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NEW FUNGAL RECORD ON *BOMBAX CEIBA* LINN. FROM PAKISTAN. III.

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ABSTRACT

Memnoniella echinata (Rivolta) Galloway, *Rotula graminis* (Desm.) Crane, *Chaetomium aureum* Chivers, *Phaeoisaria clematids* (Fuckel) Hughes, reported for the first time on *Bombax ceiba* from Faisalabad, Pakistan.

Key-words: New fungal record, *Memnoniella echinata, Rotula graminis, Chaetomium aureum, Phaeoisaria clematids, Bombax Ceiba,* Faisalabad, Pakistan.

INTRODUCTION

In continuing a project on survey and surveillance of fungal association to flora of district Faisalabad Pakistan, a detailed survey of the area was carried out. Before starting of this project, only nine (9) fungi have been reported from Pakistan on *Bombax ceiba* (Ahmad *et al*., 1997; Khan, 1989). Later on Abbas *et al*. (2015) added three (3) fungi to this list viz.: *Dematophora necatrix* Hartig, *Stachbotrys kampalensis* Hansf,*Alternaria chlamydospora* Mouchacca. later on, Abbas *et al*. (2016) added four (4) more fungi to this list viz *Triadelphia inquinans* Shearer and Crane, *Fusarium semitectum* Berk. and Rav., *Lasiodiplodia theobrome* (Pat.) Griff . and Maubl and *Torula. Erbarum. f. quaternella* Sacc. Thus the fungi recorded become sixteen (16).

In the present study further four more fungi were added to this list viz.: *Memnoniella echinata* (Rivolta) Galloway, *Rotula graminis* (Desm.) Crane, *Chaetomium aureum* Chivers, *Phaeoisaria clematids* (Fuckel) Hughes. Thus total fungi recorded from *Bombax ceiba* becomes nineteen (19).

MATERIALS AND METHODS

Materials and Methods were the same as described by Abbas *et al*. (2010). Identification up to species level made after consulting (Morris, 1963; Ellis, 1971, 1976; Carmichael *et al*., 1980; Ahmad, 1978; Ahmad *et al*., 1997; Kirk, 2015).

Observations

Fungus found from *Bombax ceiba* specimen # 44 is studied and detailed are giving below:

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

Ascocarp dark brown to blackish brown190×106.4µm. Terminal hairs not dichotomously branched. Asci ephemaral. Ascospores unseptate, ellipsoid to oval, dark brown, flattened and with one germ pore at one side, 3.8-7.6×6.8×11.4µm.These characters closely resembled with *Chaetomium aureum*. *Chaetomium aureum* differ from other species in lateral hairs and their shapes.

RESULT AND DISCUSSION

The species identified from *Bombax ceiba* specimen # 44 is identified as *Chaetomium aureum.*Chivers *Proc.Am.Acad.Arts and Sci*. 48: 86.1912; Millner, 1975:46 .

Fourty three species of *Cheatomium* already reported from Pakistan (Ahmad, 1978; Ahmad *et al*., 1997). *Chaetomium aureum* is already reported from Pakistan (Ahmad, 1978), but not from the *Bombax ceiba*, however, it was reported on dung, isolated from seeds and air; Lyallpur, Karachi, Lahore; (Ahmad, 1956; Mirza and Nasir, 1965; Ghaffar *et al*., 1971). This is a new fungal record on *Bombax ceiba* from Pakistan.

Specimen examined

Chaetomium aureum; on bark of *Bombax ceiba*; from Civil Hospital Tandlianwala.; 24 August 07; by S.Q; Abbas and Humaira Noureen; G.C.U.F.MH. # 44.

