

NEW FUNGAL RECORDS ON *EUCALYPTUS* SPP. FROM DISTRICT FAISALABAD PAKISTAN

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Abstract

The genus *Eucalyptus* is a large genus belonging to the family *Myrtaceae*, containing more than 700 species, most of them are native to Australia. Economically and medicinally *Eucalyptus* is a very important plant. Its importance further increases due its ability towards environmental stability and reclamation of saline land. In the present study, three fungi have been reported on *Eucalyptus* from district Faisalabad viz., *Gliomastix novae-zelandiae* Hughes & Dickinson, *Beltrania rhombica* Penzig Deighton and *Cerebella andropogonis* Cesati.

Introduction

More than 1000 fungi have been reported on *Eucalyptus* species from all over the world whereas only 7 fungi have been reported on different *Eucalyptus* sp., from Pakistan (Ahmad *et al.*, 1997; Khan, 1989) viz., 1) *Leitiporus sulphureus* (Khan, 1989); 2) *Alternaria alternata* (Ahmad, 1990); 3) *Fomes robiniae* (Khan, 1989); 4) *Ganoderma lucidum* (Ahmad, 1990); 5) *Coniothyrium ahmadii* (Ahmad, 1971); 6) *Cercospora eucalypti* (Mirza & Qureshi, 1978); 7) *Aspergillus ochraceus* (Matsushima, 1993). In the present study, three fungi are recorded on *Eucalyptus* spp., from Faisalabad Pakistan is the text of this paper.

Materials and Methods

Disease plant material belonging to different species of *Eucalyptus* were collected from various areas of the District Faisalabad, Pakistan, including G C University Faisalabad, University of Agriculture Faisalabad, Company bagh Faisalabad and Gatwala Forest Faisalabad. Materials and Methods used in the present study were the same as described by (Abbas *et al.*, 2010).

Identification

Identification up to species level was carried out after consulting (Ellis, 1971, 1976; Carmichael *et al.*, 1980; Kirk, 2010).

1. *Gliomastix novae-zelandiae* Hughes and Dickson. *N Z. J. Bot.*, 6: 108 (1968). Fig. 1 (A-B)

Genus Gliomastix has 37 species from all over the world (Kirk, 2010).

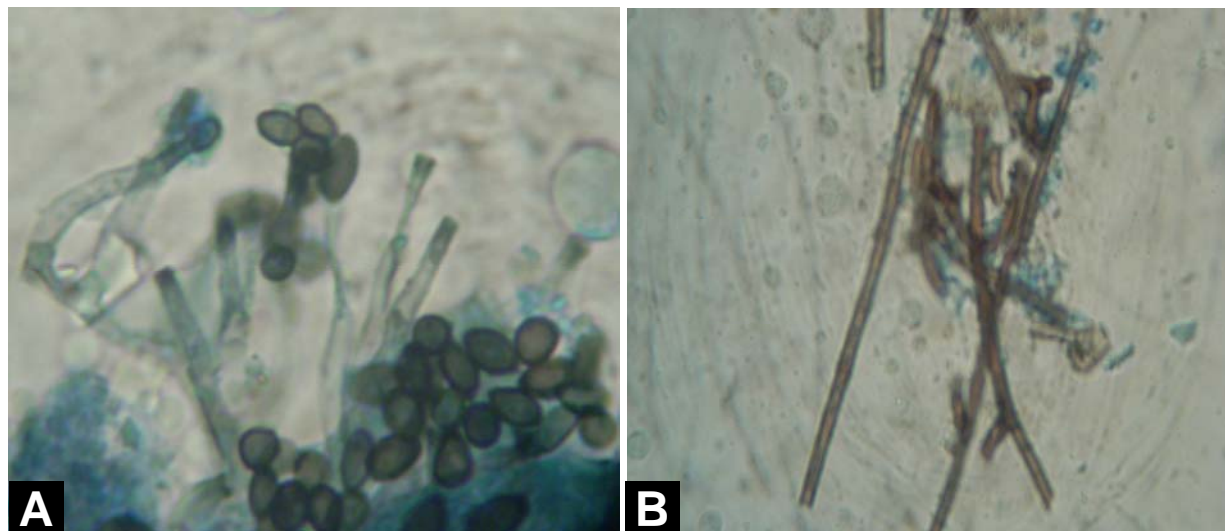


Fig. 1. *Gliomastix novae-zelandiae*, A. Conidia, attached with Conidiophores. B. Mycelium showing septate hyphae (A, B & 1000x)

Colonies effuse, dark olive to black. Mycelium branched, septate. Conidiogenous cells hogenous and stationary. Conidiophores up to 50 μm long, arising from a runner like structure, and usually pale brown with a massive black deposit at the apex forming a cupulate collarete, 3-4 x 2.8 μm just below the collarete. Conidia catenate, ellipsoidal or doliform, apex and base truncate, mid to dark brown, smooth (7-10.5 x 3.5-4 μm).

