

## Phytopathogenic micromycetes from India

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*Sirosporium ziziphicola* sp. nov. and *Stigmina tirumalensis* sp. nov. are described. *Septoria pavgii* nom. nov. is introduced, and 11 new Indian collections of phytopathogenic micromycetes are recorded.

Keywords: *Sirosporium ziziphicola*, *Stigmina tirumalensis*, *Septoria pavgii*, India, new records, taxonomy.

Various micromycetes were collected by G. Bagyanarayana and collaborators in 1994 and 1995 during field trips in Andhra Pradesh, India. Collections on *Ziziphus mauritiana* and *Bassia latifolia* turned out to be new species of *Sirosporium* and *Stigmina*, respectively. Some other specimens represent new fungal records for India in general or Andhra Pradesh in particular, or the host species are new.

***Sirosporium ziziphicola*** U. Braun & Bagyan. sp. nov. – Fig. 1.

Maculae epiphyllae, suborbiculares vel irregulares, 2–10 mm diam., sordide griseo-ochraceae vel griseo-olivaceae, margine tenui atriore brunneo cinctae, interdum confluentes majoresque vel diffusae. Coloniae hypophyllae, suborbiculares vel irregulares, densae, fuliginosae. Mycelium primarium immersum: hyphae subhyalinae vel pallide olivaceo-brunneae, septatae, ramosae. Stroma nullum. Mycelium secundarium superficiale: hyphae repentes, septatae, leniter ramosae, 2–4 µm latae, subhyalinae vel olivaceae. Conidiophora solitaria, ex hyphis repentibus lateraliter vel terminaliter oriunda, solida, saepe aggregata, subcylindrica vel conica, subgeniculata, 3–20 x 4–6(–8) µm, 0–1(–3) septata, pallide olivacea vel olivaceo-brunnea, levia. Cicatrices conidiales plus minusve truncatae, 1.5–3 µm latae, interdum leniter protuberantes, vix incrassatae, non vel lenissime fuscae. Conidia solitaria, obovoidea, late ellipsoidea, obclavata, subclavata, asymmetrica, 8–50 x 4–6 µm, 1–8 septis transversalibus et 0–4 septis longitudinalibus praedita, levia, pallide vel atro-brunnea; hilum truncatum, non incrassatum, non fuscum.

Holotypus. – On *Ziziphus mauritiana* Lam. (Rhamnaceae), India, Sri Tirumala Hills, Andhra Pradesh, Febr. 1994, Ramesh & Bagyanarayana (HAL). Isotypus: herb. Bagyanarayana.

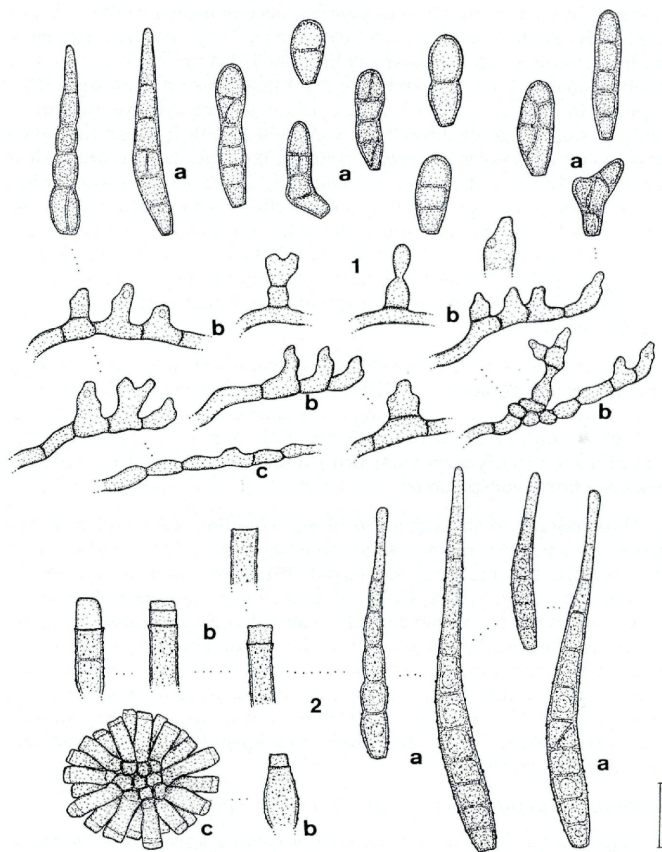


Fig. 1-2. - 1. - *Sirosporium ziziphicola* sp. nov. - a. conidia. b. conidiophores. c. creeping hypha. - 2. - *Stigmina tirumalensis* sp. nov. - a. conidia. b. conidiogenous cells. c. sporodochium (seen from above). - Bar = 20  $\mu$ m. - U. Braudel.

