Pak. J. Bot., 36(2): 457-461, 2004.

CYTOPLEASTRUM GEN. NOV., AN ADDITION TO COELOMYCETES FROM PAKISTAN

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Abstract

Cytopleastrum gen. nov., and *Cytopleastrum salvadorae* belonging to Coelomycetes are illustrated, described and compared with related taxa.

Introduction

Salvadora Garcin ex L., from Pakistan has yielded a large number of Coelomycete taxa having aseptate brown conidia. The genus under study is characterized by a number of morphological characters present in closely related genera such as *Coniothyrium* Corda, *Coniella* Höhn., *Microsphaeropsis* Höhn., *Readeriella* H. & P. Syd., *Sphaeropsis* Sacc., *Lichenoconium* Petrak & H. Syd., *Cymbothyrium* Petrak, *Aplosporella* Speg., *Cytoplea* Bizz. & Sacc., and *Cyclothyrium* Petrak. However it clearly differs from them in one way or other and it is very difficult to place it in closely related genera, therefore a new generic name *Cytopleastrum* is proposed based on *Cytopleastrum salvadorae*.

***Cytopleastrum* Abbas, Sutton, Ghaffar & Abbas gen. nov.**

Etym.: *Cytoplea* et *astrum* (L., suff.) incompelete resemblance

Conidiomata pycnidialia vel eustromatica, immersa, nigra, separata vel aggregata, globosa vel subglobosa vel depresso-globosa vel lageniformes, unilocularia vel bilocularia, interdum cum base pulvinata, parietes textura angulari ad strato duobus compositi. Parietes exteriores crassi ad cellulis grandioribus, parietes interiores ad cellulis parvis et tenuioriobus consistantes. Regio superior conidiomatum crassior, atro nigris cum clypeo atro nigro. *Conidiophora* absentia, raro praesentia tum hyalina, laevia, unicellula, raro multicellula, septata, ad basim ramosa. *Cellulae conidiogenae* lageniformes vel ampulliformes, discretae, in conidiophoris incorporatis, laeves, hyalinae, *Conidia* hologenitica, aseptata, pallide-brunnea, laevia fusiformia vel elliptica, ± guttulata, apicem ad basim obtusa.

Sp. typ.: *Cytopleastrum salvadorae* Abbas, Sutton, Ghaffar & Abbas sp. nov.

Conidiomata pycnidial to eustromatic, immersed, black, separate or aggregated, globose to subglobose to lageniform, unilocular to bilocular with basal pulvinate tissue, wall of textura angularis, differentiated into two layers, the outer layer consisting of thick-walled larger cells, the inner layer of thin-walled smaller cells. The upper part of the conidioma is thicker and darker than the lower part and a clypeus is also present on upper side of conidiomata, consisting of a band of thicker cells. *Conidiophores* mostly absent but when

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present then hyaline, smooth and unicellular or sometimes multicellular, septate and branched at the base. *Conidiogenous cells* lageniform to ampulliform, discrete, or integrated, smooth, hyaline, proliferating enterogenous and stationarly, prominent periclinal thickening and a narrow or wide cytoplasmic channel, sometimes forming a very long neck. *Conidia* hologenous, aseptate, pale brown, smooth, fusoid to ovoid, ± guttulate, with both ends obtuse.

Sp. typ: *Cytopleastrum salvadorae* Abbas, Sutton, Ghaffar & Abbas sp. nov.