The fungus under study belongs to the genus *Gliomastix* due to presence of runner like structure from which conidiophores are rising, Conidia aggregated in slimy heads, semi endogenous, or catenate, unseptate, pigmented smooth, spherical to subspherical to ellipsoidal, apex and base truncate.

Fungus under study closely resembles with *Gliomastix novae-zelandiae*. It is compared with closely related species. Conidia of *Gliomastix novae-zelandiae* are ellipsoidal with truncate base while the conidia in *G. cerealis* and *G. musicola* are pyriform or doliiform. Further more it also can easily be differentiated from *G. cerealis* and *G. musicola* on the basis of conidial measurement. In *Gliomastix novae-zelandiae* the conidia were more bigger and wider (7-10.5 x 3.5-4 μm) than *G. cerealis* where conidia are 3-5 x 2-3.5 μm and in *G. musicola* conidia are 5-7 x 2-3.5 μm . Conidiophore of *G. novae-zelandiae* possesses a cupulate collerate at the apex while *G. cerealis* and *G. musicola* do not have a copulate collerate. Conidia are smooth walled in *Gliomastix novae-zelandiae* while they were rough walled and had granules in *Gliomastix murorum*.

Four species of this genus *Gliomastix* are reported from Pakistan viz., 1) *Gliomastix cerealis* Dickinson from soil of alpine meadow, Mt. Gilpur, Nangaparbat (Matsushima, 1993); 2) *G. convolutea* (Harz) Mason on *populus* sp., Kaghan (Ahmad, 1962); 3) *G. luzulae*. (Fuckel.) Mason. ex Hughes, from bush soil., Margalla, Islamabad (Matsushima, 1993); 4) *G. murorum* (Cord.) from coniferous forest soil, Mansehra, Swat, (Matsushima, 1993).

Gliomastix novae-zelandiae is recorded for the first time on *Eucalyptus citrodora* from Faisalabad Pakistan. It is an addition to fungal flora of Pakistan. (Ahmad *et al.*, 1997).

Specimen examined: *Gliomastix novae-zelandiae* GCUFH # 54 on bark of *Eucalyptus citrodora* from Faisalabad Pakistan; Naila Sadaf and S.Q. Abbas.

2. *Beltrania rhombica* penzig, *Nuovo G. bot. ital.*, 14: 72-75. Fig. 2(A)

The fungus found on *Eucalyptus crebra* belongs to the genus *Beltrania* Hughes & Pirozynski. Sixteen species have been described in the genus *Beltrania* from all over the world (Kirk, 2010).

Fungus was found as a blackish layer on the bark of *Eucalyptus crebra*, Colonies effuse and black. Mycelium superficial and blackish brown. Conidiophores 138 x 3-6 μm , separating cell ellipsoidal; obovoid Conidiogenous cell, setae smooth and approximately 128 x 4-6 μm near the base and tapering at the base. Conidia v shaped, symmetrical and biconic

The fungus under study belongs to the genus *Beltrania* due to V-shaped, symmetrical, biconic conidia. After comparison from all the other species of *Beltrania* it is evident that the under study species closely resembles with *Beltrania rhombica* Hughes & Pirozynski. *Beltrania rhombica* can easily be distinguished from the other species of *Beltrania*. In *Beltrania rhombica* the conidia are V-Shape, symmetrical, while in *Beltrania querna* conidia are asymmetrical and proximal end U-shaped. In *Beltrania rhombica* the setae are simple smooth, and only one kind, while in *Beltrania mangiferae* and *Beltrania malaiensis* conidia are without appendage. Therefore fungus on *Eucalyptus crebra* is identified as *Beltrania rhombica*. It was not previously reported from Pakistan. It is an addition to mycoflora of Pakistan from Faisalabad.

Specimen examined: *Beltrania rhombica* on bark of *Eucalyptus globules* GCUFH # 35 from Faisalabad Pakistan; N. Sadaf and S.Q. Abbas.

3. *Cerebella andropogonis* Ces. apud Rhebenhorstin *Bot. Ztg.* 9: 669. Fig. 3(A-B)

Twenty eight species have been described in the genus *Cerebella* from all over the world (Kirk, 2010).

Black colonies formed on bark of *Eucalyptus botryoidae*, *E. grandis* and *E. citriodora*. Mycelium, branched, septate and hyaline. Conidiophores short, often branched and smooth 7.5 2-5 μm . Conidiogenous cells integrated monoblastic 5.8-3.5 μm . Conidia terminal, variable in shape, brown, smooth (15- 25 x 12-27 μm) consist of 2-10 or sometimes more cells.

