

## Leaf inhabiting fungi from West Bengal, India

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The present paper deals with two species of phytopathogenic dematiaceous hyphomycetes viz. *Pseudocercospora calotropidis* on *Calotropis procera* and *Cercospora oenanthes* on *Oenanthe benghalensis* from West Bengal which are described and illustrated here. *Pseudocercospora calotropidis* is a comb. nov. species and *Cercospora oenanthes* is a new species.

**Key words :** Taxonomy, *Pseudocercospora*, *Cercospora*

### INTRODUCTION

Reseachers from all over the world have made a lot of taxonomic contribution on dematiaceous hyphomycetous fungi. Some of them are Braun and Rogerson (1993), Castaneda *et al.* (1996), Chupp (1953), Constantinescu (1982), Crous and Braun (1995), Ellis (1971, 1976), Hawksworth *et al.* (1983), Katsuki and Kibayashi (1982), Morgan-Jones (1980), Sinclair *et al.* (1990), Sutton (1996) and Yen *et al.* (1982a, 1982b). In India and West Bengal too, a large number of workers have worked on this group of fungi (Agarwal and Sarbhoy, 1979; Bagyanarayan *et al.*, 1995; Bilgrami and Jamaluddin, 1991; Das and Chattopadhyay 1990; Haldar *et al.*, 1997; Kar and Ray 1985; Patil, 1978; Rai and Kamal, 1987; Ram and Mallaiiah, 1996; Rao and De Hoog, 1986; Ray, 1991; Saikia and Sarbhoy, 1985; Sarbhoy *et al.*, 1985, 1986; Stevens, 1993; Subramanian, 1983). This paper reports two dematiaceous leaf inhabiting fungi from West Bengal.

### MATERIALS AND METHODS

The specimens were collected during different seasons of 1997-1998 from Gobindapur of South 24-Parganas and Alipur, Calcutta. The infected leaves having distinct symptoms were spread out in between two blotting papers and dried following standard technique.

The fully dried specimens were packed with paradichlorobenzene in a separate paper envelope. A portion of the infected host tissue were detached carefully with a sharp blade. It was then mounted on a glass slide in a drop of lactophenol (0.1 percent cotton blue solution was also used) and covered with a cover glass and warmed on sprit lamp flame. The prepared slides were sealed with paraffin wax. Free hand section, of the host leaf through the infected regions were also made to study the details of the mycelial structures and stromata. The slides were carefully examined under different magnification of compound microscope. The measurment of different structures were also taken at the same time. The taxonomic determination were made with the help of relevant literature.

The specimens were identified and sent to the Tropical Forest Research Institute (T.F.R.T), Jabalpur, Madhya Pradesh for confirmation. Holotype specimens are deposited in the Mycology Herbarium, Botany Department, Presidency College, Kolkata (PCC or PCK)

### OBSERVATION AND DISCUSSION

*Pseudocercospora calotropidis* (Ellis & Everhart) comb. nov.

Syn. *Cercospora calotropidis* Ellis & Everhart  
*Missouri Bot. Gard Ann, Rept.* **9** : 120, 1898;  
*Cercospora microspora* Pat, Duss, R.P. Enum. Meth  
 Champ, *Guadeloupe*, P. 91, 1903; *Cercospora*  
*patouillardii* Saccardo, *Syll. Fung.* **18** : 608. 1906:

*Cercospora calotropidis* Lingelsh, *Engler's Bot. J.* **39**  
 : 605, 1907; *Cercospora inconspicua* Pat, & Har, *Bull.*  
*Soc. Mycol. Fr.* **24** : 16, 1909; *Cercospora domingensis*  
 Frag., & Cif., *Rep. Dom. Est. Agr Moca. Sér. B-Bot.*  
*Bul.* **11** : 64, 1927; *Cercospora lingelsheimi* Savul &

