



Three new taxa of *Corynespora* Gussow from India

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Abstract

This communication deals with the descriptions, latin diagnosis and illustrations of three hitherto undescribed species of fungus of genus *Corynespora* Gussow viz; *C. elephantoptii* sp. nov.; *C. ichnocarpi* sp. nov. and *C. mitragyna* sp. nov. collected on living leaves of *Elephantopus scaber* (Asteraceae), *Ichnocarpus frutiscens* (Apocynaceae) and *Mitragyna parvifolia* (Rubiaceae) respectively from North Western Tarai Forests of U.P., India.

Keywords: Foliar fungi, morphotaxonomy, *Corynespora*, species novum

Introduction

During the survey of North Western Tarai Forest of U.P. number of living leaves exhibiting leaf spots and blights were encountered. Upon critical examination and comparison of morphotaxonomic feature with those of allied forms, three taxa of species have found to be hitherto undescribed. This is described and illustrated as *Corynespora Gussow* viz; *C. elephantoptii* Singh and Mall sp. nov.; *C. ichnocarpi* Singh and Mall sp. nov. and *C. mitragyna* Singh and Mall sp. nov. parasitizing in the living leaves *Elephantopus scaber* (Asteraceae), *Ichnocarpus frutiscens* (Apocynaceae) and *Mitragyna parvifolia* (Rubiaceae) respectively. Illustrations have been executed with camera-lucida and latin diagnosis. in HClO, IARI, New Delhi and Isotype retained in the departmental herbarium for further reference.

Material and Methods

During collection trip infected leaf samples were taken in separate polythene bags from Katarniaghat Wildlife Sanctuary of North Western Tarai forest in Uttar Pradesh. Suitable mounts of surface scraping and free hand cut sections were prepared from infected portions of the leaf samples. Microscopic slides were prepared in cotton- blue lactophenol mixture, slides were examined and camera lucida drawing was made. Morphotaxonomic determinations of taxa were done with the help of

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current literature and resident expertise available. Holotypes have been deposited

Taxonomic Description

***Corynespora elephantoptii* Singh Mall sp. nov. (Fig. 01)**

Maculae amphigenae, irregulares, discretae, brunneae vel atrobrunneae extensae per totum. Coloniae amphiphyllae, effusae, griseo-brunneae. Mycelium internum, tenuitunicatae, glabrae, ramosae, olivaceae vel brunneae. Stromata nulla notata. Conidia phorae superficialis, singularis, ex-hyphis superficialis lateriteriorunda, macronematosa, monematosa, erectae vel procumbentes, recta vel flexuosa, non-ramosa, cylindrica, glabra, crassitunicata, 2-4 septata et 2-4 successive proliferata, brunneae vel atrobrunnea, 120-200 µm longa et 5-9 µm lata. Cellulae conidiogenae in conidiophoris incarporatae, terminalae, monotreticae, circiter incrassatae. Conidia arogena, solitaria, simplicia, non-ramosa, tenuitunicata, glabra, recta velle nitens curvata, plerumque cylindrica, 4-9 pseudoseptata, 30-120 µm longa et 5-20 µm lata, apice obtusa vel rotundata, brunnea, hila non-incrassata.

In foliis vivis *Elephantopus scaber* Linn. (Asteraceae), Motipur Forest Range, Bahraich (U.P.) India, 5th Feb., 2007, leg; D.P. Singh, BRH-1,590, DPS-0,190 (Isotypus), HClO - 47,901 (Holotypus).

