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TWO NEW SPECIES OF *PESTALOTIOPSIS* ON MANGROVE TREES IN THE SUNDARBANS, INDIA

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ABSTRACTS

Two new species of fungi, namely, *Pestalotiopsis caseolaris* sp. nov., and *P. apetalae* sp. nov., were isolated from the leaves of two mangrove trees, *Sonneratia caseolaris* (L.) Engl. and *S. apetala* Ham. respectively. These fungi are described with illustrations.

Key Words : Mangrove, foliar fungi, *Pestalotiopsis apetalae* ; *P. caseolaris*.

INTRODUCTION

No attempt has so far been made to survey the foliar fungi of mangrove ecosystem of Sundarbans and hence it was considered worthwhile to undertake this work. However, a number of fungi from mangrove soil, litters, decaying leaves and driftwood were reported earlier by Kohlmeyer and Kohlmeyer (1965), Kohlmeyer (1969 a&b), Rai *et al.* (1969), Fell and Master (1975), Newell (1975), Chowdhery *et al.* (1982), Jones *et al.* (1988), Raghukumar (1988), Jones and Hyde (1990), Ravikumar and Vittal (1991). Foliar fungi have been reported from mangroves of other countries by Creager (1962), Kuthubutheen (1984), Chang and Chang (1990), Ho *et al.* (1991) and Hyde & Sutton (1992). This communication deals with two new species of *Pestalotiopsis* recently isolated from two mangrove trees of Sundarbans and are described with illustrations.

TAXONOMY

Pestalotiopsis caseolaris Purkayastha & Pal, sp. nov. (Figs. 1-3 & 7-8).

Etym. : Reference to its natural host, *Sonneratia caseolaris* (L.) Engl.

Maculae in foliis distinctae, regulares and irregulares, discretae, in superficie dorsali, plures in foliis vetustioribus, brunneae ad atrobrunneae, interdum cum halore luteola, plerumque foramina, 1-8 mm longa, 1-5 mm lata, maculas fingentia.

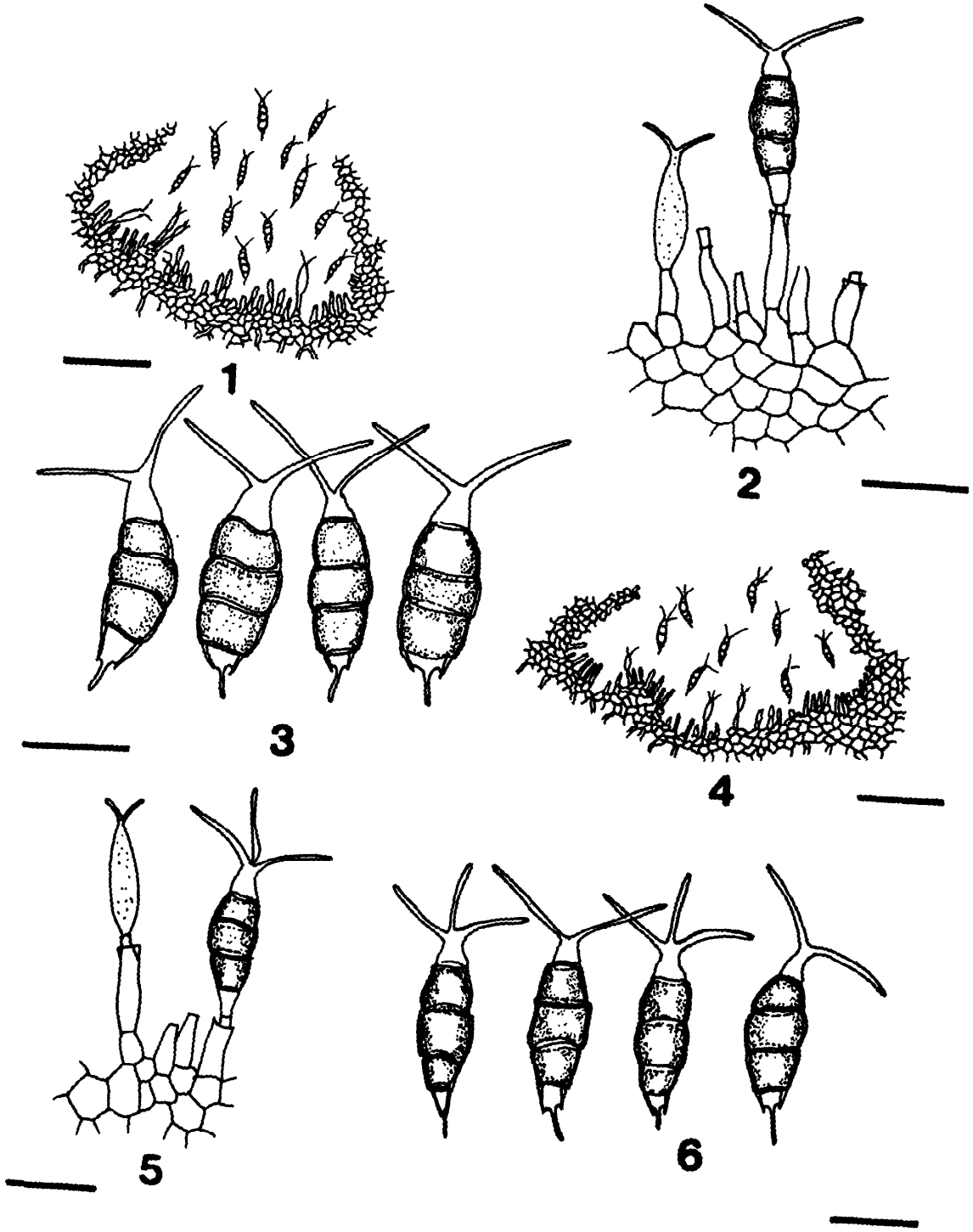
Teges mycelialis in PDA alba, coacta ad subcoacta, zona crescens appressa. Hyphae ramosae, septatae, cellulae hyphales 3.9-5.8 µm × 7.8-23.4 µm, acervuli omnino dispersi, interdum cum zonationibus distinctis diurnis.