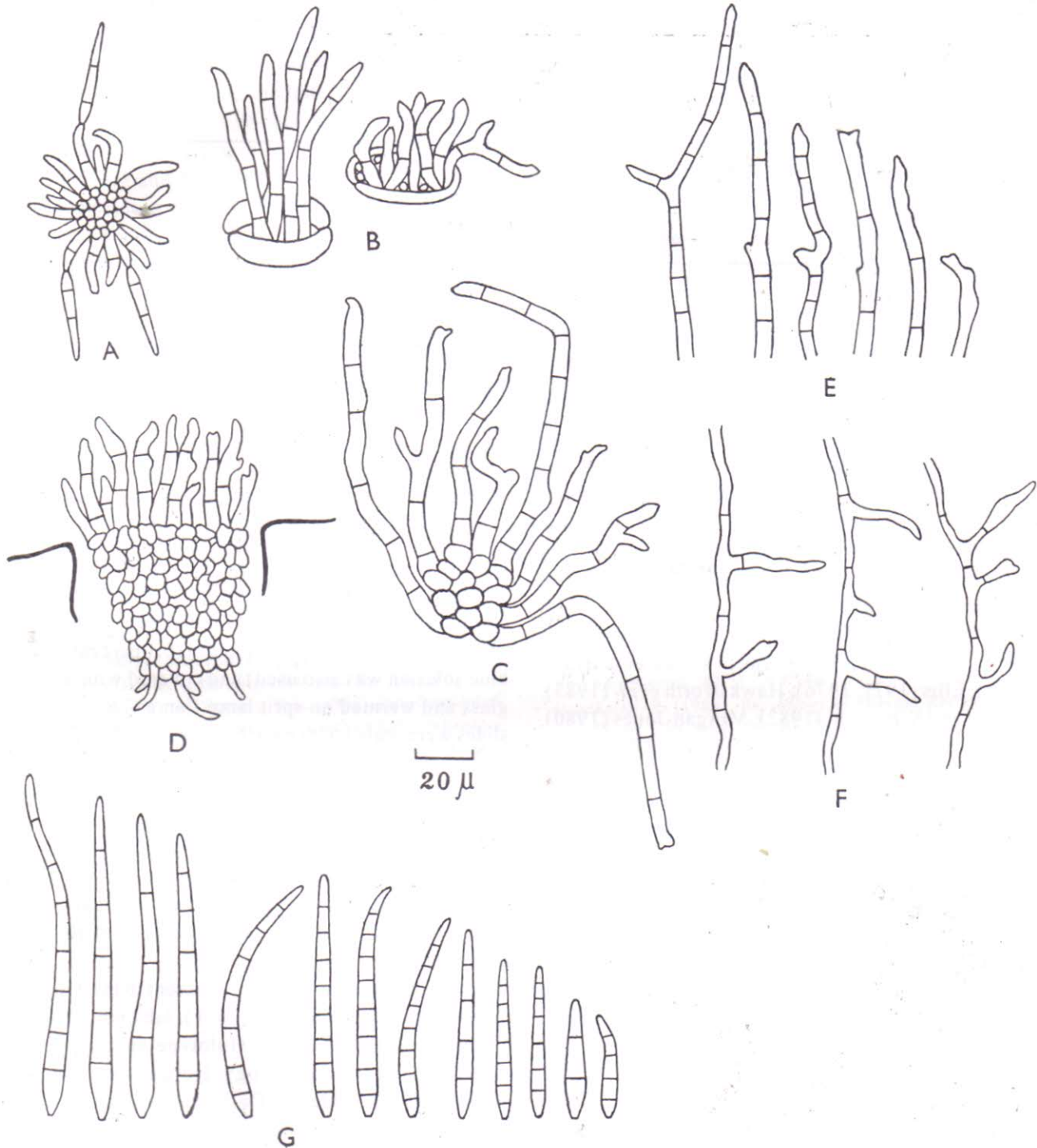


Fig.1. *Pseudocercospora calotropidis*

- A. A single conidiophore fascicles bearing conidia. E. Conidiophores.  
 B-C. Conidiophore fascicles. F. External mycelial hyphae bearing conidiophores.  
 D. Section through the stromata. G. Conidia

Rayss; *Ann. Crypt. Exot.* 8 : 49, 1935.

*Leaf spots* amphigenous, indefinite, distinct on dorsal surface, older leaves more affected, circular, effuse, occasionally developing a short hole, initially greenish becoming blackish green at maturity on the dorsal surface, sooty and blackish on the ventral surface

without any distinct margin, sometimes coalescent, 1-11 mm in diam; *caespituli* amphigenous, unevenly distributed over the spots, blackish brown to black; *stroma* well developed, dark brown, consisting of thick walled dark brown hyphal cells, 30-70  $\mu$  in length and 18-30  $\mu$  in breadth, cells are compactly arranged;

