

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

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### ABSTRACT

*Memmoniella 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, *Memmoniella echinata*, *Rotula graminis*, *Chaetomium aureum*, *Phaeoisaria clematids*, *Bombax Ceiba*, Faisalabad, Pakistan.

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### 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 chlamyospora* 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.: *Memmoniella 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)

Ascomycete dark brown to blackish brown 190×106.4µm. Terminal hairs not dichotomously branched. Asci ephemeral. 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 *Chaetomium* 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 detailed are giving below Mycelium immersed in bark of host plant, brown, septate and branched. Conidiophores unbranched, elongated, pale brown to gray  $49.3-98 \times 3.5-4.8 \mu\text{m}$ , Hologenous stationary. Conidiogenous cells mostly in groups of 4-8,  $6.9-9.2 \times 3.3-5 \mu\text{m}$ . Conidia spherical in chain, verrucose.  $3.5-5.8 \mu\text{m}$ .

### DISCUSSIONS

The examined fungal species closely resembles with *Memmoniella echinata* in having unbranched *Conidiophores*,  $49.3-98 \times 3.5-4.8 \mu\text{m}$ , spherical conidia in chain,  $3.5-5.8 \mu\text{m}$ .

Thus identified as *Memmoniella echinata* (Rivolta) Galloway, *Trans.Br.mycol.Soc.*18 (2):165 (1933). Fig 2 (A-C). *Memmoniella 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)

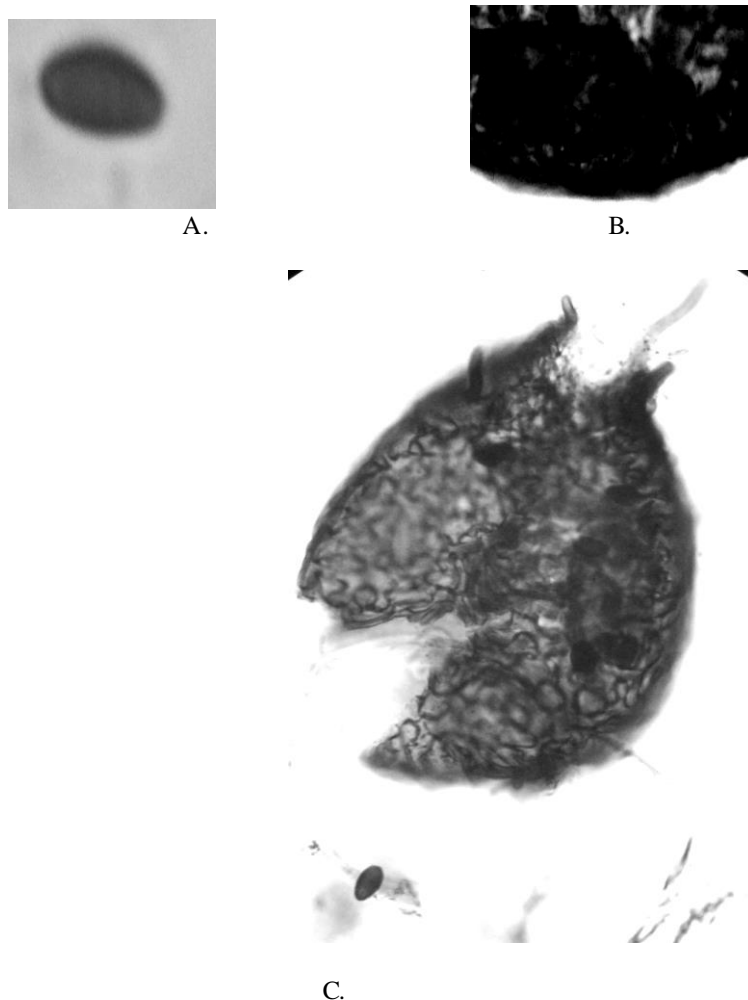


Fig 1. *Cheatomium aureum*. (A-C) (A) Ascospore. (1000x) (B) Ascospores in Ascarp (400x). (C) Crushed Ascocarp with Ascospores (400x).