Infection spots amphigenous, irregular, discrete, light brown to dark brown scattered on entire



margin. Colonies amphiphylous, effusae, grayish brown. Mycelium internal thin walled smooth, branched, olivaceous to brown. Stomata absent. Conidiophores arising singly as lateral branches from superficial hyphae, macronematous, mononematous, erect to procumbent, straight to flexuous, unbranched, smooth thick walled, 2-4 septata with 2-4 proliferations, brown to dark brown 120-200 μm long and 5-9 μm wide. Conidiogenous cells integrated, terminal, monotretic, scars, unthickened. Conidia acrogenous, solitary, simple, unbranched, thin walled, smooth, straight to slightly curved, usually cylindrical, 4-9 pseudoseptate, 30-120 μm long and 5-20 μm wide, apex obtuse to rounded, brown, hilum thickened. On living leaves of *Elephantopus scaber* Linn. (Asteraceae), Motipur Forest Range, Bahraich (U.P.) India, 5th Feb., 2007, leg; D.P. Singh, BRH-1,590, DPS-0,190 (Isotype), HClO - 47,901 (Holotype). Literature survey indicates that no species of the genus *Corynespora* has yet been described on the host family Asteraceae with the present collection, therefore the morphotaxonomic comparison is done with the type species i.e. *Corynesporaeuphorbiacearum* (Meenuet *al.* 1997) which is found to be comparable. It is evident that the length of the conidiophores in present collection is much lesser than that of earlier described species. Dimensions of conidia of earlier described species and present collection are almost similar but thickened hilum of

present species is unlike in earlier species having almost unthickened hila. Therefore, it merits description as a new species.

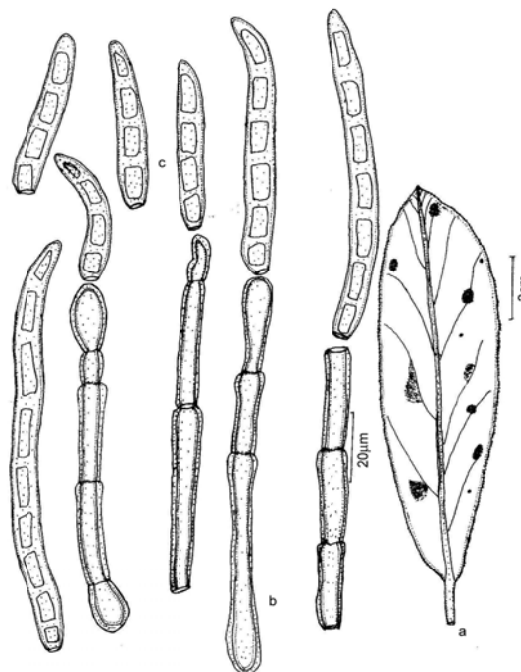


Fig. 01: *Corynespora elephantoptii* Singh and Mall sp. nov. a. Infected leaf b. Conidiophore c. Conidia

Table 1: Morphotaxonomic comparison of *Corynesporaelephantoptii* sp. nov. with *C. euphorbiacearum*

<i>Corynesporaspp.</i>	Conidiophores	Conidia
<i>C.euphorbiacearum</i> Meenuet <i>al.</i> (1997)	unbranched, light brown 3-7 septate with one proliferation 100-358 x 6-8 μm in diam.	Obclavatesubhyaline to light olivaceous 5-18 pseudoseptate, hilum unthickened 59-235 x 11.5-22.5 μm in diam.
<i>C. elephantoptii</i> sp. nov.	Macronematous, mononematous, branched 2-4 transversely septate and 2-4 successive proliferations brown to dark brown, septa with cylindrical proliferation, 120-200 x 5.9 μm in diam.	Straight to slightly curved to cylindrical, olivaceous to brown 4-9 pseudoseptate, hilum unthickened 30-120 x 5-20 μm in diam. germinating conidia present.

Corynesporaichnocarpi Singh and Mall sp. nov. circularae, 6-9 mm. in diam; brunnea (Fig. 2) Maculae amphigenae, subcircularaevel evelgrisaeadinferae.