Coniothyrium Corda resembles *Cytopleastrum* in having 0-1 septate, brown, conidia, but differs in having simple pycnidial conidiomata without any clypeus, the absence of conidiophores, conidiogenous cells enterogenous with progressive proliferations. Conidia, the outer walls of which are thick and smooth or ornamented, generally have a truncate base (Sutton, 1980; Punithalingam, 1970). *Sphaeropsis* Sacc., also resembles *Cytopleastrum* in having aseptate brown conidia, but differs in having pycnidial conidiomata without any clypeus, absence of a basal pulvinate cushion in the conidiomatal cavity, determinate non-proliferating conidiogenous cells and aseptate smooth or internally ornamented aseptate conidia (Sutton, 1980; Wang, Blanchette & Palmer, 1986). *Coniella* Höhn., also resembles *Cytopleastrum* in the conidiogenous cells and aseptate smooth-walled, brown conidia, however it differs in having simple pycnidial conidiomata without any clypeus or conidiophores and the absence of a pulvinate cushion at the base of conidiomatal wall to which the conidiogenous cells are confined. *Microsphaeropsis* Höhn., is another genus which resembles *Cytopleastrum* in having conidiogenous cells which proliferate enterogenous and stationarly and aseptate brown conidia with or without ornamentation, but it differs in the absence of any clypeus or pulvinate base in the conidiomata. *Lichenoconium* Petrak & H. Syd., found as parasite of lichens, also differs in having simple pycnidia without any clypeus or pulvinate base and conidiogenous cells proliferate enterogenous and progressively (Hawksworth, 1977; Sutton, 1980). *Cymbothyrium* Petrak is another genus which resembles *Cytopleastrum* in having unilocular eustromatic conidiomata with a clypeus and hyaline simple or sometimes septate conidiophores and aseptate brown conidia. However it differs in having simple, determinate conidiogenous cells, absence of basal pulvinate cushion in conidiomata and cymbiform, thick- walled conidia (Sutton, 1980). *Cytoplea* Bizz. & Sacc., is another genus which is very close to *Cytopleastrum*. The similarity lies in the eustromatic conidiomata, enterogenous and stationarly proliferating conidiogenous cells and aseptate pale brown fusoid conidia, but it differs in having well-developed multilocular columnar clypeate conidiomata and in the absence of a basal pulvinate cushion in conidiomata and conidiophores (Sutton, 1980). *Cyclothyrium* Petrak (Sutton, 1980), also resembles *Cytopleastrum* in its eustromatic conidiomata, presence of simple or branched conidiophores and aseptate, brown guttulate conidia, but differs in having convoluted conidiomata without a clypeus, the absence of a pulvinate conidiomatal base and aseptate brown conidia with truncate bases. *Avettaea* Petrak is similar to *Cytopleastrum* in having aseptate brown conidia, but differs in that the multi-locular conidiomata lack a clypeus, have paraphyses and well-developed, septate conidiophores, and aseptate enteroblastic and progressively proliferating conidiogenous cells and brown, smooth-walled conidia enclosed in a mucilaginous sheath (Sivanesan & Sutton, 1985; Abbas & Sutton, 1988). Similarly *Aplosporella* Speg., has aseptate, brown conidia but differs from *Cytopleastrum* in the aclypeate multilocular eustromatic conidiomata with a common ostiole, determinate conidiogenous cells and aseptate brown conidia with pitted or reticulate ornamentation on the outer wall (Sutton, 1980). Hence *Cytopleastrum* clearly differs from genera having aseptate brown conidia with pycnidial or eustromatic conidiomata.