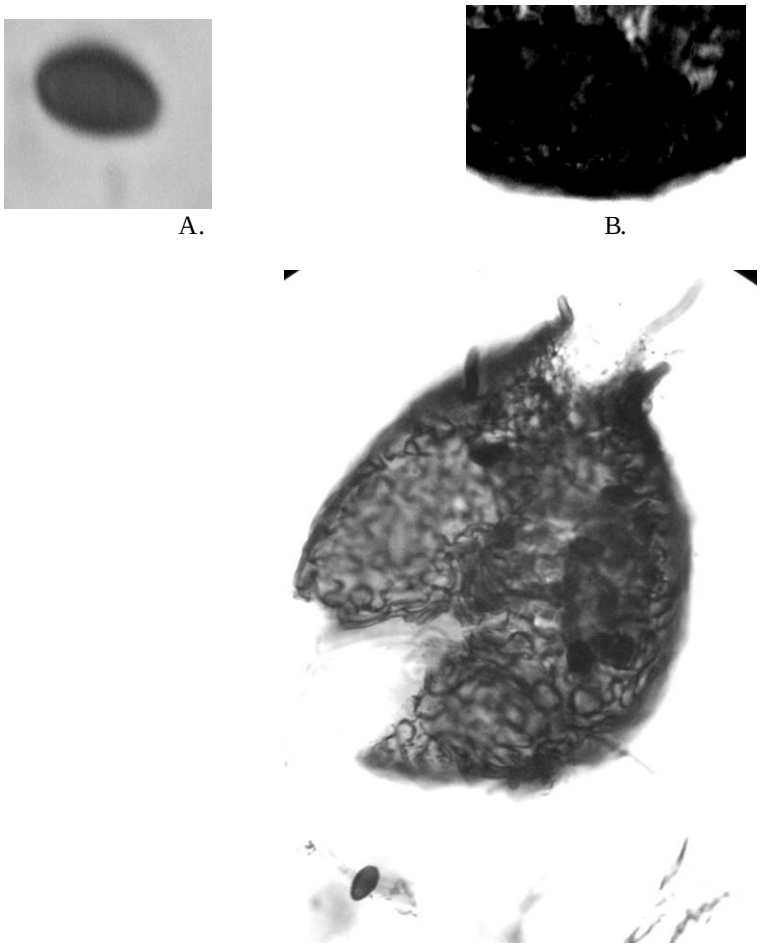
Observations

Fungus found from *Bombax ceiba* specimen # 47 is studied and detialed are giving below Mycelium immersed in bark of host plant, brown.septate and branched. Conidiophores unbranched, elongated, pale brown to gray 49.3-98 ×3.5-4.8 µm., Hologenous stationary. Conidiogenous cells mostly in groups of 4-8, 6.9-9.2 ×3.3-5 µm. Conidia spherical in chain, verrucose. 3.5-5.8 µm.

DISCUSSIONS

The examined fungal species closely resembles with *Memnoniella echinata* in having unbranched *Conidiophores*, 49.3-98 ×3.5-4.8 µm, spherical conidia in chain, 3.5-5.8 µm.

Thus identified as *Memnoniella echinata* (Rivolta) Galloway, Trans.Br.mycol.Soc.18 (2):165 (1933).Fig 2 (A-C). *Memnoniella echinata* has already been reported from Pakistan on other hosts that are on dead branches, on cow dung; on stem of *Salvadora persica*; from Changa Manga; Lahore; (Ahmad, 1962,1969; Ahmad and Asad, 1971; Ghaffar and Abbas, 1972). Ahmad *et al*. (1997), on *Syzygium cumini* From District Faisalabad; Abbas *et al*. (2008); on *Morus alba* From District Faisalabad; Abbas *et al*.(2010)



A. B.

C.

Fig 1. *Cheatomium aureum*. (A-C) (A) Ascospore. (1000x) (B) Ascospores in Ascarp (400x). (C) Crushed Ascocarp with Ascospores (400x).

RESULT

Bombax ceiba is a new host of *Memnoniella echinata* from Faisalabad Pakistan.

Specimen examined

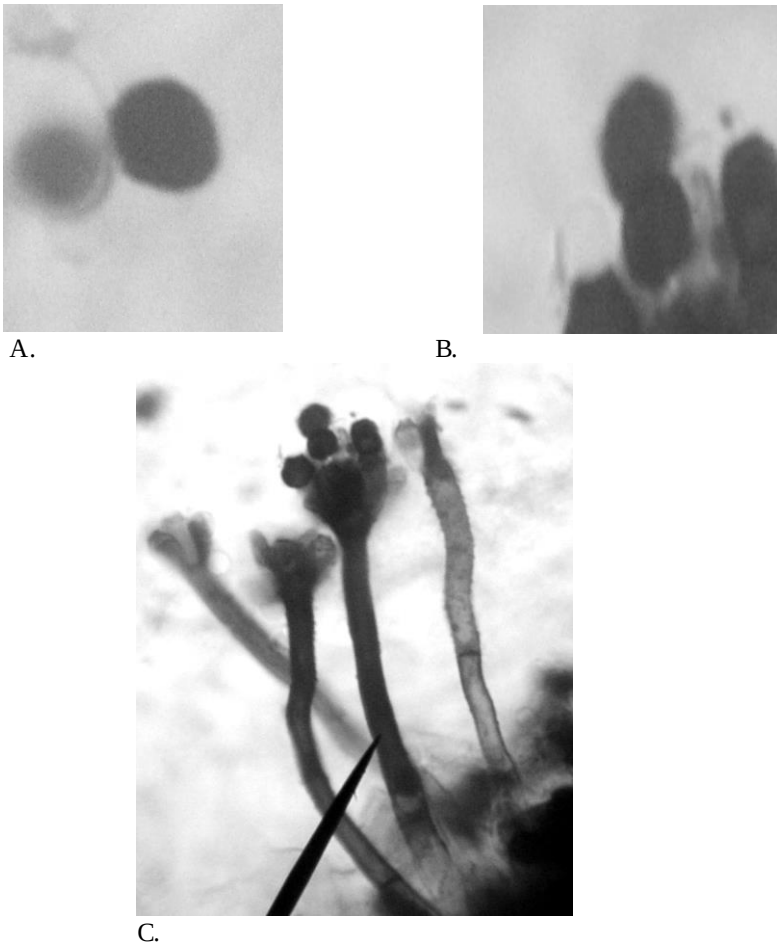
Memnoniella echinata; on bark of *Bombax ceiba*; from Civil Hospital of Tandlianwala ;24 July 07; S.Q; Abbas and Humaira Noureen; G.C.U.F.MH. # 47.

