

## NEW SPECIES OF SCYTALIDIUM PESANTE AND SPORIDESMIUM LINK EX FRIES FROM INDIA

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### ABSTRACT

Present study deals with the illustration and description of two new dematiaceous hyphomycetes species viz., *Scytalidium zapotii* and *Sporidesmium officinale* from India.

**Key words:** Dematiaceous, Hyphomycetes, *Scytalidium*, *Sporidesmium*, Taxonomy.

### INTRODUCTION

Survey of microfungi colonizing various parts of medicinal plants collected from some forest localities of Madhya Pradesh resulted in the discovery of two new dematiaceous hyphomycetes viz., *Scytalidium zapotii* and *Sporidesmium officinale*. *Scytalidium zapotii* was isolated from infected leaves of *Manilkara zapota* L. and *Sporidesmium officinale* was isolated from the dead stems of *Jasminum officinale* L. There are c. 466 species of *Sporidesmium* Link ex Fries in the world, of which c. 42 species have been reported from India (Bilgrami & al., 1979, 1981 & 1991; Jamaluddin & al., 2004). About 9 species of *Scytalidium* Pesante (1957) has been reported world wide.

Isolation from infected parts was made on potato dextrose agar (PDA) medium (Agarwal & Hasija, 1986).

***Scytalidium zapotii* Dubey & Pandey, sp. nov.**

(Fig. 1. A-1)

Coloniae effusum, fulvus ad nigra, pulverous. Hyphae hyalo ad fuscus, 2.2 - 6.6µm crassus, septatus; conidiophorii non ramosus, septatus. conidicus cellae fractus ac forms arthroconidii, terminalis, certus, cylindrus; Conidii, catenatus, exclusus, aridus, simplex, glaber, fere non septatus raro 1 - 3 septatus, jeer extres typus. (1) Hyalo, tenuituiatus, rectangularis ad oblongatus, fere non septatus at aliquando 1 - 3 septatus, truncatus at ambi terminatum, rectangularis, 6.6 - 19.8 × 1.5 - 4.4 µm. (2) Medius ad juscus, crassitunicatus, catenatus, doliiformis an ellipsoideus, 4.4 - 11 × 4.4 - 6.6 µm. (3) Glaber, brunnens, sphaeroideus, 8.8 - 11µm diametro, aliquando septatus; catenatus conidii conspissatus ad formo synnematis instar structura.

Colonies effuse, brown to blackish, powdery; hyphae hyaline to dark brown, 2.2 - 6.6 µm thick, septate; conidiophore micronematous, mononematous, unbranched, septate; conidiogenous cells fragmenting and forming arthroconidia, terminal, determinate, cylindrical; conidia catenate, separating, dry, simple, smooth, mostly aseptate, rarely 1 - 3 septate, generally of three types: (1) Hyaline, thin walled, rectangular to oblong, generally aseptate but sometimes 1 - 3 septate, truncate at both ends, rectangular, 6.6 - 19.8 × 1.5 - 4.4 µm; (2) Mid to dark brown, thick walled catenate, doliform or ellipsoidal, 4.4 - 11 × 4.4 - 6.6 µm; (3) Smooth, brown, subspherical to spherical, 8.8 - 11 µm in diam., 0-septate, sometimes septate; catenate conidia adpressed to forming synemata like structure.

**Typus :** Infected leaves of *Manilkara zapota* L. (Sapotaceae), Manegaw, Jabalpur; January 2008, HDBJ # 149,

Specific epithet was given after the name of the host plant. The present species shows minute variation from earlier reported species in having three types of conidia and also shows variation in dimensions and shape of conidia. The Morphological data (Table 1) shows that the proposed taxon in no way can be accommodated with any earlier described species and demands its rank as new species.

