ADDITION TO THE MYCOFLORA ON *SZYGIUM CUMINI* FROM DISTRICT FAISALABAD, PAKISTAN

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Abstract

Cytosporella corticola Sydow, *Pestalotiopsis guepinii* Desm., *Stagnospora carnnilla* Brun, *Phaeoisaria clavulata* (Grove) Mason & Hughes, *Phaeoisaria clemadities* Hughes, *Rhinocladiella cellare* (Fuckel) Hughes have been reported on *Szygium cumini* from district Faisalabad.

Introduction

In continuation to the studies in a project survey and surveillance to fungal flora of District Faisalabad funded by HEC. Initial work was started on various trees of economic importance. *Szygium cumini* was the focal plant in this study.

In the first paper of the series Abbas & Mushtaq (2008) reported *Bidenticula cannane*, Dighton.,*Monodictys paradoxa* (Corda) Hughes and *Torula terrestris* (Updhyay) Misra on *Szygium cumini* from District Faisalabad, Pakistan. In the present study six more fungi are being reported from the area which is the text of the present paper.

Materials and Methods

Materials and methods were used as described by Abbas & Mushtaq (2008).

Results and Discussion

1) Cytosporella sycina *Sacc, Syll. Fung*.**:**251 (1884). Fig .1(A & B)
Mycelium septate, branched, brown. Conidiomata eusrtomatic, multilocular, base wider than apex. Ostiole absent. Conidia spread by irregular breaklng of conidiomata, conidiophores simple, hyaline, septate and smooth up to 19µm long and 1.32 µm. wide. Conidiogenous cells smooth, hyaline cylindrical endogenous and stationary. Conidia hyaline, smooth, aseptate, thin walled, ellipsoidal 2- 2.8 x 1.5-1.9 µm.

Cytosporella differs from genus *Camaropycnis* in conidial shape and attachment to conidiophores. In *Camaropycnis* condia are aseptate, cylindrical, smooth, thin walled, apex obtuse and base truncate - obtuse. Whereas in *Cytosporella* conidia are ellipsoidal and aseptate, small thin walled base abruptly tapared, apex obtuse, eguttulate. Similarly *Blennoria* Mong. S. Fr. differs from *Cytosporella* by having cylindrical aseptate conidia. Similarly *Cytospora* Ehrenb. ex Fr. also differs from *Cytosporella* where conidia are formed in colored masses, and conidia are hyaline, thin walled aseptate, eguttulate, smooth and allantoid.

The fungus under study on *Szygium cumini* was identified as *Cytosporella sycina* Sacc., after consulting (Sutton, 1980; Carmichael *et al*., 1980; Kirk, 2013).

Previously, 4 species of *Cytosporella* have been reported from Pakistan. Ahmad *et al*. (1997).

1) *Cytosporella corticola* Sydow; on bark of *Cordia oblique*, from Ladhar (Sheikhupura). Ahmad (1956);

2) *Cytosporella lignicola* Sydow., on naked wood of *Acacia arabica*, from Ladhar (Sheikhupura). Ahmad (1956);

3) *Cytosporella panicina* Ahmad., on culms of *Panicum antidotale*; Ahmad (1971);

4) *Cytosporella verrucosa* Sydow; on bark of *Salvadora oleoides*; from Changa Manga, Lahore; Ahmad (1956).

Cytosporella sycina has not been reported from Pakistan. It is a new record for fungal flora of Pakistan on *Szygium cumini*.

Specimen Examined: *Cytosporella sycina* on bark of *Szygium cumini*; University of Agriculture Faisalabad, Pakistan; 13 May, 2007; S. Mushtaq and S.Q. Abbas, G.C.U.M.H # 22.