### RESULT

*Bombax ceiba* is a new host of *Memmoniella 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 detailed are giving below

**Key to common species of *Phaeoisaria***

- *Conidia*, subspherical or broadly ellipsoidal, 1-2 $\mu$ m long ... *Phaeoisaria.clavata*
- *Conidia*, fusiform or narrowly ellipsoidal, 4-10 $\times$ 1.5-2.5 $\mu$ m...*P.clematidis*
- *Conidia* septate.....*P. sparsa*.

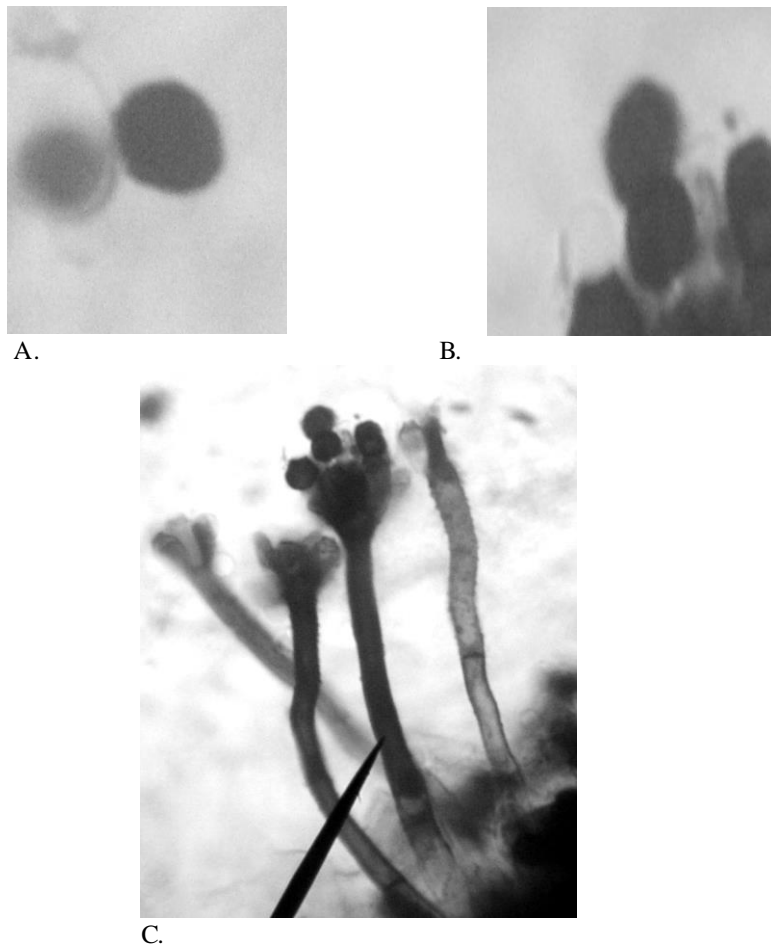


Fig 2. (A-C). *Memnoniella echinata* (A)Conidia (1000x). (B)Conidial chain (1000x). (C) Conidiophores and Conidiogenous cells with conidia attachment (400x).

**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. Synnemata up to 1.4mm. 11.7 -23.7 $\mu$ m. wide at the apex, and up to 86 $\mu$ m at base. Individual thread is 3.6 $\mu$ m thick. Numerous cylindrical hyaline denticles present at the apex. Conidia hyaline, nonseptate, ellipsoidal 6– 10.6 $\times$ 2.47c.

## DISCUSSION

This fungus under study was compared with the *Phaeoisaria clematidis*. (Fuckel) Hughes, and it was completely resembles with *Phaeoisaria clematidis* in having same shape, colour and size of conidia,  $6-10.6 \times 2.47 \mu\text{m}$ , however *P. sparsa* was different in having (0-3) septate conidia and *P. culvulata* in having smaller conidia ( $1-2 \mu\text{m}$  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.

