

First Report: Hyphomycetous Fungi from Rawalpindi, Pakistan

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FIRST REPORT: HYPHOMYCETOUS FUNGI FROM RAWALPINDI, PAKISTAN

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ABSTRACT

The saprophytic hyphomycetous fungi: *Beniowskia sphaeroidea*, *Graphium putredinis*, *Phaeoisaria clematidis*, and *Tilachlidium ramosum* were recorded in Rawalpindi from 2008 to 2010. These were studied in the laboratories of PMAS-Arid Agriculture University campus Rawalpindi. The first records from Pakistan were marked with an asterisk(*).

Keywords: Hypomycetous, Fungi Pakistan, *Beniowskia sphaeroidea*, *Graphium putredinis*, *Phaeoisaria clematidis*, *Tilachlidium ramosum*.

INTRODUCTION

Saprophytic fungi continue to grow under conditions with the least moisture present in the substrate and environment. The hyphomycetous fungi, usually during humid weather, begin to grow actively and produce their fruiting structures such as conidiomata - conidiophores and conidia in less time as compared to other asco and basidiomycetous fungi. These samples were collected during the rainy season from different localities of Pakistan. Most of the work on such fungi was done internationally and compiled monographs such as Dematiaceous fungi by Ellis 1971, 1976, Barron 1972, Gillman, 1968, and Charmichael *et al.* 1980. From Pakistan, a lot of work was done by Ahmad throughout his life (1947 – 1983). In 1978, the fungi of Pakistan was gathered by Mirza and Qureshi and was later revised by Ahmad *et al.*; as a posthumous publication. Sultana added some species of hyphomycetes. In 1985 and

1987; the Japanese scientists added more mycoflora during the expedition (1992 – 1995) of northern Pakistan, Matsushima, 1993; 1975. The present species are new contributions to the hyphomycetous fungi of Pakistan.

MATERIALS AND METHODS

The collected material in loose paper envelopes was brought into the department of plant pathology laboratory. The slides were prepared by treating the pinch of material with 70% alcohol. Lactophenol was added and the slide was heated to remove the air bubbles and to make it more clear and shiny. The prepared slides were examined under the Nikon 200 microscope and measurements of different parts *viz* conidiophores and conidia were noted and compared with the existing literature., Ahmad *et al.*, 1997., Barron, 1968., Ellis, 1971&1976., Matsushima, 1975., Saccardo, 1880.

RESULTS AND DISCUSSION

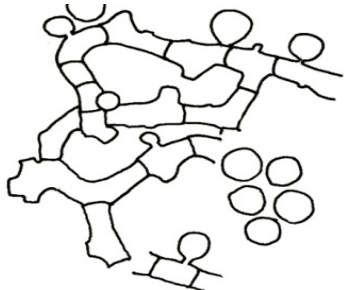
1. *Beniowskia sphaeroidea**: (Kalchbr and Cooke) Mason, CMI Papers. 1928. 2: 26 – 27. (Figure 1).



(a)



(b)



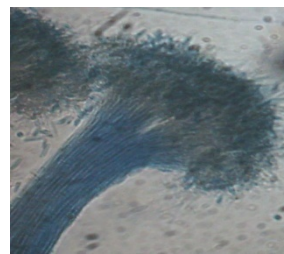
(c)

Figure 1: *Beniowskia sphaeroidea*; (a & b) Microphotographs of mycelium/ conidiophores and conidia; (c) Diagrammatic representation of conidiophores and conidia.

Fructification sporodochium hyphae broad, hyaline, septate, branching more or less at right angles with the tips of the branches anastomosing to form a network of hyphae with few free ends. Spore bearing vegetative hyphae were 7.2 – 9 μm in diameter; Conidia sessile, spherical, smooth,

hyaline, thin and thick walled (uneven) were 10.8 – 14.4 μm in diameter, 0 – septate. Leaving small raised scar on the subtending hyphae; simple, spirally twisted hyphae may radiate from the sporodochium. On the deteriorating *Stereum* species (mushroom), Kuldana forest, Murree hills, 15. 7. 2008. ARID. 13

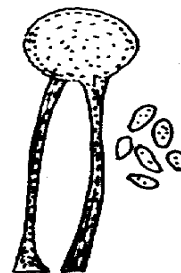
2. *Graphium putredinis* (Corda) Hughes, Can. J. Bot., 36:770, 1958. (Figure 2).