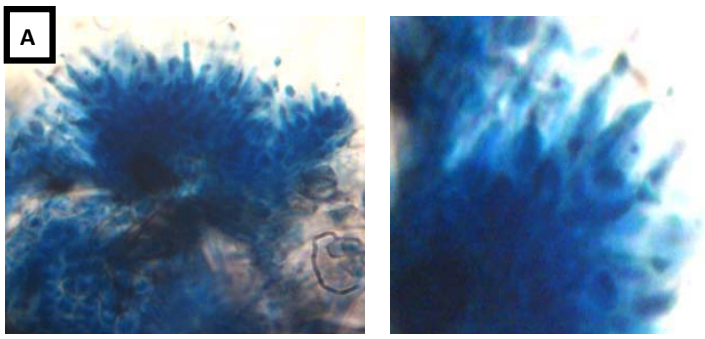

Fig. 1. ***Cytosporella sycina,*** **(A-B) A. Conidiogenous cells 400 x. B. conidiophores (1000x).**

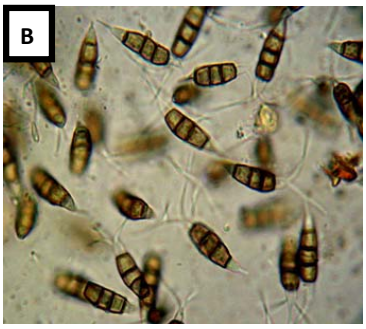

Fig. 2. ***Pestalotiopsis guepinii*** **Conidia (100x).**

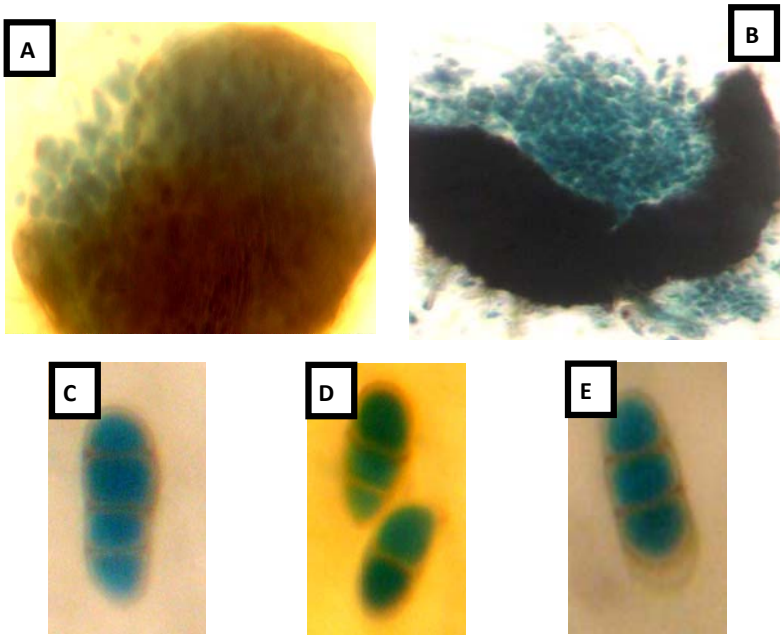

Fig. 3. ***Stagnospora carcinella*** **A. Conidiomata B. Conidia releasing from conidia; C. Conida with 3 septa D. Conidia with 2 and 1 E. Conidia with 2 septa (1000x).**

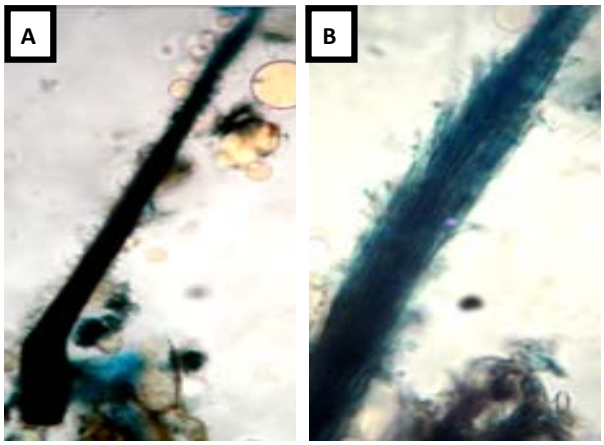

Fig.4. ***Phaeoisaria clavulata,*** **A. Synnemata (400X), B. Upper part of synnemata, conidiogenous cells and conidiophores (1000X).**

