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NEW FUNGAL RECORD ON *BOMBAX CEIBA* L. FROM PAKISTAN. I.

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ABSTRACT

Dematophora necatrix Hartig, *Stachybotrys atra* Hansf, *Alternaria chlamydospora* Mouchaccak are reported for the first time on *Bombax ceiba* from Faisalabad, Pakistan.

Key words: *Bombax ceiba, , Dematophora*. *Stachbotrys* and *Alternaria*.

INTRODUCTION

Bombax ceiba L. (Vern. Simbal, Simal, cotton tree) is native to Pakistan. It is also found in India and Nepal. In Pakistan, it grows in sub Himalayan tract from Hazara eastward with a temperature range of 0°C to 40°C and at an elevation of up to 3000ft. It requires large amounts of direct sunlight but is susceptible to frost damage. Older trees are fire resistant. It is a large deciduous tree, 30m tall, with a diameter of 0.75 to 1.25m; leaves are compound with 5 to 7 leaflets.

New leaves sprout in March and April. The bark is smooth, gray to light brown and thick. Bark of young trees and branches have large conical prickles, older trees have prickles in considerable number but they swell (Sheikh, 2003).

This plant is very important due to its economic and medicinal value. Strightness of wood fiber with lightness, white color and good packing properties makes it suitable for match industry, furniture and packing cases. Wood of Simbal is also used as fuel. Cotton from seeds is used to stuff pillows and quilts. Bark of Simbal is demulcent, tonic and expectorant and used to treat ulcer. It is good ornamental tree and can be used to improve the landscape as described (Dabur *et al.*, 2007).

Fungi are the most important pathogens of plant that cause various plant diseases. In Pakistan. Javaid *et al*. (2004) pointed out decline of some important trees including *Bombax ceiba* in Punjab due to fungal attack. No serious effort for reporting fungi on *Bombax ceiba* was carried out. Only nine fungi have been reported on *Bombax ceiba* from Pakistan (Ahmad *et al*., 1997; Khan 1989).

Therefore, present study is carried out to investigate fungi associated to *Bombax ceiba* from District Faisalabad, Pakistan. This study is a part of the HEC project for study the fungal plant association of District Faisalabad Pakistan.

MATERIALS AND METHODS

Samples of *Bombax ceiba* were collected from the different areas of District Faisalabad. The different areas include G. C. University Faisalabad; University of Agriculture, Faisalaba; Gutwala forest, Faisalabad and Tandlianwala City, situated in District Faisalabad at a distance of 30 miles away from Faisalabad city.

For collection of fungal specimens methods and materials described by Abbas *et al*. (2010) were used. Identification up to species level were carried out after consulting (Ahmad *et al*., 1997; Carmichael *et al*., 1980; Ellis 1971, 1976; Kirk, 2015; Morris,1963)

Observations

The fungus found on *Bombax ceiba* specimen # 45 is studied and details are given below

Description of fungus under study. Fig.1 (A-C)

Mycelium dark brown spread on the bark of *Bombax ceiba*. Synnemata up to 200 µm. long. Conidiogenous cells polyblastic, denticulate with a short thin walled separating cell which break across the middle, leaving a minute collar or frill at each geniculation which crosspondes a frill at the base of each conidium. Conidia hyaline to pale brown, un septate, smooth, ovoid 3.3 - 5.3 x 2.3 - 2.6 µm.

DISCUSION

Dematophora is a monotypic genus based on *Dematophora necatrix*. It is reported from roots and stumps of trees including Apple, Pear and also on herbaceous plants, reported from Africa, Asia, Australia, Europe, and North & South America (Ellis,1971).

RESULT

Fungus under study from *Bombax ceiba* is identified as *Dematophora necatrix* Hartig. .
Unters. forstbot. Inst. Munchen, **3**:95 and 122-126. Fig. 1 (A-C).
It is not reported from Pakistan. Ahmad *et al*. (1997). In the present study genus *Dematophora* and species *Dematophora necatrix* are reported for the first time from Faisalabad, and are additions to the fungal flora of Pakistan. Furthermore, *Bombax ceiba* is also an addition to the host list of *Dematophora necatrix* from Pakistan.

Specimen examined

Dematophora necatrix ; On Bark of *Bombax ceiba*; Civil Hospital Tandlianwala; 24 July 07; S.Q. Abbas & Humaira Noureen; G.C.U.F.MH. # 45.