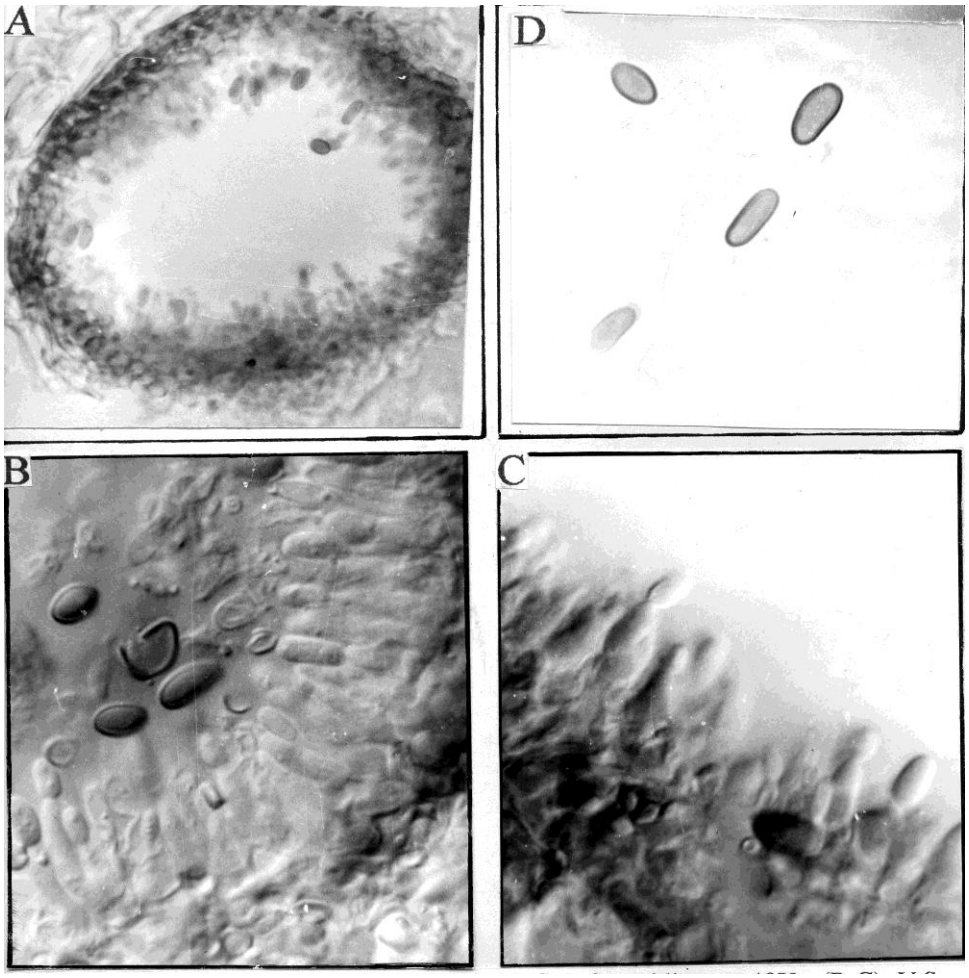

Fig. 1. *Cytopleastrum salvadorae* (A) V.S. of conidioma, 40X; (B, C) V.S. of conidioma with conidia and conidiogenous cells, Namarski optics, 1800X; (D) Conidia, 1800X.

***Cytopleastrum salvadorae* Abbas, Sutton, Ghaffar & Abbas sp. nov.**
Figs. 1 & 2.

Conidiomata pycnidiala vel eustromatica, nigra, immersa, separata, unilocularia vel bilocularia, globosa vel depresso-globosa vel lageniformes, 99-165 x 80-190 ìm, parietes 1-8 celluli crassi ad 4-24 ìm lati, generaliter 4-8 celluli crassi, ex textura angulari ad stratis duobus compositi. Stratum exterior atro-nigris ex cellulis grandioribus consistans quam stratuminterior cellulis hyalinis, tenuioribus, parvis consistans. Regio superior conidiomatum crassior cellulis parvis, atro-nigris cum clypeo ex cellulis crassitunicatibus 5-8 cellulis crassa ad 16-36 ìm lata, quam regio basalis (inferior) ex cellulis hyalinis, grandioribus consistans, interdum pariete basali pulvinata ex textura angulari formata. *Conidiophora* absentia, raro praesentia tum hyalina, laevia, unicellula, raro multicellula, septata, ad basim ramosa, 4-15.6 x 1.6-6 µm. *Cellulae conidiogenae* lageniformes vel ampulliformes, discretae vel in

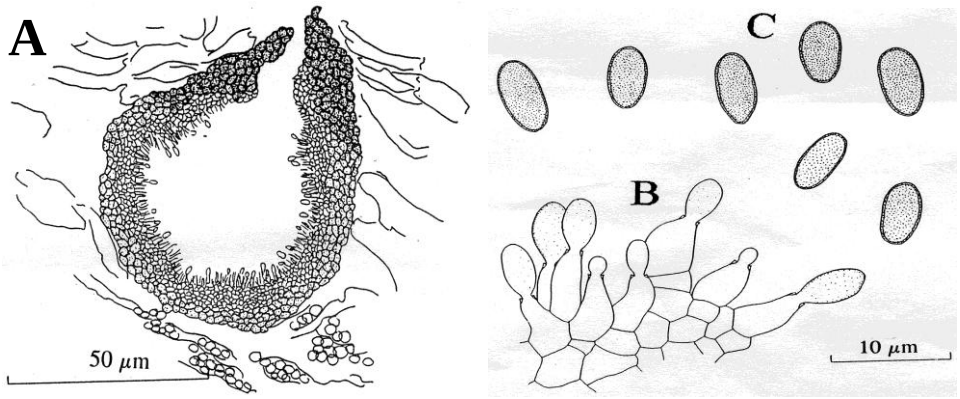

Fig. 2. *Cytopleastrum salvadorae* (A) V.S. of conidioma; (B) Conidiogenous cells; (C) Conidia.