Fig. 5. ***Phaeoisaria clemadities,*** **Synnema, conidiophores, conidiogenous cells and conidia, (1000X).**

2) ***Pestalotiopsis guepinii*** (Desm.) Stey *Bull. Jard. Bot. Brux*: 312 (1949). Fig. 2

Mycelium septate, branched and pale brown. Conidiomata acervulus light brown up to 200µm diam. Conidiophores 10-15 x 1-3 µm, with 1-2 proliferations. Conidiogenous cells hologenous and progressive. Conidia 4 euseptate 21 - 27 x 6.5 -8.5µm, smooth, median cells light olivaceous brown, 15-19µm long. Appendages, on apical side, simple, 2-5, mostly 3, 16-33µm long., and one simple appendage at basal side. 4-12µm long.

Pestalotiopsis Stey., differs from *Pestalotia* de Not. in conidiomatal structure. It is eustromatic in *Pestalotia* and acervular in *Pestalotiopsis. Trunctella* Stey, has 3 euseptate conidia, basal cell hyaline truncate and with simple or some time branched apical appendages. Basal appendages absent. *Pestaloptiopsis* has 4 euseptate conidia and on apical side two or more simple or branched appendages and on basal side one simple appendage is present. The genus *Monochaetia* (Sacc) Allesch similar to *Pestaloptiopsis* in having acervular conidiomata but differs in having, transverse conidial wall thick, with one basal and apical simple appendage. *Seiridium* Corda also resembles to *Pestaloptiopsis* in having acervular conidiomata, but differs in having 5- celled euseptate conidia with apical and basal cells hyaline and 4 median cell thickwalled and more pigmented, whereas *Pestaloptiops*is has thin walled conidia. *Seimatosporium* Corda also resembles to *Pestaloptiopsis* in having acervular conidiomata but differs in having 2-5 euseptate conidia, apical and basal cell may or may not be hyaline, conidia entirely lacking appendages or with single appendage on apical and basal cells, lateral walls are thinner than median, a peculiar characteristic feature of *Seimatosporium* conidia.

The species found on *S. cumini* is identified as *Pestalotiopsis guepinii* Desm., after consulting Sutton (1980) and Kirk (2013).

Pestalotiopsis guepinii Desm., has not been reported from Pakistan, Ahmad *et al.,* (1997). Bhanumathi & Rai (2007) reported leaf blight in *Szygium cumini* from Maysore, India. In the present study *Pestalotiopsis guepinii* is a new report on host *Szygium cumini* from Faisalabad Pakistan.

It is alarming that before present report it is not recorded on *Szygium cumini* whereas in nagbour country India it is causing leaf blight disease Bhanumathi and &Rai (2007)

Specimen Examined: *Pestalotiopsis guepinii* on bark of *Syzygium cumini*; The city campus G.C.University Faisalabad, Pakistan; 10 July, 2007; S.Q. Abbas and Sobia Mushtaq. G.C.U.M.H. #27.

3) ***Stagnospora carcinella*** Brun *Bull.Soc. Bot. Fr., Ser*.2, 15:224 (1893). Fig 3 (A-E) Conidiomata pycnidial, dark black , spherical, up to 115.5 µm diam. ostiole single 14.5 µm. Conidia hyaline, 2-3 septate, walls constructed at septa, fusiform minutely guttulate 7-14 x 3.5-6.3µm.