(a)



(b)



(c)

Figure 2: *Graphium putredinis*; (a & b) Microphotographs of Synnema (c) Diagrammatic representation of synnema and conidia.

It was first named as *Stysanus putridinis* Corda, Icon. Fung., 3: 12, 1839. Afterwards its name was changed to *G. cuneiferum* (Berk. & Br.) Mason & Ellis, Mycol. Pap. , 56:41, 1953. However, its current name is *Graphium putredinis* (Corda) Hughes, Can. J. Bot., 36:770, 1958 (Figure 2).

Colonies consist of profusely growing synnemata on the branches kept in the moist glass chamber at room temperature. Synnemata erect, gray to brownish, slightly broader at the base and cylindrical above in the most part with well-developed, moist, glistening, colorless conidial head, usually coalescing with other heads. The heads bear diverging bundles of phialides, producing conidia through annellids.

Synnemata more than 1 mm long, phialides cylindrical below and narrowing above, $10 - 32 \times 1 - 2 \mu$. Conidia $6 - 12 \times 2.2 - 4 \mu$

On the twig of *Alstonia scholaris* tree, PMAS, Arid Agriculture University, Rawalpindi. ARID.31

3. *Phaeoisaria clematidis** (Fuckel) Hughes, Can. J. Bot., 36: 795, 1958. (Figure 3).

It was first named as *Stysanus clematidis* (Fuckel, Symb. Mycol.:365, 1870). Later, its name was changed to *Graphiopsis cornui* (Bainier, Bull. Trimmest. Soc. mycol. Fr., 23: 19 - 20, 1907). Then, it was named as *Phaeoisaria cornui* (Bainier) (Mason, Mycol. Pap., 4: 94, 1937) and in 1909 called as *Phaeoisaria bambusae* Hohnel, Sber, Akad. Wiss. Wien, Abt. 1, 118: 329 - 330, 1909. However, its current name is *Phaeoisaria clematidis*.

Colony grayish black, on the curve of petal of old deteriorating flower of *Bombax malabaricum*, looking hairy with 10x folding pocket lense, as well as under low power microscope. The material was

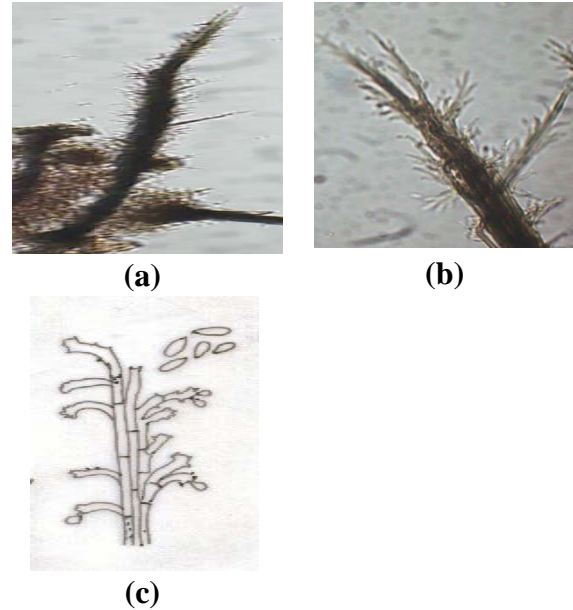


Figure 3: *Phaeoisaria clematidis*; (a & b) microphotographs of synnemata and conidia; (c) Diagrammatic synnemata and conidia.

collected during August under humid conditions of the rainy season. Synnemata were erect with a comparatively broad base and cylindrical above and sporulate almost, all around or more than two third of the synnema, colony looking grayish when under sporulation, variable in height, remain below 1mm. Individual threads $2 - 3 \mu$ thick, branched. Phialides or conidiogenous cells flattened at the tips, flexuous, or straight and smooth, pale brown with numerous cylindrical denticles. Conidia narrowly ellipsoidal or fusiform in outline, $4 - 8.5 \times 1.5 - 2 \mu$

On the petal of the flower of *Bombax malabaricum*, Arid Agriculture University, August 2010. ARID. 30.