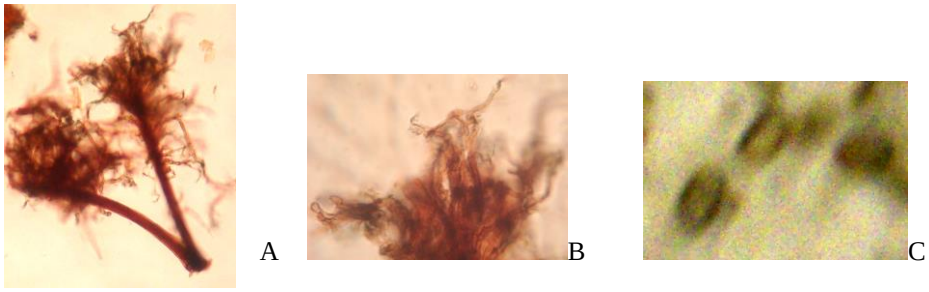

Fig.1. *Dematophora necatrix* (A-C). (A) Synnemata as whole (400X) (B) Upper portion of synemmata (400X) (C) Conidia (1000X)

OBSERVATIONS

The fungus found on *Bombax ceiba* specimen # 46 is studied and detail is given below

Description of fungus under study. Fig. 2 (A-E)

Mycelium immersed, branched, septate . Hyphae in form of ropes. Conidiophores septate, hyaline to grayish pale brown 96 × 3.1- 4.7 µm. Conidiogenous cells Hologenous stationary, hyaline to pale brown in form of cluster of 4 - 8 cells, 8.9 -13 × 3.3 – 6 µm. Conidia when immature hyaline and matured conidia black, sub spherical to oval, verrucose and aggregated due to slimy excretions, 7.6 - 9.9 × 4.4 - 6.6 µm.

DISCUSSION

The under study fungus belongs to *Stachybotrys* where conidia are aggregated and enclosed in mucilaginous sheath whereas in closely related genus *Memnoniella,* conidia are dry and in chains.
Under study fungus is also campared with *Stachybotry* species.
Stachybotrys kampalensis resembles with the under study fungus in having hyaline to olivaceous conidiophore but differs in having ellipsoidal to oblong conidia with both ends obtuse and bigger conidia 11-15 x 6-8 µm. than under study fungus, where the conidia are ovoide to sub globose, verrucose (7.6-9.9× 4.4-6.6 µm.). *S. theobromae* Hansf., also differs from under study fungus in having more darker and bigger conidia (20-28 x 14-17 µm.) with a projecting papilla at the base. *S. cylindrosporae* differs from under study fungus by having cylindrical large and striated conidia (11-15 x 4-5 µm.). Similarly *S. parvispora* Hughes and *S. atra* var. *microsporai* Mathur & Sankhla can be distinguished by having more smaller conidia. In *S. parvispora* conidia are 3-5.5 x 2.5-3.5 µm. and in *S. atra* var. *microspora* conidia are 6-8 x 4-5µm. Similarly *S. dichora* differs from under study fungus by having ellipsoidal

or cylindrical, olivacious to almost black conidia with both end obtuse and obliquely attenuated to the base. *S. nephrospora* Hansf. and *S. oenanthes* Ellis differ from the fungus under study in having reniform conidia. *S. cylindrospora* Jensen also differs from the fungus under study in having cylindrical conidia with obtuse apex and truncate base with longitudinal stariations. *S. sansevieriae* Agarwal and Sharma. Also differs from the fungus under study in having straight, ellipsoidal or boat shaped conidia with apex acute and base truncate, dark brown, smooth 6-9 µm. *Stachybotrys* state of *Melanopsamma pomiformis* (Pers. Ex Fr.) Sacc., also differs from the fungus under study in having ellipsoidal, green or grayish brown, smooth and bigger conidia 6-11x 4.5-7µm.

S. atra closely resembles with the under study fungus in conidiogenous cells and conidial measurement. In *S. atra* conidiogenous cells are 10-13 x 4-6 µm. and 6.9-13 x 4-6µm., whereas , measurement in the under study fungus are more or less in the same range. Conidia are also similar in both taxa. In *S. atra* conidia are broadly ellipsoidal to sub spherical, dark black to brown to black, verrucose 8-11 x 5-10 and conidia in the under study fungus are sub spherical 7.6-9.9 x 4.4-6.6 and are in the same range. Therefore fungus under study is identified as *Stachybotrys atra* Corda.

RESULT

Fungus under study is identified as *Stachybotrys atra***.** Corda, *Icon. Fung*. **1**:21, 1837.
Stachybotrys atra, has already been reported from Pakistan on other hosts / substrats viz.:- From Karachi; In soil, cow dung; from Lahore, Faisalabad in soil, on old paper, *Legenaria vulgaris*, on dung of goat, sheep, rabbit (Ahmad 1962, 1969; Ahmad *et al.*, 1997; Ahmad & Asad 1971; Ghaffar & Abbas 1972; Mirza & Nasir 1965; Qureshi 1966; Rizvi 1966). It is not reported on *Bombax ceiba*, and it is an addition to host list from Pakistan,

Specimen examined

Stachybotrys atra; on bark of *Bombax ceiba*; Bilal Shaheed park Tandlianwala; 18 August 07; S.Q. Abbas & Humaira Noureen; G.C.U.F.MH. # 46.