Stagnospora macropycnidi Cunnell., *Stagnospora elegans* (Berk.) Sacc. & Traverso., *Stagnospora cylindrical* Cunnell., differ from *Stagnospora carcinella* Brun. in having much larger pycinidia (up to 1250µm.), (500µm in diameter). *Stagnospora paludosa* (Sacc. & Speg.) Sacc., *Stagnospora gigaspora*, (Niessl) Sacc., *Stagnospora anulica* Cunnell., also differ in having more than 30µm. longer conidia than of *Stagnospora carninella* which has smaller conida (14-27x4-6µm.) *Stagnospora vitensis* Unam, has cylindrical conidia whereas *Stagnospora caricinella* has fusiform coinida. *Stagnospora caricis* (Oud.), Sacc., has more wider conidia (>8µm) than *Stagnospora cariicnella* where conidia are 4-6 µm.

Fungus under study closely resembles to *Stagnospora caricnella*, In both, taxa Conidiomata are more or less same dimension. They are 90-120 µm in *Stagnospora cariicnella* and 115.5µm in fungus under study. Similarly single ostiole is present in both taxa. 15-20 µm. in dia *Stagnospora carciinella* and 14.5 µm. in under study fungus. Similarly conidia are 2-3 septate in both taxa, but conidia are longer14-27x4-6µm in *Stagnospora caricinella* and 7- 14x3.5-6.3µm. in fungus under study.

The fungus on *Szygium cumini* specimen. No 31is near to *Stagnospora carcinella* Brun. but it differs in having smaller conidia and it seems to be a new species, which will be described in else where. For the time being it is tentatively reported in *Stagnospora cariicnella*

Eleven *Stagonospora* spp. have been reported from Pakistan Ahmad *et al*. (1997). *Stagonospora alhagicola*, Ahmad, on the branches Alhagi maurorum, from Lahore Ahmad (1971).

S. alhagiae Mirza., Zakaullah and Nasir, on leaves, stem and spines of *Alhagi camerlorum*; Shrikupura, Balakot; Mirza *et al.,* (1967).

S. asperagi Ahmad., on *Asparagus adcendens*; Kasur; Ahmad (1969a).

S. daemiae, on the branches of Daemia extensa; ChangaManga; Lahore (Ahmad, 1971).

S. eriobotryae Ahmad., on fallen leaves *eriobotya japonica* Lindl; Choa Saelen Shah; Ahmad (1960, 1969).

S. euonymi Sacc., on dead branches *Euonymus pendulus*; Muree; Ahmad (1969b).

S. microscopica (Fr.) Sacc., on branches on *Hedera* nepalensis; Muree; Ahamd (1969a).

S. panici Ahmad., on culms of *Panicum* antidotale; Karachi; Ahmad (1971); Ghaffar & Abbas (1972)

S. saccharicola Ahmad., on culms of *Saccharum spontaneum*; Gujrat; Ahmad (1971).

S. saccharina Ahmad., on culms of *Saccharum spontaneum*; Hasenabdal; Ahmad (1971).

Stagnospora carcinella is not reported from Pakistan Ahmad *et al.,* (1997) it is a new record on host *Szygium cumini* from Faisalabad Pakistan.

Specimen Examined: *Stagnospora carcinella* on dead branch of *Szygium cumini*; University of Agriculture Faisalabad, Pakistan; 23 April, 2007; S.Q. Abbas and S. Mushtaq. G.C.U.M.H. # 31. 8

4). ***Phaeoisaria clavulata*** (Grove) Mason & Hughes, In Mason & Ellis, *Mycol. Pap*., **56:** 42-44 (1953). Fig 4 (A&B) = *Pachnocybe clavulata* Grove, **2**: 14 (1884).

Mycelium immersed. Conidimata synemata, synnema upto 199.5 µm. high and 17 µm broad at apex and 72 µm. wide at base. Dark brown individual hyphae with septa. Conidiophores and conidiogenous cells hyaline, denticulate. Denticles present at apex, with fine points bearing the conidia. Conidia hyaline, spherical to sub-spherical, 2.1 x 2.8 µm.