Coloniaeamphiphyllae, effusae, griseae; Mycelium internum, tenuitunicatae, glabrae, ramosae, olivaceovelbrunnae. Stomataundistincta. Conidiophor asuperficilis, singularis, exhyphis superficialis lateritero riunda, macronemata, mononemata, erectavelleniterprocumbenta, recta velflexuosa, non ramosa, cylindrica, laevia, crassitunicata 3-6 septata, brunneavelatrobrunnea, 64-165 x 6-11 µm in diam. Cellulaeconidiogenae in conidiophorisintegratae, terminalis, monotreticae, cicatrices non incrassatae, inflataeadapicem. Conidia acrogena, solitaria, simplicia, non-ramosa, tenuicata, glabra, recta vellenitercurvata, obclavatocylindrica, 35-105 x 14-20 µm in diam, 3-8 distoseptata, apiceobtusavelrotundata, olivaceobrunneavelsubhyalina, hila incrassata.

In foliisvivi*Ichnocarpusfrutiscense* R. Br. (Apocynaceae), Katarniaghat Wildlife Sanctuary, Bahraich (U.P.) India, 15th March, 2008, leg; D.P. Singh, BRH-1,684, DPS-0,284 (Isotypus), HClO - 48,571 (Holotypus). Infection spots amphigenous, subcircular to circular, 6-9 mm in diam; brown to grayish on lower surface. Colonies amphiphilous, effuse, grayish. Mycelium internal and external, thin walled, smooth, branched, olivaceous to brown. Stromata indistinct. Conidiophores arising singly lateral branches from superficial hyphae, macronematous, erect to slightly procumbent, straight to flexuous, unbranched, cylindrical, smooth, thick walled, 3-6 septate brown to dark brown, 64-165 x 6-11 µm in diam. Conidiogenous cells integrated, terminal, monotretic scars unthickened swollen towards the apex. Conidia acrogenous, solitary, simple, unbranched, thin walled smooth, straight to slightly curved, obclavatocylindrical, 35-105 x 14-20 µm in diam,

3-8 distoseptate, apex obtuse to rounded, olivaceous brown to subhyaline, hilum unthickened. On living leaves of *Ichnocarpusfrutiscense* (Apocynaceae), Katarniaghat Wildlife Sanctuary, Bahraich (U.P.) India, 15th March, 2008, leg; D.P. Singh, BRH-1,684, DPS-0,284 (Isotype), HClO - 48,571 (Holotype). Literature survey indicates that two species of the genus *Corynespora* viz., *C. cassicola* (Berk & Curt.) Wei and *C. alstoniae* Meenuet *al.*, 1997 have been described on the family Apocynaceae. The present collection therefore is compared with the same in Table-2.

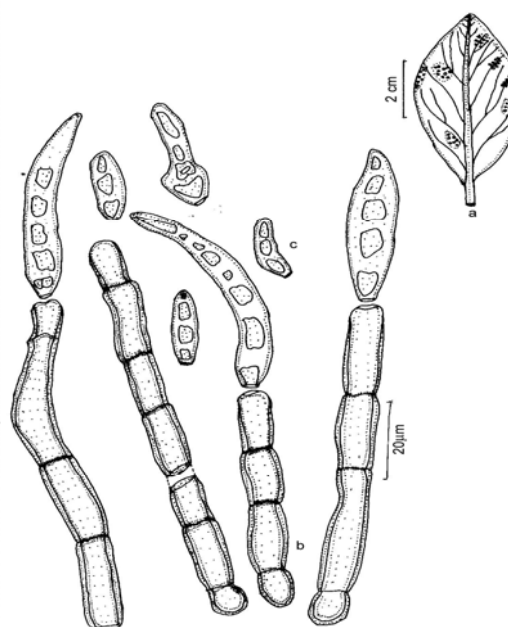


Fig. 02: *Corynespora ichnocarpii* Singh and Mall sp. nov. a. Infected leaf b. Conidiophore c. Conidia

Table 02 : Comparative details of *C. cassicola*, *C. alstoniae* with *C. ichnocarpii* sp. nov.

