseptate, rounded at apex, truncate at the base, 20-30 × 5-6.5 µm, developing in basipetal chains.

Notes. The genus *Chalara*, typified by *C. fuscidioides* (Corda) Rabenh., is characterized by sessile or stalked, loose to fasciculate, unbranched to rarely branched, mononematous, light to moderately brown conidiophores, phialidic condiogenous cells with a basal venter, a long collarette and a deep-seated conidio- genlous locus, and hyaline, usually cylindrical, 1-2-celled, conidia which are sometimes in slimy, short to long chains. Nag Raj and Kendrick (1975) monogra-

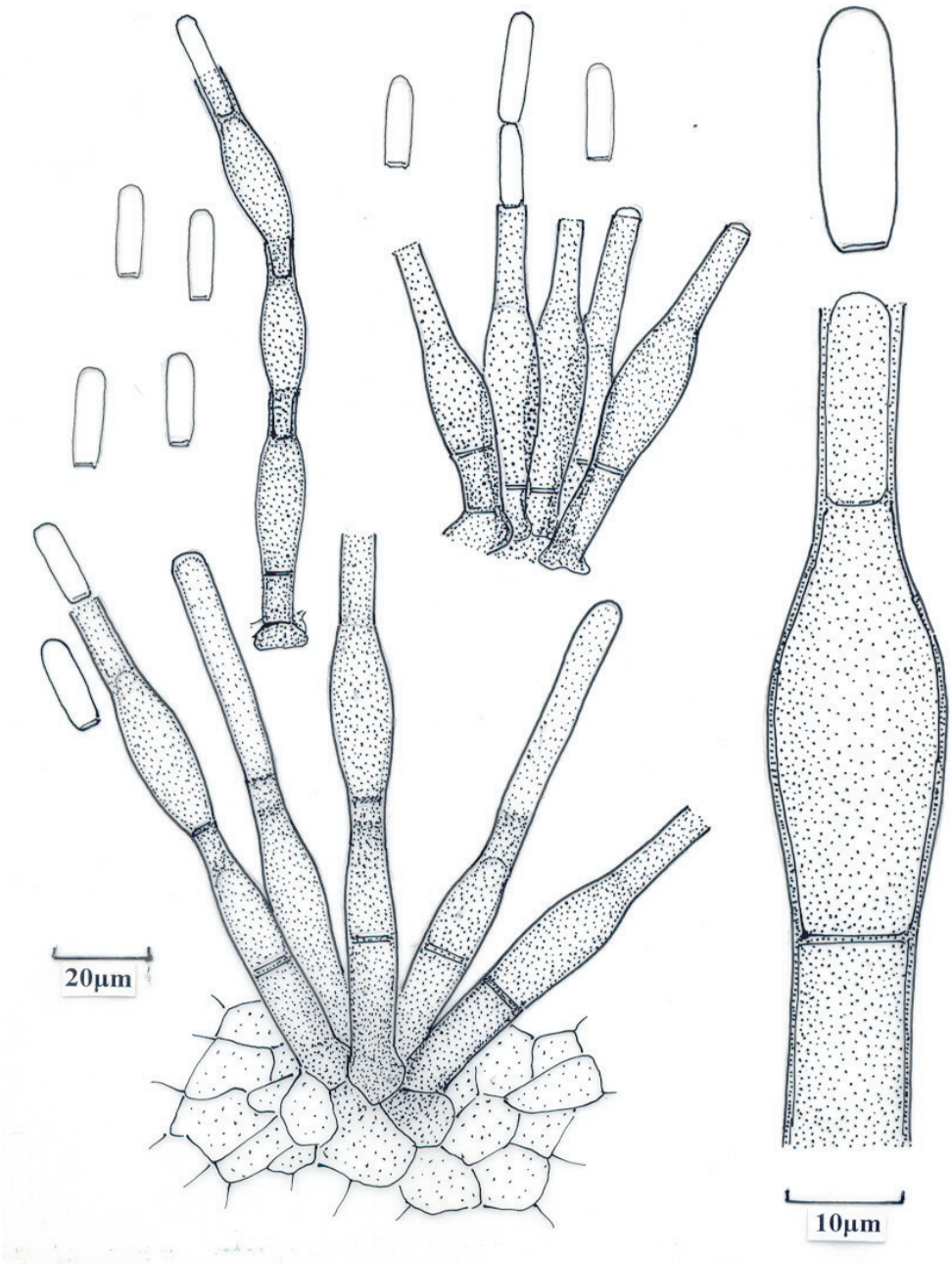

Fig. 2: *Chalara indica*: conidiophores and conidia.

phed *Chalara* and provided a key to the accepted species. McKenzie *et al.* (2002) while describing two new species provided a key to the taxa described since 1975 in the genus.