Phaeoisaria clavulata differs from *Phaeoisaria sparsa* Sutton. in having up to 450µm.long and10-20µm. thick conidiomata and aseptate, fusiform conidia while *Phaeoisaria sparsa* (Fuckel) Hughes has 200µm long and 30 µm thick conidiomata and 0-3 septate conidia, similarly *Phaeoisaria clavulata* also differs from *Phaeoisaria clematidis* which has ellipsoidal conidia and synnemata up to 1500µm.

Key to common species

1. Conidia 0-septate……..…….2
1. Conidia 0-3 septate……..…*Phaeoisaria sparsa*
2. Synemata up to 450 µm.……....*Phaeoisaria clavulata*
2. Synemata more than 450 µm.…… *Phaeoisaria clematidis.*

The fungus is identified as *Phaeoisaria clavulata* (Grove) Mason & Hughes,
Previously genus *Phaeroisaria* and species *Phaeoisaria clavulata* has not been reported from Pakistan (Ahmad *et. al.*, 1997). It is a new report on *Szygium cumini*, from Faisalabad, Pakistan.

Specimen examined: *Phaeoisaria clavulata* on the bark of *Szygium cumini*, Guttwala Forest, Faisalabad, Pakistan; 24 April, 2007; S.Q. Abbas and S. Mushtaq G.C.U.F.M.H. # 28.

5. *Phaeoisaria clemadities* (Fuckel) Hughes *Can. J. Bot*. 36:795(1958). Fig A
= *Stysanus clemadities* Fuckel, *Jb. Nassau. Ver. Naturk*. 23-24: 365(1869-70).
= *Graphiopsis cornuii* Bainier, *Bull .trimest. Soc. Mycol*. Fr.23:19 (1907)
= *Phaeoisaria cornui* (Bainier), Mason, *Mycol. Pap*., 4:94. (1937)
=*Phaeoisaria bambusae* Hohn., S, ber *Akad. Wiss. Wien, Abt*.1, 118:329-330
=*Phaeoisaria clemadities* Verma & Kamal, *Trans. Br. Mycol. Soc*. 89(1): 67. (1987)
= *Passalora clemadities* (R.K. Verma & Kamal) Braun & Crous,. In Crous & Braun, CBS.*Diversity Ser*. (Utrecht)**1**: 448.(2003)

Synnemata dark brown, up to 322 µm, individual hyphae septate, 3.5 µ thick, base is thick, upper half is splaying, 10.5-24.5 µm wide at the apex and up to 87µm wide at base. Numerous cylindrical hyaline denticals are present at the apex. Conidia are hyaline, aseptate and ellipsoidal, 7-10.5 (7) x 2. 5µm.

Phaeoisaria clemadities differ from the *Phaeoisaria sparsa* Sutton, which has 0-3 septate conidia and synnemata up to 200 µm. long and *Phaeoisaria clavulata* that has 450µm. long and10-20µm. thick conidiomata and aseptate, fusiform conidia whereas *Phaeoisaria clemadities* Hughes has ellipsoidal, aseptate conidia and synnemata up to 1500 µm.

The under study fungus is identified as *Phaeoisaria clemadities* (Fuckel) Hughes. Identification is carried out after consulting with (Ellis, 1971, 1976; Charmicheal *et al*., 1980; Kirk, 2013).

In the previous studies genus *Phaeoisaria* and the species *Phaeoisaria clemadities* has not been reported from Pakistan (Ahmad *et al*., 1997).

Genus *Phaeoisaria* and the species *Phaeoisaria clemadities* is new report from Pakistan and *Szygium cumini* is also a new host.

Specimen examined: *Phaeoisaria clemadities* on the bark of *Szygium cumini*, University of Agriculture, Faisalabad, Pakistan; 13 May, 2007; S.Q. Abbas and Sobia Mushtaq G.C.U.F.M.H. # 29.

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