<i>Corynespora</i> spp.	Conidiophores	Conidia
<i>C. cassicola</i> (Berk. & Curt.) Wei	Pale to to mid brown septate with 1 successive cylindrical proliferation, 110-850 x 4-11 µm in diam.	Obclavate to pale olivaceous brown 4-20 pseudoseptate hilum thickened, 40-220 x 9-22 µm in diam.
<i>C. alstoniae</i> Meenuet <i>al.</i> , (1997)	Olivaceous brown to dark brown, septate with one cylindrical proliferation, 121-473.5 x 6.0-13.5 µm in diam.	Clavate to obclavato cylindrical, subhyaline to light olivaceous, 2-15 pseudoseptate, hilum unthickened, 48.5 - 154 x 8.5 - 21.5 µm in diam.
<i>C. ichnocarpii</i> sp. nov.	Brown to dark brown, septate with cylindrical proliferation 64-163 x 6-11 µm in diam.	Solitary, generally cylindrical, hilum unthickened, 35-105 x 14-20 µm in diam; 3-8 distoseptate.

From above comparative account, it is clear that there are major differences in dimensions of conidiophores and conidia in present collection with those of earlier described species. Hila are thickened in *C. cassicola* whereas unthickened in *C. alstoniae* and also in present species *C. cassicola* and *C. alstoniae* have much longer conidiophores than of *C. ichnocarpi* which are strictly unbranched and cylindrical in shape. No *Corynespora* has so far been described on the host genus, hence the proposal of new taxon of species rank is worthwhile, to accommodate it.

***Corynesporamitragynae* Singh and Mall sp. nov. (Fig. 3)**

Maculae amphigenae, subcircularevelcirculare, 6-9 mm in diam; brunnea evelgrisaeadinferae. Coloniaeamphiphyllae, effusae, grisae. Mycelium internumetexternum, tenuitunicatae, glabrae, ramosae, olivaceovelbrunnae, Stomata abesse. Conidiophorasuperficialis, singularis, ex hyphissuperficialislateriteroriunda, cellaebasicconspicuae, macronematosa, mononematosa, erecta, recta velflexuosa, non-ramosa, cylindrica, glabracrassitunicata, usque 5 septata, brunneavelatrobrunnea, 165-175 x 8-11 µm in diam. Cellulaeconidiogena in conidiophorisintegratae, terminalesmonotreticae, cicatrices non incrassata. Conidia acrogena, solitaria, simplicia, non-ramosa, tenuitunicata, glabra, recta vellenitercurvata, plerumquecylindrica, 45-87 µm longa et 6-18 µm lata, usque 9 distoseptata, apiceobtusavelrotundata, brunnea, hila incrassata. Germinisconidium cum tubisgerminalibusnotata. Infoliisvivi*Mitragynaparvifolia* (Rubiaceae), Nishangara Forest Range, Bahraich (U.P.) India, 4th May, 2008, leg; D.P. Singh, BRH-1,695, DPS-0,295 (Isotypus), HCIO-48,582 (Holotypus). Infection spots amphigenous, subcircular to circular, 6-9 mm in diam; brown to grayish on lower surface. Colonies amphiphyllous, effuse, grayish. Mycelium internal and external, thin walled, smooth, branched olivaceous to brown. Stomata absent. Conidiophores arising singly as lateral branches from superficial hyphae, basal cell conspicuous, macronematous, mononematous, erect, straight to flexuous, unbranched, cylindrical, smooth, thick walled, up to 5 septate, brown to dark brown, 165-

175 x 8-11 µm in diam. Conidiogenous cells integrated, terminal, monotretic, scars, unthickened. Conidia acrogenous, solitary, simple, unbranched, thin walled, smooth, straight to slightly curved usually cylindrical, 45-87 µm long and 6-18 µm wide, upto 9 distoseptate, apex obtuse to rounded, brown, hilum unthickened. Germinating Conidium with germ tube also observed.