Acervuli, numerosi, globosi, lenticulares vel ellipsoidei, 250-400 µm diam., nigri, ad maturitatem rumpentes, massam sporarum emissentes. Conidiophora (annellophora) hyalina, cylindrica ad obpyriformia, 1.5-3.5 × 5-15 µm, cum 1-2 proliferationibus percurrentibus, cellulae conidiogenae holoblasticae, conidia fusiformia, recta, raro curvata, 5-cellularis, ad septam constricta, 31.2-39 × 3.9-7.8 µm, 3 cellulae medianae parietibus crassibus, olivaceo-brunneae, interdum cellula media fuscata, cellula apicalis basalisque hyalina, cellula apicalis cum 2 appendicibus vel setulis apicalibus, 15.6-11.7 µm longis, cellula basalis cum appendice singulo hyalino recto, 5.8-8 µm longo.

Holotypus : CUPH 300, Danchi Sylva, 24 Parganas, Benghala Occ., India, 11.11.1992. *Isotypus* : IMI 356251, Danchi Sylva, 24 Parganas, Benghala Occ., India, 11.11.1992.

Leaf spot distinct, regular to irregular, discrete, on the dorsal surface, more on the older leaves, brown to dark brown, some times with a yellowish

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Figs. 1-6 : *Pestalotiopsis caseolaris*.

Fig.: 1. Vertical section of acervulus (bar = 50 µm); 2. Conidiogenous cells and immature conidia (bar = 10 µm); 3. Conidia (bar = 10 µm); 4. V.S. of acervulus (bar = 50 µm; 5. Conidiogenous cells and immature conidia (bar = 10 µm); 6. Conidia (bar = µm).

halo, often replaced by shot holes, 1-8 mm length, 1-5 mm breadth.

Mycelial mat white on PDA, felty to subfelty, advancing zone appressed. Hyphae branched, septate, hyphal cell 3.9-5.8 µm × 7.8-23.4 µm, acervuli scattered throughout, sometimes forming distinct diurnal zonation.