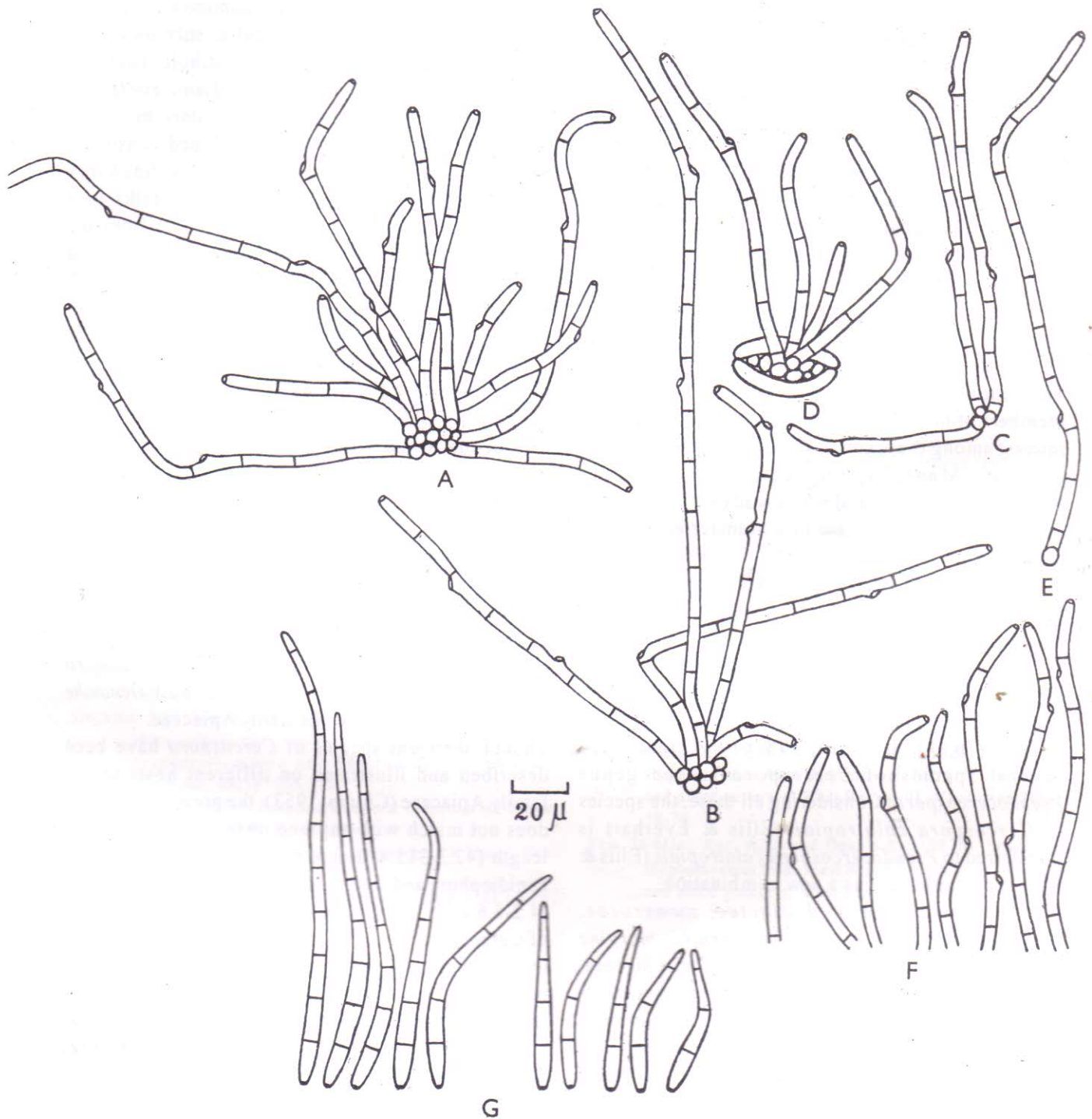


Fig.2. *Cercospora oenanthae*.

A-D Conidiophore fascicles.  
E. A Solitary conidiophore.

F. Conidiophores,  
G. Conidia.

primary mycelium internal, colourless, 1.5-2.0  $\mu$  in wide; secondary mycelium external, superficial, olivaceous, septate, up to 2.5  $\mu$  producing secondary conidiophore laterally and terminally; conidiophores usually fasciculate, 2-25 divergent stalks in a fascicle, emerging through the stomata, denticle straight to flexuous, light to mid brown, paler towards the tip, smooth thick walled, usually simple, very rarely branched, distinctly pluriseptate (2-14 septa), straight to rarely once geniculate, denticulate, inconspicuous conidial scar present at the tip of the conidiophores 3.3-6.6 x 9.8-99.0  $\mu$ , tip subobtuse or terminated with distinct denticle; conidia cylindric to obclavate cylindric, hyaline to olivaceous, usually straight, very rarely curved, distinctly multiseptate (1-7 septa), smooth thick walled, tip subobtuse, base tapered to unthickened hilum measuring 3.4-6.6 x 19.9-198.9  $\mu$ . Specimen studied: On the living leaves of *Calotropis procera* R.Br. (fam. Asclepiadaceae), Gobindapur, South 24 Parganas, West Bengal, India T.F.R.I. S-20, 30 January 1998.