Of the nearly 100 so far known species in the genus, *C. indica* may be compared with *C. microchona* W. Gams (Gams and Holubova-Jechova, 1976) for its regenerating phialides and *C. sibika* Subram. and Sudha (Subramanian and Sudha, 1986) in conidial dimensions. However, in *C. microchona* the phialides regenerate sympodially and the conidia are 3.5-5 × 1.3-2.5 µm. In *C. sibika,* the cylindrical conidia are truncate at both ends and measure 12.1-26.4 × 2.5-3.3 µm. Further, the first-formed conidia in *C. sibika* are turbinate (6.5-9.5 × 4.8-6), whereas the conidia in *C. indica* are undifferentiated.

Sorocybe indicus Puja, K.D. Hyde et Bhat, sp. nov. (Figs 3-4)

Coloniae effusae, canities, capillatus. Mycelium immersum. Conidiophora synnematosa, erectae, ordino confertim, laevia, septata, synnema 500-700 × 35-85 µm. Cellulae conidiogenae in conidiophoris incorporatae, holoblasticae, polyblasticae, determinatae, hyalinae vel olivaceous brunnea, laevia, 14-20 × 1-1.5 µm. Conidia catenula, limosus, fusiformes, ambo extrema planus, hyalinae vel pallide brunnea, laevia vel verruculosa, eseptate, 6-20 × 2-5 µm,

Conidial hyphomycete. *Colonies* effuse, white to gray, hairy. *Mycelium* mostly immersed, composed of 1.5 to 2 µm wide, hyaline hyphae. *Conidiophores* synnematous, erect, compactly arranged, smooth, septate, branched in the above half, hyaline below the lower 3/4th, olivaceous to dark brown towards the apex; synnema 500-700 × 35-85 µm. *Conidiogenous cells* holoblastic, polyblastic, integrated, determinate, hyaline to pale olivaceous brown, smooth, 14-20 × 1-1.5 µm. *Conidia* catenate, slimy, fusiform, flat at both the ends, hyaline to very pale brown, smooth to minutely verruculose, one-celled, 6-20 × 2-5 µm, developing in branched, acropetal chains, with broad interconidial constricted septa, with remnant of the conidiogenous cell often remaining at the base; terminal conidium truncate at the base, apiculate to elongated at the tip, 6-30 × 2-3 µm.

Colonies on MEA effuse, very slow growing, white to gray, woolly, slightly raised at the center, with partially immersed mycelium, up to 1.5 cm diam in 7 days at 25ºC, reverse grayish-black. The fungus in culture did not sporulate even after two months of incubation.

Holotype: Western Ghats, Goa; on hanging dead twigs of *Anacardium occidentale* Linn., 14 July 2003, Puja, G., Herb. GUFC No. AF-11; Cultura ex-type (GUFCC, No.-3179).

Notes. In a taxonomic reassessment of the genus *Sorocybe* Fr., [Type sp. *S. resinae* (Fr.)Fr.], Partridge and Morgan-Jones (2002) considered *Pycnostysanus* Lindau and *Hormoconis* Arx & G.A. de Vries as nomenclatural synonyms of the former. The genus *Sorocybe* is characterized by mostly synnematous, compactly arranged, brown, smooth, septate, distally branched conidiophores, polyblastic, integrated, determinate conidiogenous cells and catenate, dry, unicellular, fusiform to ellipsoidal, pale brown to brown conidia. The conidiogenous loci are protuberant and interconidial septa are distinctly wide in the wood-inhabiting, saprophytic *S. resinae.* In natural condition, both synnematous and mononematous forms are recognized in close proximity to one another. Besides the type, *S. tenella* is the only other known species in the genus.