Leaf spots epiphyllous, subcircular to irregular, 2-10 mm diam., dull greyish ochraceous to greyish olivaceous, surrounded by a narrow dark margin, sometimes confluent and larger, patches occasionally diffuse. - Colonies hypophyllous, subcircular to somewhat irregular, 2-10 mm diam., dense, sooty. - Primary mycelium

internal; hyphae subhyaline to pale olivaceous brown, septate, branched. – *Stroma* lacking. – *Secondary mycelium* external; hyphae creeping, septate, sparsely branched, 2–4  $\mu\text{m}$  wide, subhyaline to olivaceous. – *Conidiophores* solitary, arising from secondary hyphae, lateral or terminal, stout, often aggregated, subcylindrical, slightly geniculate, 3–20 x 4–6(–8)  $\mu\text{m}$ , 0–1(–3)-septate, pale olivaceous to olivaceous brown, smooth; conidial scars more or less truncate, 1.5–3  $\mu\text{m}$  wide, occasionally somewhat protuberant, unthickened or almost so, not or only slightly darkened (in front view sometimes to be seen as minute circles). – *Conidia* formed singly, obovoid, broadly ellipsoid, obclavate, subclavate, asymmetrical, 8–50 x 4–6  $\mu\text{m}$ , with 1–8 transverse and 0–4 longitudinal (–oblique) septa, smooth, pale to dark brown, base truncate, hilum neither thickened nor darkened.

Kamal & al. (1977) recorded *Sirosporium antenniforme* (Berk. & Curt.) Bubák & Serebrian. on *Ziziphus xylocarpus* from India and published a description and drawing. This species possesses much larger and wider conidia, up to 100 x 15  $\mu\text{m}$ , with up to 15 transverse septa. The hila are usually somewhat protruding, peg-like and the conidial scars are fairly conspicuous.

With regard to the structure of the conidial scars and hila, the genus *Sirosporium* is somewhat heterogeneous. The conidial scars are usually conspicuous, somewhat thickened and darkened. In *S. diffusum* (Heald & F. A. Wolf) Deighton and *S. mori* (Syd. & H. Syd.) M. B. Ellis, they are rather inconspicuous, hardly thickened and only somewhat darkened (cf. Ellis, 1976). The conidial hila are unthickened and not or only slightly darkened. *S. ziziphicola* is an unusual member of *Sirosporium*, distinguished from the type species of this genus and most other taxa by having unthickened and not or only very slightly darkened conidial scars. Therefore, this species is only tentatively placed in *Sirosporium*.

***Stigmina tirumalensis* U. Braun & Bagyan. sp. nov. – Fig. 2.**

Maculae amphigenae, suborbiculares vel angulares-irregulares, 0.5–3 mm diam., primo griseo-violaceae vel atro-brunneae, denique centro griseo, plerumque margine tenui atro-brunneo vel purpureo-brunneo cinctae, saepe confluentes. Conidiomata amphigena, atro-brunnea, punctiformia. Mycelium immersum: hyphae septatae, modice ramosae, leviae, brunneae. Sporodochia ca. 30–60  $\mu\text{m}$  diam., stromata immersa vel erumpentia, ex cellulis inflatis, brunneis, 3–8  $\mu\text{m}$  latis composita. Conidiophora numerosa, dense aggregata, ex stromate quoque oriunda, simplicia, cylindrica, 10–30 x 4–8  $\mu\text{m}$ , brunnea, sursum pallidiora, verruculosa. Cellulae conidiogenerae integratae, terminaliae vel separatae, percurrentes. Conidia solitaria, plus minusve obclavata, 40–150 x 5–8  $\mu\text{m}$ , (5–)10–20(–25) septis transversalibus et interdum 1–2 septis longitudinalibus praedita, interdum sparse distoseptata, modice brunnea vel sursum pallidiora, parve crassitunicata, verruculosa, ad apicem obtusa, interdum leniter inflata, basi in hilum rotundata vel truncata, non incrassata, non fusca.

**Holotypus.** – On *Bassia latifolia* Roxb. (Sapotaceae), India, Sri Tirumala Hills, Andhra Pradesh, Febr. 1994, Ramesh & Bagyanarayana (HAL). Isotypus: herb. Bagyanarayana.