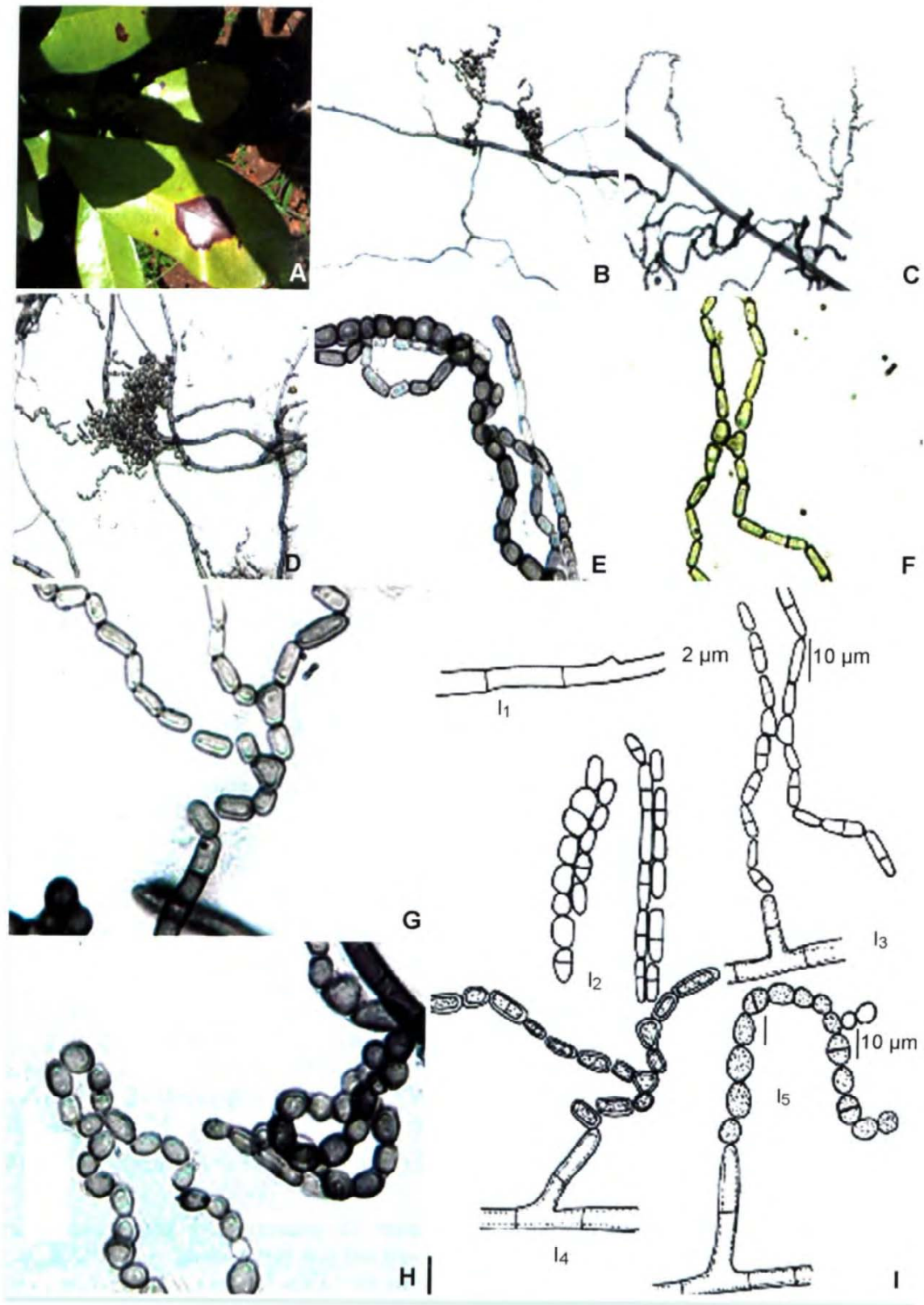
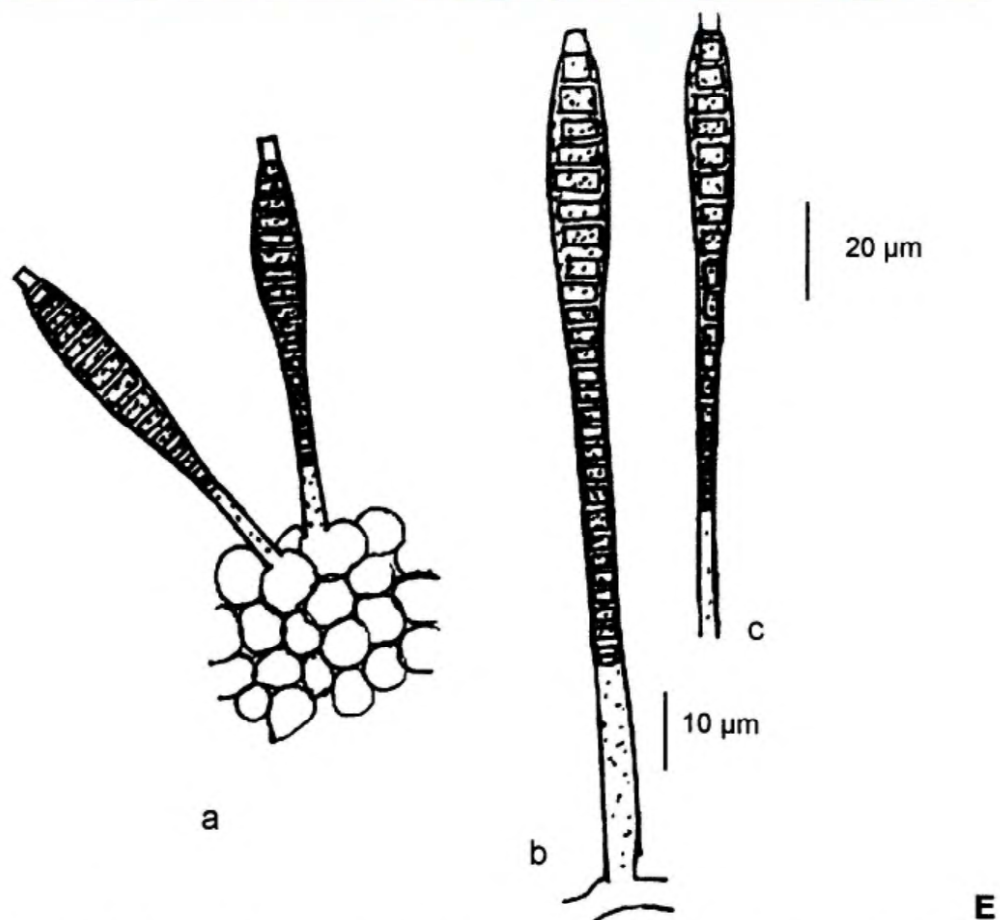