conidiophoris incorporatae, laeves, hyalinae, anterogeneric stationes. *Conidia* hologenitica, aseptata, pallide- brunnea, laevia, fusoidea vel elliptica, ± guttulata, basim ad apicem obtusa, 5.6-13 x 2.8-5.4 µm.

In ramis emortuis *Salvadorae oleoides*, Karachi, Pakistan, 20 March 1984, S.Q. Abbas UCMH 755 (IMI 315013), holotypus.

***Cytopleastrum salvadorae* Abbas, Sutton, Ghaffar & Abbas sp. nov.**

Conidiomata pycnidial to eustromatic, black, immersed, separate or aggregated, unilocular to bilocular, globose to depressed globose or lageniform, 99-165 x 80-190 µm. Wall of textura angularis, 1-8 cells thick and 4-24 µm wide but generally 4-8 cells thick, differentiated into two layers, an outer darker layer which consists of larger cells, and an inner layer consisting of small, thin-walled, hyaline cells. Conidiomata are differentiated into an upper and a basal region. The apical region is composed of more cells which are relatively smaller than the basal region where the cells are larger and hyaline. The upper region also has a clypeus composed of a band of dark, thick- walled cells and is up to 5-8 cells thick and 16-36 µm wide. Sometimes a pulvinate pseudoparenchyma is formed in the basal region of the conidiomatal wall. *Conidiophores* mostly absent, but when present then unicellular or sometimes multicellular, septate, hyaline, smooth and branched at the base, 4-15.6 x 1.6-6 µm. *Conidiogenous cells*, hyaline, lageniform, smooth, proliferate enterogenous and stationarly 4-9.6 x 1.6-4 µm, with periclinal thickening and narrow or wide cytoplasmic channels, sometimes producing a long narrow neck. Conidia hologenous, aseptate, smooth, pale brown, fusoid to ovoid, ± guttulate, sometimes slightly curved, apex and base obtuse, 5.6- 13 x 2.8-5.4 µm.

This species resembles *Coniothyrium oblongatum*, *Sphaeropsis karachiensis*, *Avettaea salvadorae* and *Coniella musaiaensis* var. *hibisci* (Sutton, 1980; Abbas & Sutton, 1988; Abbas *et al*., 1999, 2000) in conidial morphology since they all have aseptate, brown, smooth-walled conidia. *C. oblongatum* however has oblong conidia (3.7-7.8x 3.6-5.6 µm), which are smallar than in *C. salvadorae*. In *Avettaea salvadorae* conidia are sphaerical to pyriform (13.5-21.5 x 10.5-17.5 µm) enclosed in mucilaginous sheath. Similarly *Coniella musaiensis* var. *hibisci* resembles *C. salvadorae* in conidial morphology, since they are eguttulate, cylindrical to falcate, 11-16 x 3.5-5 µm. However it differs from *C. salvadorae* in

having slightly larger conidia and conidiomata lacking any clypeus but with a pulvinate base in the conidiomata to which conidiogenous cells and conidia are confined.

Specimens examined:

***Cytopleastrum salvadorae* Abbas, Sutton, Ghaffar & Abbas sp. nov.**

On stem of *Salvadora oleoides*, Karachi, Pakistan, 20 Mar. 1984, S.Q. Abbas UCMH 755 (IMI 315013), holotype.

***Avettaea salvadorae* Abbas & Sutton**

On stem of *Salvadora oleoides*, Changa Managa, Pakistan, 25 Mar. 1950, S. Ahmad 3129 (IMI 228842), holotype.

***Sphaeropsis karachiensis* Abbas, Sutton & Ghaffar**

On stem of *Salvadora persica*, Karachi to Hyderabad highway, Pakistan, 8 April 1964, S. Ahmad 16912C (IMI 138491C), holotype.

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(Received for publication 11 November 2003)