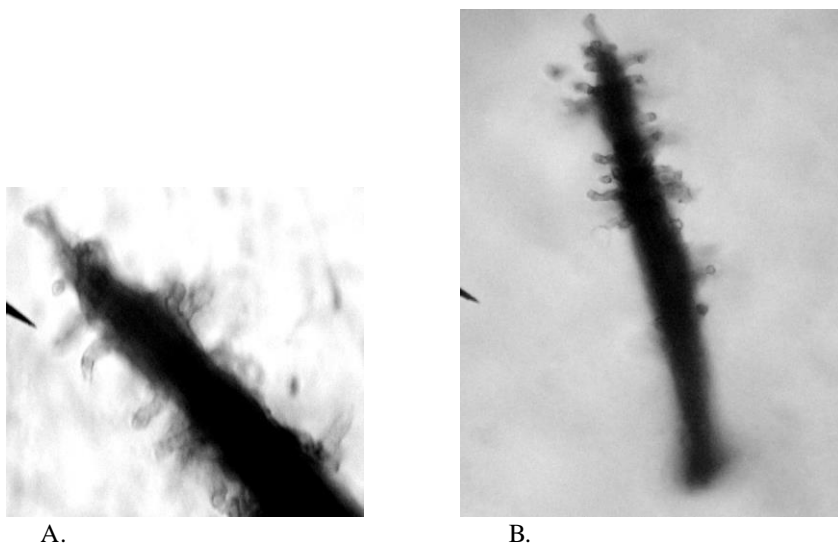


Fig 3. *Phaeoisaria clematidis* (A-B): (A) Upper portion of synnemata with appendages (1000x). (B) Synnemata with conidia and conidiogenous cells (400x).

### Observations

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

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

Mycelium generally immersed. Conidiophores including conidiogenous cells,  $2-6 \mu\text{m}$  thick. Conidia in very long sometimes branched chains which break up into segments with 0, 1, 2 or many septa, brown minutely verruculose,  $4-5.6 \times 4.6-6.7 \mu\text{m}$ .

## 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  $4-5 \times 4-6 \mu\text{m}$ , while in fungus under study they are  $4-5.6 \times 4.6-6.7 \mu\text{m}$ . Further more long chain of conidia and absent of half 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 fungus from *Bombax ceiba* specimen # 49 is identified 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.

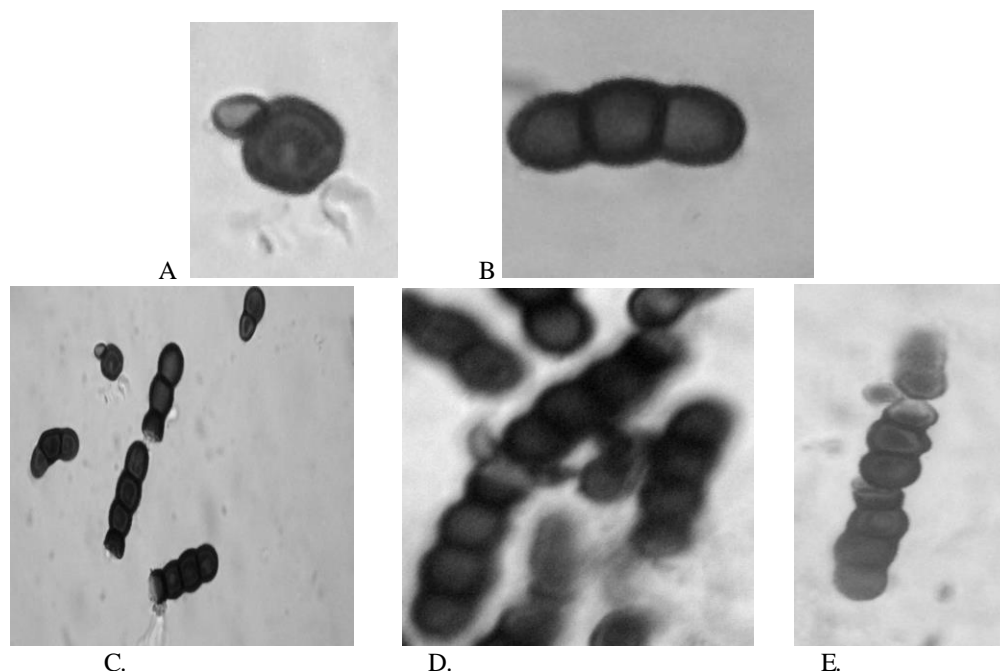


Fig 4. *Rutola graminis*. (A-E). (A-C) Different shapes of Conidia (1000x, 400x). (E) Conidial attachment (1000x).

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(Accepted for publication August 2016)