The fungus under studies is identified as *Cerebella andropogonis* Ces. It can be differentiated easily. It differs from *Tetracoccusporium* Szabo which has 4 celled conidia while *Cerebella andropogonis* has 3-8 celled conidia. It also differs from *Chuppia* on the basis of conidiophore, which is present in *Cerebella* and absent in *Chuppia*.

Previously *Cerebella andropogonis* has not been reported from Pakistan, (Ahmed *et al.*, 1997).

Therefore the genus *Cerebella* and species *Cerebella andropogonis* are new records from Pakistan and *Eucalyptus botryoides*, *E. grandis*, *E. citriodora* are new hosts of *Cerebella andropogonis* from Faisalabad, Pakistan.

Specimen examined: *Cerebella andropogonis* on bark of *Eucalyptus botryoides* GCUFH # 56 from District Co-ordination Officer Faisalabad Pakistan, 3rd March 2007; N. Sadaf & S.Q. Abbas; on bark of *Eucalyptus grandis* GCUFH # 57 from National Textile University, Faisalabad, Pakistan, 3rd March 2007; N. Sadaf & S.Q. Abbas, on bark of *Eucalyptus citriodora* GCUFH # 58 from Faisalabad, Pakistan; N. Sadaf & S.Q. Abbas.

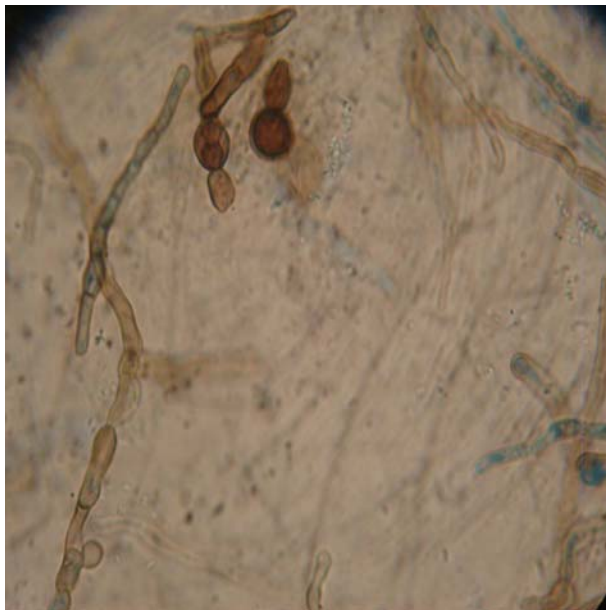


Fig. 2. *Beltrania rhombica* (A) Conidiogenous cells integrated monoblast (1000x).

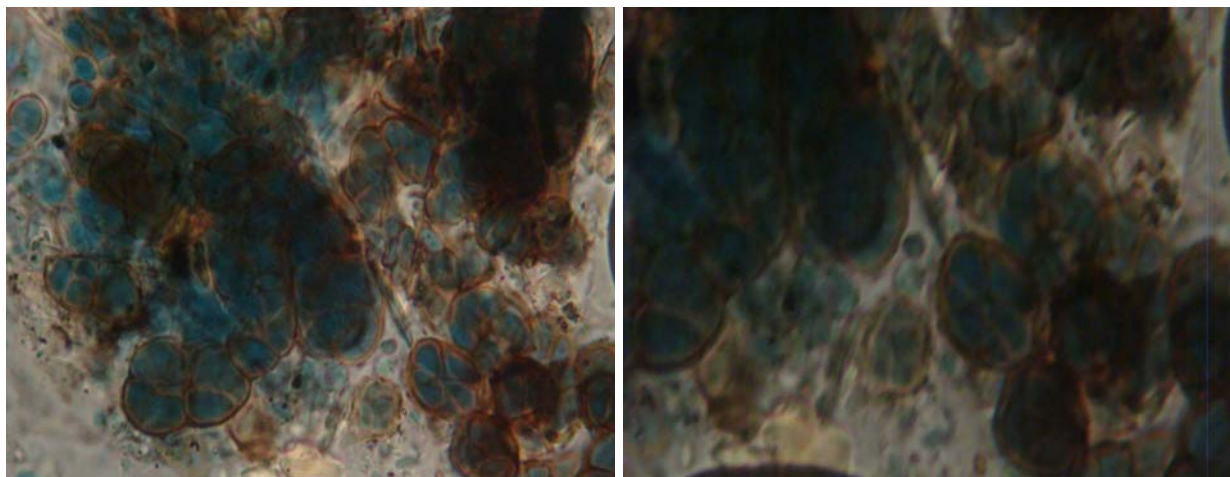


Fig. 3. *Cerebella andropogonis* A. Conidiogenous cells integrated monoblast.
B. Mycelium consists of hyaline hyphae (400 X)

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