Acervuli numerous, globose, lenticular or ellipsoidal, 250-400 µm diam., black, ruptured with maturity, releasing spore masses. Conidiophores (annellophores) hyaline, cylindrical to obpyriform, 1.5-3.5 × 5-15 µm, with 1-2 percurrent proliferations, conidiogenous cells holoblastic, conidia fusiform, straight, rarely curved, 5-celled, constricted at the septa, 31.2-39 × 3.9-7.8 µm, 3 median cells thick-walled, olivaceous brown, in some cases middle cell is darker, apical cell and basal cell hyaline, apical cell with 2 apical appendages or apical setulae, 11.7-15.6 µm long, basal cell with single hyaline straight appendage, 5.8-8 µm long.

Specimens examined : IMI 356251, Danchi forest, 24 Parganas, West Bengal, India, 11.11.1992 ; CUPH 300, Danchi forest, 24 Parganas, West Bengal, India, 11.11.1992 ; CUPH 400, Kalas, 24 Parganas, West Bengal, India, 3.11.1993 ; CUPH 450, Saznakhali, 24 Parganas, West Bengal, India, 12.8.1993.

Holotype : CUPH 300, Danchi forest, 24 Parganas, West Bengal, India, 11.11.1992. *Isotype:* IMI 356251, Danchi forest, 24 Parganas, West Bengal, India, 11.11.1992.

Pestalotiopsis apetalae Purkayastha & Pal, sp. nov. (Figs. 4-6 & 9-11).

Etym. : Reference to its natural host, *Sonneratia apetala* Ham.

Maculae in foliis dispersae, interdum coalescentes in superficie dorsali, irregulares, cum halore luteola, brunneis ad atrobrunneis plerumque versus peripheriam, 2-15 mm longae et 1-5 mm latae.

Teges mycelialis in PDA alba, coacta, cum zonationibus indistintis diurnis. Hyphae ramosae, septatae, albae, cellulae hyphales 1.9-3.9 × 11.7-23.4 µm, acervuli dispersi versus peripheriam tegitum mycelialium.

Acervuli ellipsoidei ad globosi, 250-300 µm in diametro, massam sporarum nigram emissentes. Conidiophora (annelophora) hyalina, plusminusve cylindrica, obovoidea, 3.5-3.8 × 5-15 µm cum 1-2 proliferationibus percurrentibus. Cellulae conidiogenae holoblasticae. Conidia parum curvata, recta, 5-cellularia, 15.6-21.5 × 3.9-5.85 µm, ad septam constricta, 3 cellulae medianae parietibus crassibus, olivaceobrunneae, cellula apicalis basalisque hyalina, cellula apicalis cum 3 (raro 2) appendicibus vel setulis apicalibus, 5.8-9.7 µm longis, cellula basalis cum appendice singulo hyalino, recto, 5.8-7.8 µm.