Observations

Fungus found from *Bombax ceiba* specimen # 48 is studied and detialed are giving below

Key to common species of *Phaeoisaria*

- *Conidia*, subspherical or broadly ellipsoidal, 1-2µm long … *Phaeoisaria.clavata*
- *Conidia*, fusiform or narrowly ellipsoidal, 4-10×1.5-2.5µm....*P.clematidis*
- *Conidia* septate……*P. sparsa.*



A. B. C.

Fig 2**.** (A-C). *Memnoniella echinata* (A)Conidia (1000x). (B)Conidial chain (1000x). (C) Conidiophores and Conidiogenous cells with conidia attachment (400x).

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

Mycelium immersed, brown. Synnemata dark brown , individual thread septate, and base of synnemata thick, upper half splaying. Synemata up to 1.4mm. 11.7 -23.7µm. wide at the apex, and up to 86µm at base. Individual thread is 3.6µm thick. Numerous cylindrical hyaline denticals present at the apex. Conidia hyaline, nonseptate, ellipsoidal 6– 10.6×2.47c.

DISCUSSION

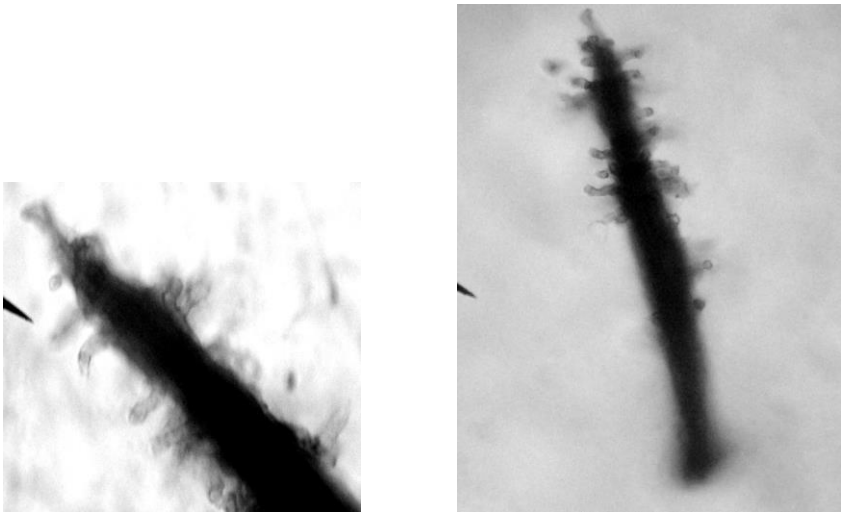
This fungusunder studt was compared with the *Phaeoisaria clematidis*. (Fuckel) Hughes, and it was completely resembles with *Phaeoisaria clematidis* in haing same shape, colour and size of conidia, 6–10.6 ×2.47µm., howevere *P. sparsa was different* in having (0-3) septate conidia and *P.culvulata*.in having smaller conidia (1-2 µm diam,). Therefore fungus found from *Bombax ceiba* specimen # 48 is *Phaeoisaria clematidis* (Fuckel) Hughes.

RESULT

Genus *Phaeoisaria* is not reported from Pakistan.Ahmad *et al*. (1997).Therefore,the genus *Phaeoisaria* and species *Phaeoisaria clematidis* are additions to fungal flora of Pakistan. Further *Bombax ceiba* is also a new host of *Phaeoisaria clematidis* from Faisalabad, Pakistan.

Specimen examined

Phaeoisaria clematidis; on bark of *Bombax ceiba*; from Civil Hospital Tandlianwala; 24 August 07; by S.Q; Abbas and Humaira Noureen; G.C.U.F.MH. # 48.



A. B.

Fig 3. *Phaeoisaria clematidis* (A-B): (A) Upper portion of synnemata with appendages (1000x). (B) Synnemata with conidia and conidiogenous cells (400x).