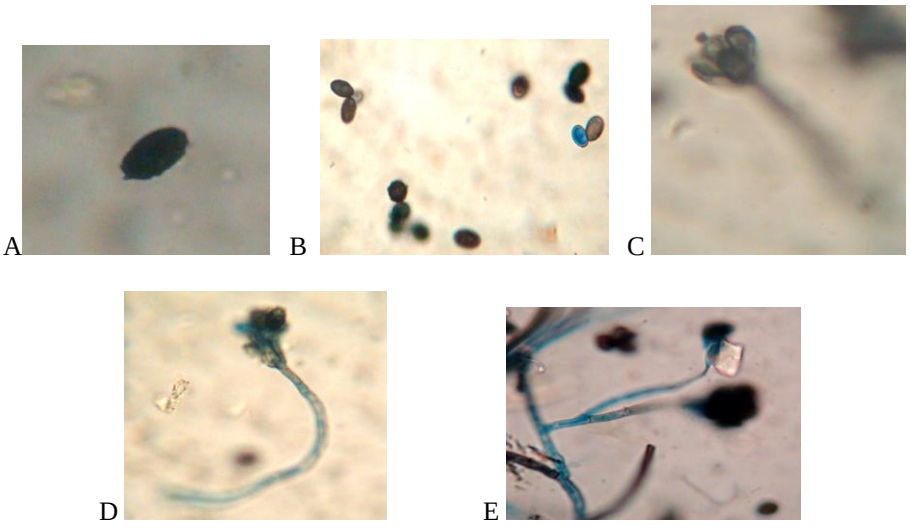

Fig. 2. *Stachybotrys atra*. (A-E). (A-B) Conidia (1000X, 400X). (C-E) Conidiophores with conidia and conidiogenous cells. (1000X).

OBSERVATIONS

The fungus found on *Bombax ceiba* specimen # 52 is studied and details are given below

Description of fungus under study. Fig. 3(A-E)

Colonies blackish brown. Mycelium generally immersed in the bark of *Bombax ceiba*. Chlamydospores Many celled, very variable shape, size, golden brown. Conidiophores 145 µm long and 3.4-4 µm. thick, pale brown.

Conidia initialy obpyriform later becoming variable in shape, golden brown, smooth 21-62 × 6-40 µm with a short pale beak 2-6 µm thick.

DISCUSSION

The fungus under study closely resembled with *Alternaria chlamydospora* Mouchacca, in having chlamydospores which are the characteristic of *Alternaria chlamydospora* of variable shapes, golden brown, smooth walled conidia (21-62 ×6-40 µm) with a short 2-6 µm. thick pale beak.
Tweny nine species of *Alternaria* have been reported from Pakistan, but *Alternaria chlamydospora* was not reported from Pakistan (Ahmad *et al*., 1997).

RESULT

Fungus from *Bombax ceiba* specimen # 52 is identified as *Alternaria chlamydospora*

Mouchacca, [as '*chlamydosporum*'], *Mycopath. Mycol. appl.* **50**(3): 217 (1973). It is a new record for fungal flora of Pakistan and *Bombax ceiba* is als a new host record for this fungus from Pakistan.

Specimen examined

Alternaria chlamydospora Mouchacca ; On bark of *Bombax* ceiba; collected from main canal side of Tandlianwala; 24 July 07; S.Q. Abbas & H. Noureen, G.C.U.F.MH. # 52.

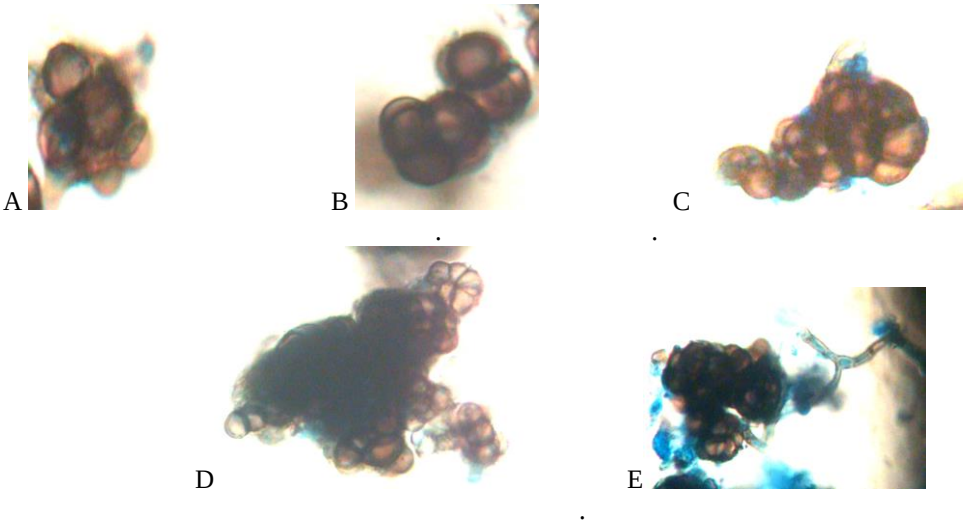

Fig. 3. *Alternaria chlamydospora* (A-E). (A-D) Conidia (1000X (E) Conidium and conidiophore. (1000X)

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