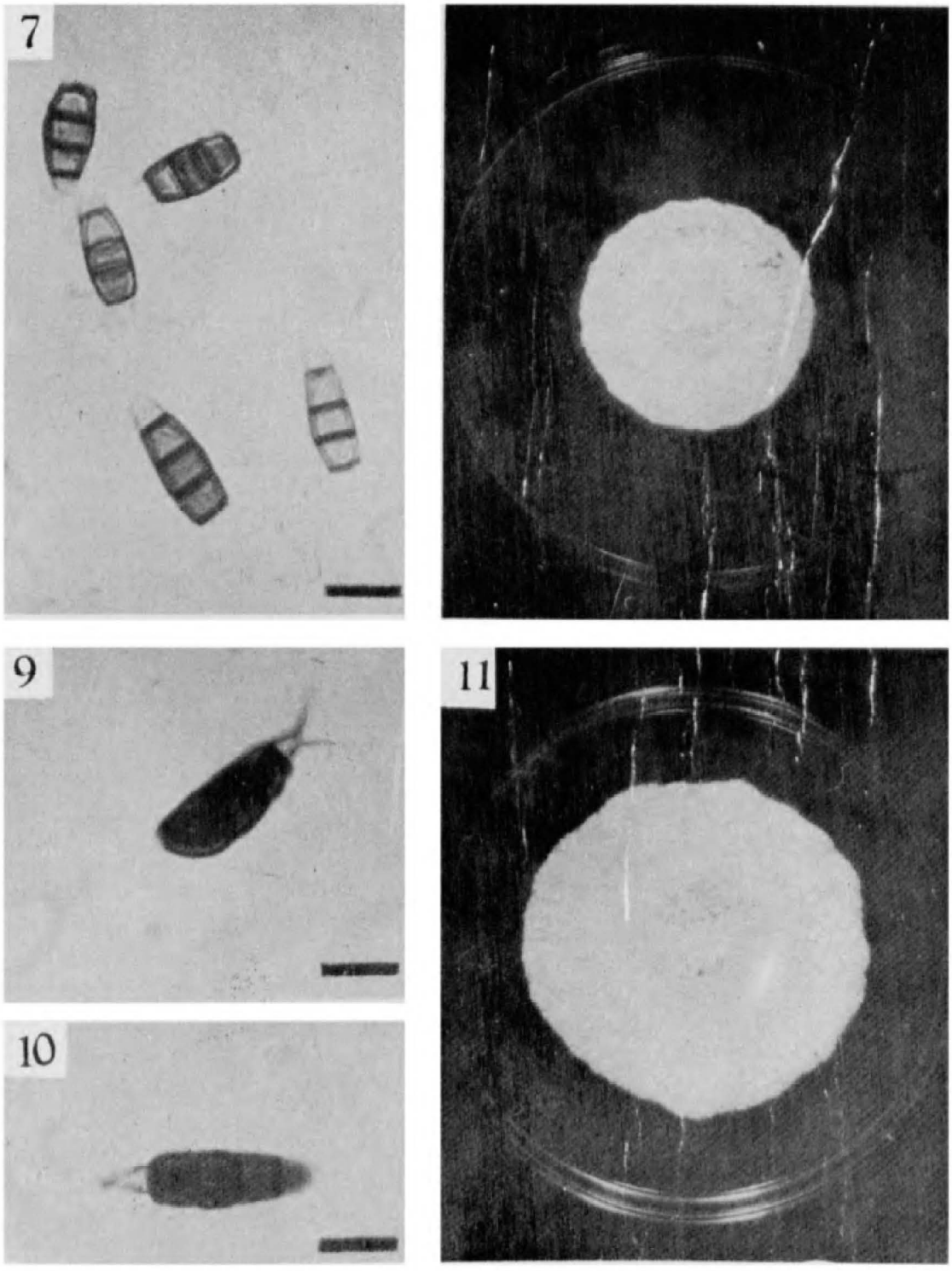
Holotypus : CUPH 217, Kultali Sylva, 24 Parganas, Benghala Occ., India, 5.1.1992. *Isotypus* : IMI 352586, Kultali Sylva, 24 Parganas, Benghala Occ., India, 5.1.1992.

Leaf spots scattered, sometimes coalescing, on the dorsal surface irregular, with yellowish halo, brown to dark brown, concentrated towards the periphery, 2-15 mm length and 1-5 mm breadth.

Mycelial mat on PDA white, felty, with indistinct diurnal zonations, Hyphae branched, septate, white, hyphal cells 1.9-3.9 × 11.7-23.4 µm, acervuli scattered towards periphery of the mycelial mats.

Acervuli ellipsoidal to globose, 250-300 µm diameter, released black spore masses. Conidiophores (annellophores) hyaline, more or less cylindrical, obovoid, 3.5-3.8 × 5-15 µm, with 1-2 percurrent proliferations, conidiogenous cells holoblastic. Conidia slightly curved, straight, 5-celled, 15.6-21.5 × 3.9-5.85 µm, constricted at the septa, 3 median cells thick-walled, olivaceous brown, apical and basal cell hyaline, apical cell with 3 (occasionally 2) appendages or apical setulae, 5.8-9.7 µm long, basal cell with single hyaline straight appendage 5.8-7.8 µm.

Specimens examined : IMI 352586, Kultali forest, 24 Parganas, West Bengal, India, 5.1.1992 ; CUPH 217, Kultali forest, 24 Parganas, West



Figs 7-11 *Pestalotiopsis caryotae*

Fig. 7. Conidia (bar = 10 µm); 8. 5 days old colony on PDA. *Pestalotiopsis apetalae*. 9 & 10 Conidia (bar = 10 µm). 11 5 days old colony on PDA.