On living leaves of *Mitragynaparvifolia* (Rubiaceae), Nishangara Forest Range, Bahraich (U.P.) India, 4th May, 2008, leg; D.P. Singh, BRH-1,695, DPS-0,295 (Isotype), HCIO-48,582 (Holotype).

As evident from the literature survey, no *Corynespora* species has been described from north-western tarai region on the host genus and family, in question. The present collection, therefore, is compared with type species novel status of the present collection to justify the *C. cassicola* (Berk. & Curt.) Wei. The comparative account is given in Table -3

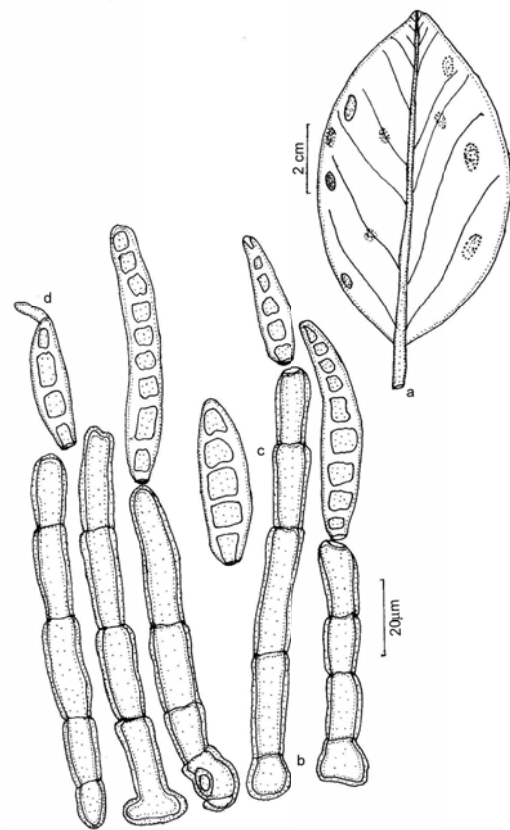


Fig. 03: *Corynespora mitragynae* Singh and Mall sp. nov. a. Infected leaf b. Conidiophore c. Conidia d. Germinating Conidium

Table 3 : Comparison of morphotaxonomic features of *C. cassicola* (Berk & Curt.) Wei with *C. mitragyna* sp. nov.

<i>Corynesporaspp.</i>	Conophorea	Conidia
<i>C. cassicola</i> (Berk. & Curt.) Wei	Simple or occasionally branched, multiseptate with 9 successive proliferations, pale to mid brown 110-850 x 4-11 µm in diam.	Solitary or catenate, obclavate to cylindrical, 4-20 pseudoseptate, hilum, thickened subhyaline to pale olivaceous brown, 40-220 x 4-22 µm in diam.
<i>C. mitragyna</i> sp. nov.	Simple, unbranched, up to 5 septate, brown, 165-175 x 8-11 µm in diam.	Solitary, generally cylindrical hilum unthickened, 45-87 x 6-18 µm in diam; germinating conidium with germ tube.

From the comparison, it is clear that length of conidiophores of the present collection is smaller than that of *C. cassicola* significantly. Conidiophores are branched in *C. cassicola* where as unbranched in proposed species. Conidia of *C. cassicola* are catenate and having 4-20 distoseptation with thickened hila as against unthickened in the present collection. Presence of germinating conidium with germ tube is also peculiar to this collection. Therefore, it merits recognition as a new species to accommodate it. The review of literatures (Bilgrami *et al.*, 1979, 1981, 1991; Ellis, 1971, 1976; Jamaluddin *et al.*, 2004; Meenu *et al.*, 1997, Meenu and Kamal, 1998; Sarbhoy *et al.*, 1986, 1996; Singh and Mall, 2007a, 2007b, 2008) reveals that these new taxa have not been reported either from North Western Tarai Forests of U.P. or anywhere in India. Hence these novel species are addition to Indian foliar mycoflora.

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