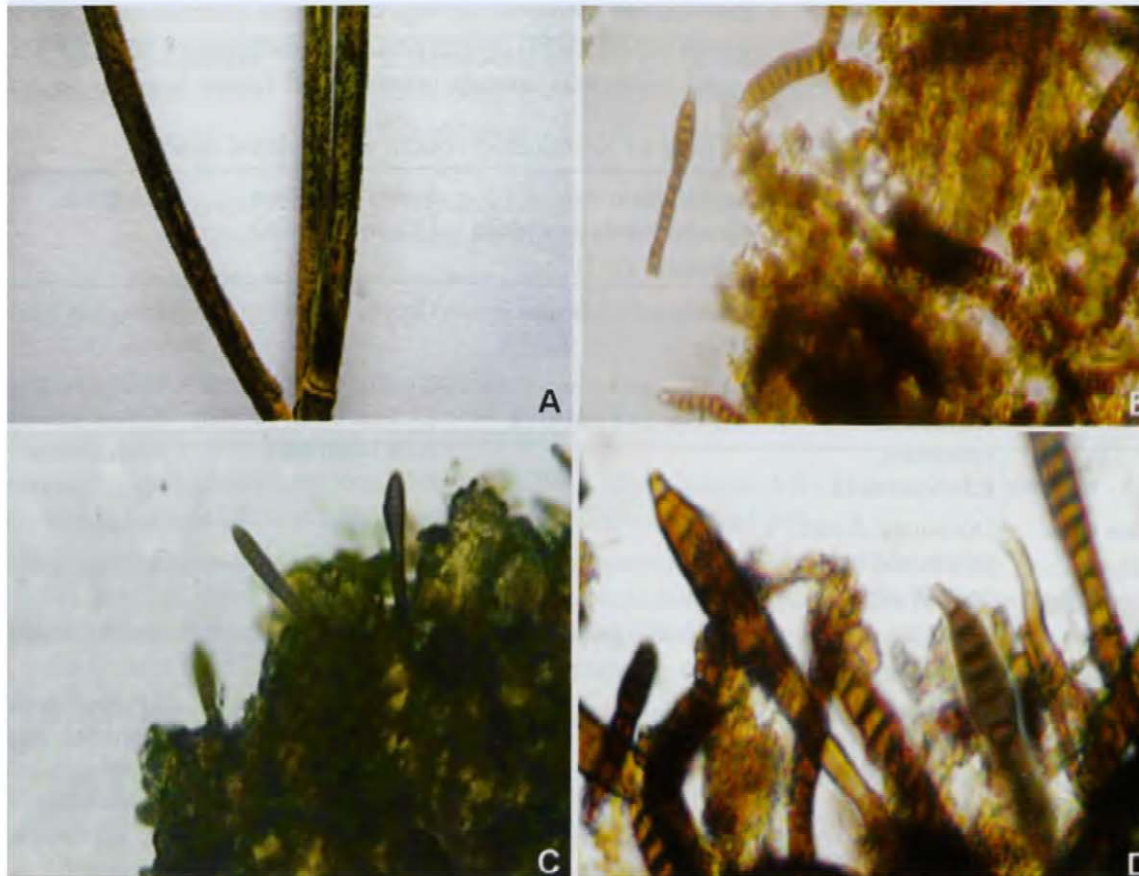


