Type: Singh 74615 (LWG). India: Uttar Pradesh; Rae Bareli district, Pithan village, on lime plaster of old wall, figures 1–4.

Thallus calcicolous, dark brown to black, squamulose, squamules compactly aggregated, with minute lobules attached centrally umbilicus. Thallus homioimerous; alga a member of chroococcaceae (chroococcus?), algal cells spherical, 5–9 μm in diameter; with thick gelatinous sheath.

Apothecia brown, immersed in the squamules or slightly emergent, 0.5–1 mm in diameter, disc brown-black, concave, epruinose; margin thalline; epithecium brown, 10–15 μm thick, K–; hymenium hyaline, 80–150 μm high, I+ blue, K–; hypothecium hyaline, 25–35 μm thick; ascii cylindrical, 8-spored, 60–85 × 16–23 μm; spores simple, colourless, oval to ellipsoid, 17–25 × 9–11 μm; paraphyses simple to branched, septate, apically slightly thick end.

Remarks: Henssen2 mentioned six species in the genus Phylliscum. Awasthi and Singh3 added the seventh by describing P. abuense Awas. & S. Singh, a new species from Mt. Abu, Rajasthan. Earlier, Awasthi and Singh4 reported the occurrence of P. testudinum Henssen, from Palni Hills, Tamil Nadu. P. indicum raises the strength of the number of species in this genus to eight and the number of species occurring in India to three.

P. indicum shows affinity to P. testudinum, P. abuense and P. macrosorum Henssen, in general appearance and nature of lobes. P. abuense has, however 16-spored asci and the remaining two species are characterized by much smaller spores (i.e. 8–9 μm long) in P. testudinum and 13–15 μm in P. macrosorum.

Additional specimens examined: Uttar Pradesh: Rae Bareli district; Pithan village, on lime plaster of old wall, 17.9.1963, Singh 74608, 74611 (LWG).

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**FUSARİUM SOLANI CAUSING WILT OF EUCALYPTUS**

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Eucalyptus tree is extensively planted in India for its rapid growth, timber and industrial wood, particularly for the paper industry1. A large number of 2 to 3-year-old plants of Eucalyptus camaldulensis Dehn were observed affected by wilt at a large plantation at Bilaha near Pali. Fusarium was isolated from the roots of such wilted plants on potato dextrose agar (PDA) medium. Wilting plants showed yellowing and death of leaves in acropetal succession. The wilting plants defoliated and eventually collapsed. On the basal portion of infected plants, brown and black streaks representing discolouration of the vascular tissues, were visible under the bark. Certain infected plants showed only yellowing.

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of the foliage, but did not die. Such plants were observed regaining normal growth under the changed environmental conditions.

Pure cultures of the fungus were raised in Erlenmeyer flasks containing 35 ml of solid PDA medium by manually picking-up hyphal tips. One of the cultures so raised was multiplied after two weeks. The fungus was then maintained on the PDA medium. The fungus formed a dull white colony. The mycelium showed numerous shining, milky white to pale brown oval droplets on simple stigmata. In some cases below the mycelial growth, irregular, slimy white to dirty white pinnules containing numerous macroconidia were observed. The pathogen was identified as Fusicarium solani (Mart.) Saac. (IMI 317255). As there is no report of Eucalyptus wilt caused by F. solani in India, the following studies were initiated to determine the conditions conducive to the occurrence of the disease.

Cultural and physiological studies

The influence of four synthetic nutritive media viz. Czapek’s, Coon’s, Asthana and Hawk’s, and Richard’s suggested for Fusicarium was noted for assessing growth and sporulation of the fungus in them. Twenty five to thirty conidia were inoculated on 35 ml of medium contained in 100 ml flasks by transferring aliquots of homogeneous conidial suspension in sterile distilled water. The flasks were incubated at room temperature (30 ± 2°C) for 30 days. Spore concentration was adjusted on the basis of the average number of spores present in a field under low power (10 x 10) compound microscope as described earlier. Richard’s medium supported maximum growth (70 mg mycelial dry wt) followed by Czapek’s, Coon’s and Asthana and Hawk’s media. The sporulation varied from fair to excellent in all these media. However, excellent sporulation was consistently observed in Richard’s and Coon’s media.

The conidial germination was observed at 30 ± 2°C (room temperature) in humidity chambers at 4, 16, 20 and 24 h. Maximum germination (80%) was observed after 16 h which declined to 77% and 54% after 20 and 24 h respectively.

Pathogenicity tests and infection studies

Pathogenicity was tested on 6-month-old, healthy E. camaldulensis saplings obtained from the Central Arid Zone Research Institute nursery at Pali. Roots were first washed with tapwater and later with sterile distilled water and dipped in two-week-old inoculum fragmented in sterile distilled water. The inoculated plants were then transplanted in a sterilized local sandy soil. Plants placed in sterile water served as controls.

A month after inoculation, the infection was verified by observing mycelium in the roots. The pathogen reisolated from the infected roots resembled the test fungus. The transverse hand sections of infected roots showed septate and profusely branched mycelium. Vascular bundles were slightly discoloured. Mycelium was confined to xylem only.

Four different concentrations of conidial suspension were prepared by measuring their optical density (OD) in a spectrophotometer. Healthy saplings of E. camaldulensis were inoculated separately with these suspensions for 20, 30 and 60 min as described above. Plants inoculated with 0.036 and 0.046 OD suspensions (around 30 and 50 macroconidia, respectively in a microscope field under high power 45 x 10) showed blackening of stem and drying of upper portion right from the top leaf and below after 12 days. The plants dried 15 days after inoculation. Roots when exposed exhibited the fungal mycelium resembling the test fungus. A period of 20 min was found adequate to cause infection in the roots of inoculated plants.

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