Observations

Fungus found from *Bombax ceiba* specimen # 49 is studied and detialed are giving below

Description of fungus under study Fig. 4 (A-E)

Mycelium generally immersed. Conidiophores including conidiogenous cells, 2-6 µm thick. Conidia in very long sometimes branched chains which break up into segments with 0, 1, 2 or many septa, brown minutely verrculose, 4-5.6 ×4.6-6.7 µm.

DISCUSSIONS

By comparing the examined fungus with *Rutola graminis* (Desm.) Crane and Schokn. It is observed that this fungus closely resembles to *Rutola graminis*. In having same size of conidia, in *R. graminis* conidia are 4-5×4-6µm,while in fungus under study they are 4-5.6 ×4.6-6.7 µm. Further more long chain of conidia and absent of haif cup like (coronate) conidiogenous are common in both. Therefore fungus under study is identified as *Rutola graminis***.** (Desm.) Crane and Schokn..

Crane and Schokn in 1977 changed the *Torula graminis* to *Rutola graminis* because conidia consist of simple or branched chains of acrogenous,brown, minutely verruculose cells which frequently fragment into one- or many-celled segments. *Rutola graminis* differs from *Torula herbarum*, the type species of *Torula*, in lacking the diagnostic coronate conidiogenous cell that is characteristic of the genus *Torula* and is, therefore, placed in the new Hyphomycete genus *Rutola*. *Rutola* is a monotypic genus with only one species *Rutola graminis*.

RESULT

The fungud from *Bombax ceiba* specimen # 49 is identifierd as *Rutola graminis* (Desm.) Crane and Schokn., *Can. J. Bot.* 55(24): 3015 (1978). =*Torula graminis* Desm., *Annls Sci. Nat.*, Bot., sér. 1 **11**: 72 (1827)

Genus *Rutola* has not been reported from Pakistan. Ahmad *et al*. (1997). Therefore, *Rutola graminis*.is an addition to the fungal flora of Pakistan and *Bombax ceiba* is a new host of *Rutola graminis* from Faisalabad, Pakistan.

Specimen examined

Rutola graminis; on bark of *Bombax ceiba*; from Civil Hospital of Tandlianwala; 24 July 07; by S.Q; Abbas and Humaira Noureen; G.C.U.F.MH. # 49.

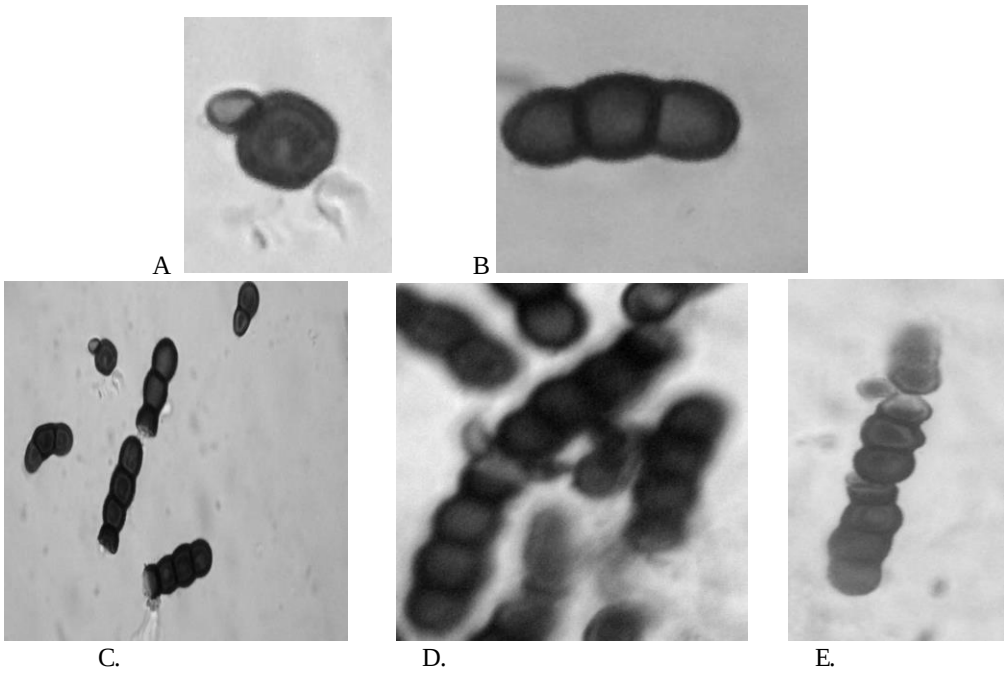


Fig 4. *Rutola graminis*. (A-E). (A-C) Different shapes of Conidia (1000x, 400x). (E)Conidial attachment (1000x).

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