Fig. 1. (A-I) *Scytalidium zapotii*: A. Leaf spot of *Manilkara zapota*; (B-D) Conidia & Conidiophores ( $\times 100$ ); E. Adpression of conidial chains ( $\times 400$ ); F. Hyaline conidia ( $\times 400$ ); G. Mid brown doliiform conidia; H. Dark subspherical conidia; I. Camera Lucida drawing (I1. Hyphae, I2. Adpression of conidial chain, I3. Hyaline conidia, I4. Dark doliiform conidia, I5. Sphaerical conidia, I6. conidiophore).



**Fig 2.** *Sporidesmium officinale*: A. Dead stem of *Jasminum officinale*; B. Conidia & Conidiophore ( $\times 100$ ); C. Stromatic conidia ( $\times 100$ ); D. Conidia ( $\times 400$ ); E. Camera Lucida drawing (a. Stomata, b. Conidiophore, c. Conidia).

**Sporidesmium officinale** Dubey & Pandey, **sp. nov.**

(Fig.2. A-E)

Coloniae brunneae vel nigra; mycelium superficialis; stroma presens, conidiophorii 20 - 35 × 3.5 - 6 µm, brunneolus ad fuscus; conidiis clavatus ad cylindricus, aureus brunneus ad fuscus brunnae at acro-cella

Table 1. Comparative account of *Scytalidium zapotii* with related species :

| Fungal Characteristics              | <i>S. ligincola</i><br>(Pesante, 1957<br>apud Ellis, 1971)                                                                                                                                                                                       | <i>Scytalidium</i> state of<br><i>Hendersonula toruloidea</i><br>(Natrass, 1933)                                                                 | <i>S. thermophilum</i><br>(Austwick, 1976)                                                                                     | <i>S. zapotii</i>                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Colonies</b>                     | Dark blackish-brown                                                                                                                                                                                                                              | Dark blackish-brown to black                                                                                                                     | Grey to black                                                                                                                  | Brown to black                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Hyphae</b>                       | Smooth, narrow, cylindrical, colourless, 1.5 - 6 µm thick                                                                                                                                                                                        | Mid to dark brown, smooth, 2 - 8 µm thick                                                                                                        | Hyaline to brown 2 - 5 µm thick, swollen cells 14µm thick                                                                      | Hyaline to dark brown, 2.2 - 6.6 µm thick, narrow smooth, rectangular                                                                                                                                                                                                                                                                                                                                                           |
| <b>Swollen cells</b>                | Occasional & rare, pale to mid brown up to 10 µm thick                                                                                                                                                                                           | Absent                                                                                                                                           | Abundant                                                                                                                       | Absent                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Hyphae</b>                       | Parallel to one another                                                                                                                                                                                                                          | Sometimes parallel                                                                                                                               | Abundant                                                                                                                       | Sometimes parallel                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Conidiophores</b>                | Micronematous, mononematous, septate, branched or unbranched                                                                                                                                                                                     | Absent                                                                                                                                           | Absent                                                                                                                         | Micronematous, mononematous, septate, usually unbranched, straight, up to 20 µm long                                                                                                                                                                                                                                                                                                                                            |
| <b>Conidiogenous cells</b>          | Intercalary, determinate, fragmenting and forming arthroconidia                                                                                                                                                                                  | Absent                                                                                                                                           | Absent                                                                                                                         | Terminal, determinate, fragmenting and forming arthroconidia                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Conidia</b>                      | Two types :<br>(1) Hyaline-Arthroconidia catenate, cylindrical, oblong, truncate at each end 6 - 10 × 1 - 3 µm, 0-septate<br>(2) Dark brown conidia, thick walled, oblong, doliform or broadly ellipsoidal. Dark conidial chain adpressed rarely | One type : Arthroconidia mid to dark brown smooth, oblong, mostly 0-septate but occasionally 1 septate, 4 - 17 × 3 - 8 µm, when spherical 5-11µm | One type : Arthroconidia mid to dark brown smooth, mostly spherical 9 - 14 µm in diameter, sometimes oblong 8 - 18 × 7 - 11 µm | Three types :<br>(1) Hyaline, thin walled, rectangular to oblong, catenate, generally 0-septate, sometimes 1 - 3 septate, truncate at both ends, 6.6 - 19.8 × 1.5 - 4.4 µm<br>(2) Dark, mid to dark brown, thick walled, catenate and in groups also; doliform to ellipsoidal 4.4 - 11 × 4.4 - 6.6 µm<br>(3) Brown, spherical to subspherical, smooth, 8.8 - 11.0 in diam., 0-septate, occasionally 1-septate, septa dark brown |
| <b>Adpression of conidial chain</b> | Not seen                                                                                                                                                                                                                                         | Not seen                                                                                                                                         | Not seen                                                                                                                       | Observed in case of hyaline and dark conidial chain                                                                                                                                                                                                                                                                                                                                                                             |