Bengal, India, 5.1.1992 ; CUPH 346, Bhagbatpur, 24 Parganas, West Bengal, India, 12.12.1993.

Holotype : *CUPH* 217, Kultali forest, 24 Parganas, West Bengal, India, 5.1.1992. *Isotype*: *IMI* 352586, Kultali forest, 24 Parganas, West Bengal, India, 5.1.1992.

Pestalotiopsis apetalae sp. nov., appears to be very close to *P. mangiferae* (Henn.) Steyaert in number of apical and basal appendages and septation of conidia together with the conidiogenous cell. Both these species described here differ from other known species of the genus, particularly in growth characteristics, and colour, morphology and dimensions of conidia.

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REFERENCES

CHANG, H.S. AND J.M. CHANG. *Pestalosphaeria hansenii*, the teleomorph of an anamorph *Pestalotiopsis* sp., on mangrove [*Kandelia candel* (L.) Druce] leaves and its ascomatal formation under laboratory conditions. *Bot. Bull. Academia Sinica.* 31(2) : 175 177. 1990.

CHOWDHERY, H.J., K.L. GARG AND A.K. JAITLY. Occurrence of fungi in rhizosphere zones of some mangroves. *Indian J.Mar. Sci.* 11(2) : 138-142. 1982.

CREAGER, D.B. A new *Cercospora* on *Rhizophora mangle*. *Mycologia* 54:536-539. 1962.

FELL, J.W. AND I.M. MASTER Phycomycetes (*Phytophthora* sp. nov. and *Pythium* sp. nov.) associated with degrading mangrove (*Rhizophora mangle*) leaves. *Can. J.Bot.* 53 : 2908-2922. 1975.

HO, H.H., H.S. CHANG AND S.Y. HSIEH. *Halophytophthora kandeliae*, a new marine fungus from Taiwan. *Mycologia* 83(4) : 419-424. 1991.

HYDE, K.D. AND B.C. SUTTON. *Nypaella frondicola* gen. *et* sp. nov. *Plectophomella nypae* sp. nov. and *Pleurophomopsis nypae* sp. nov. (Coelomycetes) from intertidal fronds of *Nypa fruticans*. *Mycol. Res.* 96(3) : 210-214. 1992.

JONES, E.B.G. AND K.D. HYDE. Observations on poorly known magrove fungi and a nomenclatural corection. *Mycotaxon* 37(O) : 197-202. 1990.

——, F.R UYENCO AND M.P. FOLLOSCO. Fungi on drift wood collected in the intertidal zone from the Philippines. *Asian Marine Biology* 5 : 103-106. 1988.

KOHLMEYER, J. Ecological notes on fungi in mangrove forest. *Trans. Brit. Mycol. Soc.* 53 : 237-250. 1969a.

—— Marine fungi of Hawaii including the new genus *Heliscus*. *Can. J. Bot.* 47 : 1469-1487. 1969b.

—— AND E. KOHLMEYER. New marine fungi from mangroves and trees along eroding shore lines. *Nova Hedwigia* 9 : 89-104. 1965.

KUTHUBUTHEEN, A.J. Leaf surface fungi associated with *Avicennia alba* and *Rhizophora mucronata* in Malaysia. *Proc. As. Symp. Mangr. Env. Res. and Manag.*, Kuala Lampur, pp. 153-171. 1984.

NEWELL, S.Y. Mangrove fungi. The succession in the mycoflora of red mangrove seedlings (*Rhizophora mangle* L.). In Recent Advances in Aquatic Mycology (Jones, E.G.B., ed.) Paul Elek. Ltd., London, pp. 51-91. 1975.

RAGHUKUMAR, S. *Schizochytrium mangrovei* sp. nov., A thraustochytrid from mangroves in India. *Trans. Br. Mycol. Soc.* 90(4) : 627-631. 1988.

RAI, J.N., J.P. TEWARI AND K.G. MUKERJI. Mycoflora of mangrove mud. *Mycopath. et Mycol. Appl.* 38 : 17-31. 1969.

RAVIKUMAR, D.R. AND B.P.R. VITTAL. A new species of *Bathyascus* from Indian mangroves. *Mycol. Res.* 95(3) : 370-384. 1991.