4. *Tilachlidium ramosum** (Mains) Mains 1951. Mycologia 43 (6); 714. (figure 4).

It was first named as *Hisutella ramosa* Mains, 1949. *Mycologia* 41(3): 308. Then, it was renamed as *Tilachlidium ramosum* Kamyachko in 1961. *Bot. mater of deal spar, rast. Bot Inst. An SSSR*, 14, p. 227, Figure 9. Then, it was named as *Cephalo*, *Schimmel.P.* 141 -144 & Taf 1f, 1971. However, its current name is *Tilachlidium ramosum*.

A colony on the natural host Bamboo was grayish brown, consisting of aerial interwoven hyphae, forming coremia (not snow white) cylindrical of parallel, irregularly growing hyphae like rhizomorph and twisting, sometimes giving the impact of zig zag growth, long in mm and broad 50 – 125 μm or more, broadest at the base and tapering upward. The branches from the main given out laterally at right or oblique angles. The short branches serve as metulae, which bear the conidiogenous or phialidic cells 1 – 3 on each branch, the phialide rarely septate, cylindrical below and gradually narrowing above to conidiogenous point 18 – 32 μm long (24.6 x 3 – 2) and 2.1 – 3.2 μm at the base. Conidia elongate 3.2 – 5.5 x 1 – 1.4 (3.5 x 2.4) μm (Figure 4).

On deteriorating culm of Bamboosa and on wood of rubber plant PMAS Arid Agriculture University, dated, August, 2010; ARID.30a.

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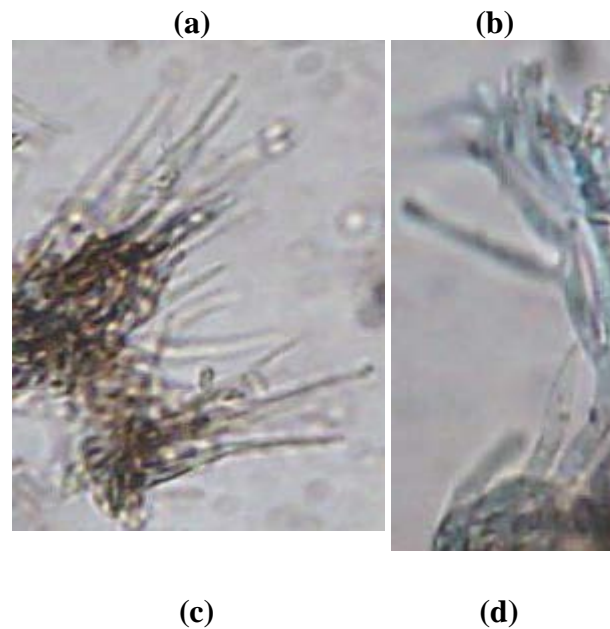
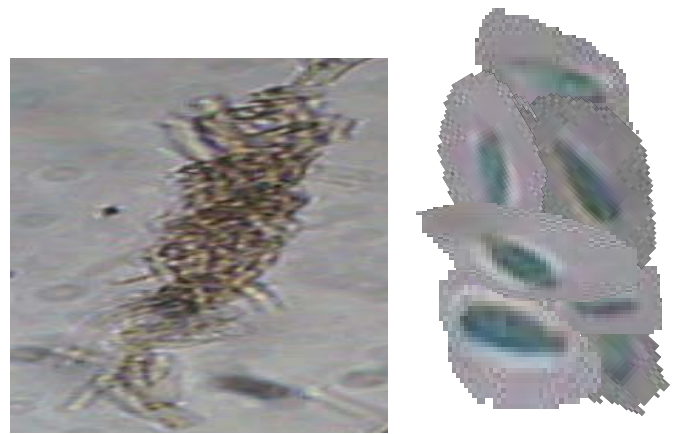


Figure 4: *Tilachlidium ramosum*; (a) Thallus, (b). conidia, (c & d) conidiophores and conidia.

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