Partridge & Morgan-Jones (2002) established monotypic genus *Seifertia* Partridge & Morgan-Jones, with *S. azaleae* (Peck) Partridge & Morgan-Jones as type, for the causal organism of bud blast and twig blight of azaleas and rhodo-

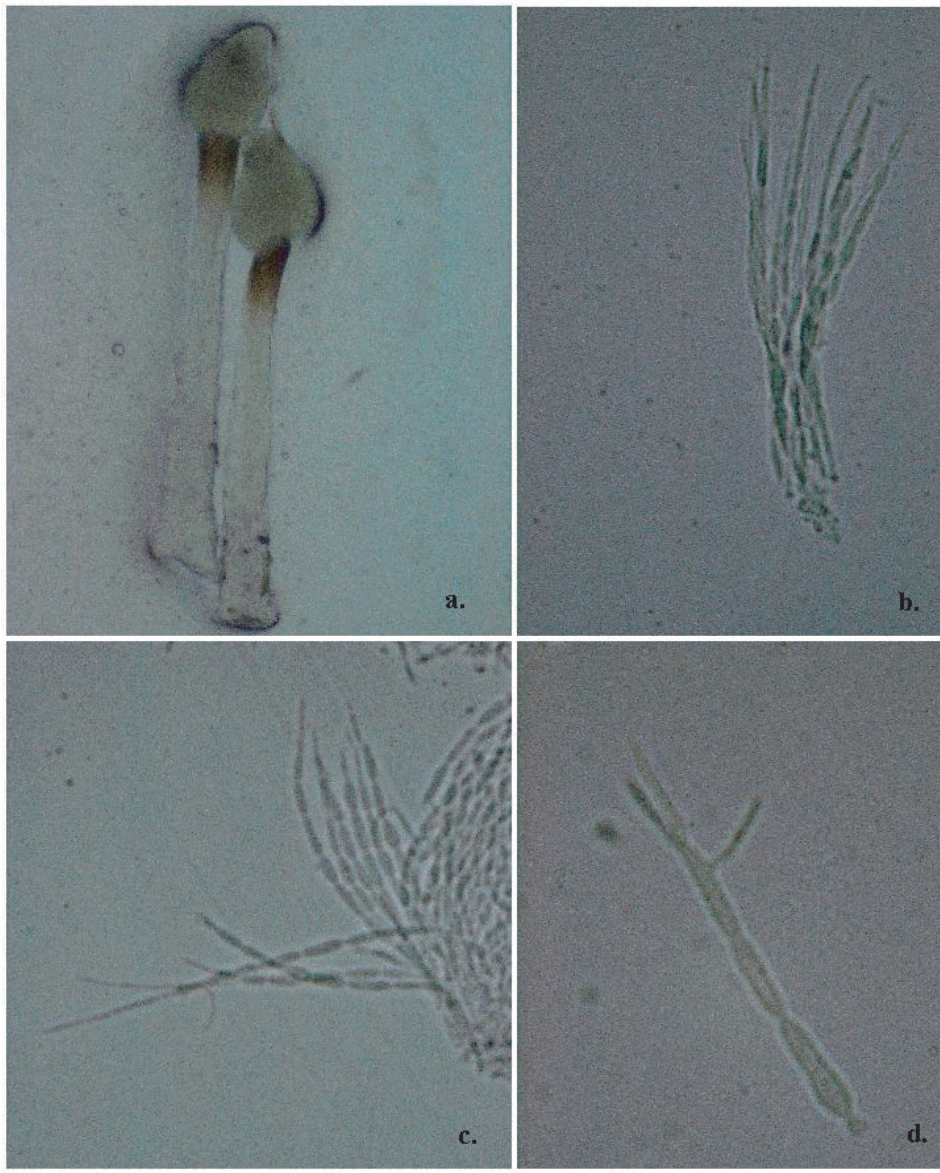

Fig. 3, a-d: *Sorocybe indicus*: synnemata and catenate conidia.

dendrons. Though, with synnematous, brown, compactly arranged, septate, distally branched conidiophores, integrated, polyblastic conidiogenous cells and catenate, unicellular, oblong or ellipsoidal conidia, *S. azaleae* superficially resembles to *Sorocybe resinae,* differs from the latter in its narrow interconidial isthmi and virulently plant pathogenic habitat.

Fig. 4: *Sorocybe indicus*: Synnemata, conidiophores and catenate conidia.

With broad interconidial septa and saprotrophic habitat, *S. indicus* justifies its placement in *Sorocybe*. The fungus differs from earlier known species with its hyaline but terminally olivaceous brown synnemata, and comparatively long (*S. indicus*: intercalary conidia: 6-20 × 2-5 µm, terminal conidium: 6-30 × 2-3 µm; S. resinae: conidium: 5-11 × 3-6 µm), slimy, very pale brown, minutely verrucose conidia.

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