The genus *Pseudocercospora*, is one of the largest members of the "Cercospora like fungi" raised much interest among the taxonomists dealing with this type of fungi. Many hyphomycetous fungi, which are "Cercospora like" and was already included under the genus *Cercospora* are now transferred to more authentic and appropriate genus *Pseudocercospora* owing to the presence of broad conical denticles, unthickened conidial scar on conidiogenous cells, proliferation of conidiogenous cells and tapered to abruptly tapered conidia with unthickened hilum at the base (generic character of *Pseudocercospora* Speg).

On the basis of above characteristics, Deighton (1973, 1974, 1976, 1979, 1987a, 1987b) has transferred several species of *Cercospora* to the genus *Pseudocercospora*. Considering all these, the species of *Cercospora calotropidis* Ellis & Everhart is transferred to *Pseudocercospora calotropidis* (Ellis & Everhart) comb. nov. as a new combination.

*Maculae amphigenae, distinctae, numerosae, circulares vel irregulares, albido centro, margine flavidae cinctae, 1-2 mm latae; caespituli amphigenae, sed precipue hypophylli, perbrunneae vel atrobrunneae; stroma non bene evoluta conidiophora solitaria vel fasciculata, 2-10 in fasciculo divergenete per stoma emergente, recta vel flexuosa, pallide vel modice-brunneae, apicem versus paliidiora, laevia, simplicia, raro ramosa, multiseptata (2-14 septata), recta vel geniculata, (0-2), cicatrices conidiales circa 2.5-3.0  $\mu$  indistincto, apice subtruncata, 4.2-5.6 x 42.3-109.2  $\mu$  (maxima 315.14  $\mu$ ); conidia obclavata, cylindrica, olivacea vel pallide olivacea, recta vel*

*curvata, distincto multiseptate (1-10 septata), laevia, basim truncata, apice subobtusa, 4.2-5.6 x 42.3-63  $\mu$ .*

*Habitat in foliis vivis Oenanthe benghalensis* Benth (fam. Apiaceae), Indian Agrihorticultural Society, Alipur, Kolkata, Bengal *occidentales, indiae*, PCC 6305 1. IV 1998.

*Leafspots* amphigenous, distinct, numerous, scattered, circular to irregular, whitish centre, surrounded by yellow margin, rarely leaving a shot hole, necrotic, occasionally coalescent, 1-2 mm diam; *caespituli* amphigenous, chiefly hypophyllous, dark brown to blackish brown; *stroma* not well developed, consisting of a few dark brown hyphal cells; *conidiophores* solitary to fasciculate, 2-10 divergent stalks in a fascicle, emerging through the stomata or from the base of the stroma, straight to flexuous, pale to mid brown, paler towards the tip, smooth, thick walled, simple, rarely branched multiseptate (2-14 septa), straight to geniculate (0-2), indistinct conidial scar (2.5-3.0  $\mu$ ) present at the tip or at the point of geniculations, tip subtruncate 4.2-5.6 x 42.3-109.2  $\mu$  (maximum length upto 315.4  $\mu$ ); conidia obclavate, cylindric, olivaceous to pale olivaceous, straight to curved, distinctly multiseptate (1-10 septa), smooth, thickwalled, base truncate, tip subobtuse, 4.2-5.6 x 42.3-63  $\mu$ .

Specimen studied: On the living leaves of *Oenanthe benghalensis* Benth. (fam. Apiaceae), Indian Agrihorticultural Society, Alipur, Kolkata, West Bengal, India PCC 6305, 1 April 1998.

Review of literature shows no species of *Cercospora* has yet been reported on the present host *Oenanthe benghalensis* Benth. under the family Apiaceae.

Though different species of *Cercospora* have been described and illustrated on different hosts of the family Apiaceae (Chupp, 1953), the present collection does not match with any one of them. Specially the length (42.3-315.4  $\mu$ ) and breadth (4.2-5.6  $\mu$ ) of the conidiophore and the breadth and length of the conidia (4.2-5.6 x 42.3-63  $\mu$ ) clearly differ from other species of *Cercospora*.

In view of the above reports the present fungus could not be accommodated in any species of this group hitherto know and therefore, it has been described and illustrated under a new specific epithet; viz. *Cercospora oenanthes*.

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