Leaf spots amphigenous, subcircular to angular-irregular, 0.5–3 mm diam., at first dull greyish violet to dark brown, later centre greyish, usually with a narrow, often somewhat raised dark margin, dark to blackish brown or with a dull purplish violet tinge, spots often confluent. – **Conidionata** amphigenous, blackish brown, punctiform. – **Mycelium** internal; hyphae septate, sparsely branched, smooth, brownish. – **Conidionata** sporodochial, about 30–60 µm diam., composed of an immersed to erumpent stromatic base of swollen, brown hyphal cells, 3–8 µm wide, and numerous, densely arranged conidiophores. – **Conidiophores** straight, cylindrical, 10–30 x 4–8 µm, medium to dark brown, often paler towards the apex, verruculose; conidiogenous cells integrated, terminal or separate (conidiophore reduced to a single conidiogenous cell), percurrent, annellations conspicuous. – **Conidia** formed singly, more or less obclavate, 40–150 x 5–8 µm, with (5–)10–20(–25) transverse and occasionally 1–2 longitudinal septa, sometimes with a few distosepta, medium brown throughout or often paler towards the apex in long conidia, wall somewhat thickened, verruculose, apex obtuse, occasionally somewhat swollen, base rounded to truncate, hilum neither thickened nor darkened.

This species is allied to *Stigmia butyrospermi* (Hansf.) M. B. Ellis, described on *Butyrospermum parkii* (Sapotaceae) from Uganda. The latter species differs, however, by having shorter, smooth conidia with 3–8 septa. There are some other *Stigmia* species with similar conidia, but on hosts not belonging to the Sapotaceae. *S. beshirii* M. B. Ellis and *S. phaeocarpi* (Mitter) M. B. Ellis are characterized by obclavate, pluriseptate conidia. The conidia are, however, provided with long non-septate beaks. *S. celata* (Welwitsch & Currey) M. B. Ellis and *S. crotonicola* M. B. Ellis are also similar, but well-distinguished by having shorter conidia with less than 10 septa.

#### **Additional records of phytopathogenic micromycetes from Andhra Pradesh, India**

If not otherwise stated, the following collections have been made by Ramesh and Bagyanarayana in February 1994. Duplicates of the collections are deposited in herb. Bagyanarayana and HAL. Host range and distribution in India have been proven on the base of Bilgrami & al. (1991) and other Indian mycological publications of the last

years. New records and new hosts are marked as follows: !! = new to India, ! = new to Andhra Pradesh, + = new host.

***Asterostomella*** anamorph of ***Asterina balii*** Syd., Ann. Mycol. 19: 308 (1921).

On *Alangium lamarckii*, Khammam, !

***Balladynia gardeniae*** Rac., Paras. Algen u. Pilze Javas II: 6 (1900).

On *Chomelia zeylanica* (= *C. asiatica*), Sri Tirumala Hills, + !

***Meliola tenella*** var. ***atalantiicola*** Hosag., J. Econ. Tax. Bot. 11: 159 (1989).

On *Atalantia monophylla*, Sri Tirumala Hills, det. Hosagoudar.

***Oidium*** spec.

On *Pachygone ovata*, Sri Tirumala Hills, June 1994, Bagyanarayana, + !! (*Pseudoidium* type; appressoria lobed; conidia solitary, subcylindric, 28–36 x 14–18 µm).

***Phlyctema canthicola*** Seshadri, Mycopathol. Mycol. Appl. 30(2): 179 (1966).

On *Canthium dicoccum*, Sri Tirumala Hills, !

***Pseudocercospora gmelinae*** (J. M. Yen & Gilles) J. M. Yen, Bull. trim. Soc. mycol. Fr. 94: 383 (1979).

On *Gmelina arborea*, Sri Tirumala Hills, !!

***Pseudocercospora jujubae*** (S. Chowdhuri) N. Khan & Shamsi, Bangladesh J. Bot. 12(2): 117 (1983).

On *Ziziphus oenoplia*, Khammam, + !

***Pseudocercospora punicea*** (P. Henn.) Deighton, Mycol. Pap. 140: 151 (1976).

On *Punica granatum*, Hyderabad, !

***Pseudocercospora viticicola*** U. Braun, Mycotaxon 48: 296 (1993).

On *Vitex altissima*, Sri Tirumala Hills, April 1995, Bagyanarayana, !

***Sarcinella*** anamorph of ***Clypeolella gymnosporiae*** Hansf., Proc. Linn. Soc. Lond. 157: 200 (1946).

On *Gymnosporia* spec., Sri Tirumala Hills, !

Subhedar & Rao (1975: 194) published the name *Sarcinella gymnosporiae* (nom. nud.). This record belongs possibly to the present species.



***Septoria pavgii*** nom. nov.

Bas.: *Septoria vernoniae* Pavgi & U. P. Singh, Mycopathol. Mycol. Appl. 27: 93 (1965) (non *S. vernoniae* Syd., 1930)

On *Vernonia cinerea*, Hyderabad, Aug. 1994, Bagyanarayana, !

Pycnidia 50–100 µm diam.; conidia acicular-filiform, 20–40 x 2 µm, 0–3-septate. *Septoria vernoniae* Syd., described from Venezuela on *Vernonia brasiliiana*, differs by having much longer conidia, 38–75 x 2–3 µm, with numerous septa.

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