Table 2. Comparative account of *Sporidesmium officinale* with related species:

| Fungal Characteristics | <i>S. leonense</i><br>(Ellis, 1976)                   | <i>S. jasminicola</i><br>(Ellis, 1958)                      | <i>S. crassisorum</i><br>(Ellis, 1958)                            | <i>S. officinale</i>                       |
|------------------------|-------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------|
| <b>Stroma</b>          | Present                                               | Not observed                                                | Not observed                                                      | Prominent                                  |
| <b>Conidiophores</b>   | 70 - 120 × 4.5 - 8 µm, mid brown, with 3 annellations | 16 - 40 × 5 - 8 µm, mid to dark brown, without annellations | 50 - 300 × 5 - 7 µm, dark blackish brown, with 0 - 3 annellations | 20 × 35 - 3.5 - 6 µm, without annellations |
| <b>Conidia</b>         | Oboclavate, wide at base, mid to dark brown           | Oboclavate, wide at base, dark brown, smooth                | Oboclavate, wide at base, verruculose                             | Clavate to cylindrical, narrow at base     |
| <b>Apical cell</b>     | Not prominent                                         | Not prominent                                               | Not                                                               | Prominent, paler & truncate at end         |

subhyalinus, glaber, pseudoseptatus, per 32 septatus, 70 - 172 µm longus, 6.6 - 11 µm in latus portio, 5 - 6.6 µm in angustus portio acro-cella truncates, 3 - 4.4 µm latus; septa medius 4 µm.

Colonies blackish-brown to black; mycelium superficial; stroma observed; conidiophores 20 - 35 × 3.5 - 6 µm, light brown to dark brown; conidia clavate to cylindrical, golden brown to dark brown but apical cell subhyaline, smooth, pseudoseptate, up to 32 septate, 70 - 172 µm long, 6.6 - 11 µm wide at the broadest part, 5 - 6.6 µm wide at the narrowest part, apical cell truncate, 3 - 4.4 µm wide; septa averaging 4 µm distance.

*Typus*: Dead stems of *Jasminum officinale* L. (Apocynaceae), Jabalpur; October 2009, HDBJ #145, Leg R.Dubey.

Specific epithet is given after the name of the host plant.

The present collection possesses some distinct characters, as presence of stroma, conidia clavate to cylindrical, apical cell subhyaline and truncate. A comparative study of *S. officinale* with *S. bambusae* Ellis (Sharma, 1980), *S. parvum* Ellis (Sharma, 1980), *S. sagarensis* (Subhedar & Rao, 1975), *S. vagum* Nees (Sharma, 1980), *S. adesendens* Berk. (Sharma, 1980), *S. lichenicola* (Iturriaga & al., 2008), *S. ilicis* and *S. pruni* (Jian and Zhang, 2007) and other species of *Sporodesmium* reveals that it is different from all the other existing species. Diagnostic characters of *S. officinale* show its resemblance to *S. leonense*, *S. jasminicola* and *S. crassisorum* (Table 2). But, as is evident from the Table 2, the presence of truncate apical cell creates a line of demarcation between these species also. Although it resembles with *S. socium* in having subhyaline apical cell but differs from it in all other features. Thus it is described as a new species.

#### ACKNOWLEDGEMENTS

Authors are thankful to the Director, Botanical Survey of India for encouragement. They are also thankful to Dr. P.G. Diwakar, Head of the Office, Botanical Survey of India, Western Regional Centre, Pune for his kind support and encouragement. Sincere thanks are also due to the Head, Dept. of Biosciences, R.D. University, Jabalpur (M.P.), for providing laboratory facilities. Financial assistance received from Ministry of Environment and Forests, New Delhi is thankfully acknowledged.

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## भारत से साइटेलिडियम एवं स्पोरिडेस्मियम की नयी जातियाँ

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### सार संक्षेप

प्रस्तुत अध्ययन में भारत से दो नये डिमेटिएसियस हाइफोमाइसिटिज साइटेलिडियम जेपोटी एवं स्पोरिडेस्मियम आफिसिनेल के चित्रांकन तथा वर्णन पर विचार किया गया है।