Foliicolous fungi from North-Eastern terai belt of U.P.: Some new taxa of anamorphic powdery mildews

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ABSTRACT: Three new taxa of anamorphic powdery mildews viz., Oidium capparidacearum, O. pergulariae and O. spilanthedis collected from the forest flora of terai belt of North-Eastern Uttar Pradesh are described and illustrated.

Key words: Oidium capparidacearum, O. pergulariae, O. spilanthedis, sp. nov.

Northern part of Indian subcontinent is characterized by the turnover of Angiospermic vegetation almost all the year round; which is more so in the North-Eastern terai belt of U.P. in India. The vegetation of this region combined with congenial climatic conditions has proved to be a paradise for foliar fungi (Bilgrami et al., 1991; Jamaluddin et al., 2004). Anamorphic forms of Powdery mildews have been least explored from this region whereas from other parts of the country, some new forms have been described (Paul and Bhardwaj, 2001; Ahmad et al., 2004, 2005). Authors collected the anamorphic forms of powdery mildews occurring on Cleome rutidosperma, Pergularia pallida and Spilanthes echmella, which upon examination have proved to be hitherto undescribed.

Oidium capparidacearum Pal, Akhtar, Kamal and Ahmad sp. nov. (Fig. 1)

Maculae epiphyllae, albide vel griseae, inceptio in fragmenti effusae posterius. Mycelium exhyphis, externum, epigenum, ramosis, septatis, subhyalinae, 4-7 µm in diam. Appressoria indistincta. Conidiophora erecta vel leniter procumbenta, cylindrica, recta vel flexuosa, 30-90 x 4-9 µm. Cellulae pedis cylindricae, rectae, 1-7 cellulae ad apicemi, 12-20 x 4-8 µm. Conidia catenata, simplicia, hyaline, frequenter ovoidea, 15-30 x 12-18 µm. Tubis germinalis nulla notata.

Review of literature indicates that no species of Oidium has ever been described on the host species Cleome rutidosperma (Capparidaceae), January 21, 2005, Gorakhpur (U.P.), India, leg; V.K.Pal, S.N.C.A.F. Herb. 03 (Isotypus), H.C.I.O. 45903 (Holotypus).

Infection spots epiphyllous, white turning to grayish, in discrete patches in beginning becoming effuse later on. Mycelium of hyphae external, epigenous branched, septate, subhyaline, 4-7µm in diameter. Appressoria indistinct. Conidiophores erect, cylindrical, straight to flexuous, 30-90 x 4-9µm. Foot cells cylindrical, straight, 12-20 x 4-8 µm followed by 1-7 cells. Conidia in chains, simple, hyaline, generally ovoid, 15-30 x 12-18 µm. Germ tube not observed.

In foliis vivis Cleome rutidosperma (Capparidaceae), January 21, 2005, Gorakhpur (U.P.), India, leg; V.K.Pal, S.N.C.A.F. Herb. 03 (Isotypus), H.C.I.O. 45903 (Holotypus).

Review of literature indicates that no species of Oidium has ever been described on the host species Cleome rutidosperma. However, Erysiphe cruciferarum Opiz. ex Junell, has already been described on an allied host (Cleome graveolens) from Asia (Braun, 1987). The comparison of the present fungus with the Oidium state of O. cruciferarum appears to be worthwhile to ascertain the new taxonomic identity of the present collection, that the conidiophores of E. cruciferarum are significantly smaller (15-50 µm) than those of Oidium capparidacearum (30-90 µm), the conidia are born singly on the conidiophores in the Oidium state of E.cruiciferarum but are present in intact chains in

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**Oidium capparidacearum.** The dimensions of the conidia are also at great variance in these two cases. These are significantly larger in *E. cruciferarum* (27-55 x 12-21 µm) as against smaller conidia (15-30 x 12-18 µm) in the present collection. Moreover, *E. cruciferarum* is regarded as a parasite restricted only to Brassicaceae (Zheng and Chen, 1981; 1987). Hence, the present collection merits description and illustration as a new taxon of species rank.

**Oidium pergulariae** Pal, Akhtar, Kamal and Ahmad sp.nov. (Fig. 2)


Infection Spots amphiphyllous, white turning to grayish, in patches in beginning becoming effuse later on covering the entire surface of leaf. Mycelium amphigenous of hyphae branched, septate,
subhyaline, 3-5 µm in diameter. Appressoria indistinct. Conidiophores straight to slightly flexuous, cylindrical, 9-41 x 3-8 µm. Foot cells cylindrical, straight to procumbent, 11-23 x 4-9 µm followed by 1-4 cells. Conidia in chains, simple, hyaline, oval shaped 20-31 x 8-18 µm. Germ tubes not observed.

No powdery mildew has been reported on the host in question as evident from the survey of literature. Moreover, the powdery mildews have been found to be mostly host specific. The present collection, therefore, warrants its description and illustration as a new taxon of species rank.

**Oidium spilanthedis** Pal, Akhtar, Kamal and Ahmad sp. Nov. (Fig. 3)

Maculae epiphyllae, albide vel brunneae, inceptio in fragmenti, effusae posterius. Mycelium externum, epigenum, exphysis, ramosis, septatis, subhyalinae, 4-6 µm in diam. Appressoria indistincta. Conidiophora erecta, cylindrica, recta vel flexuosa, 19-55 x 4-10 µm. Cellulae pedis cylindricae rectae, 1-5 cellulae ad apicem, 9-12 x 4-5µm. Conidia catenata hyaline, simplicia, frequenter ovoidea, 11-58 x 5-19 µm. Tubis germinalis cum germinis conidia notata.

In foliis vivis *Spilanthes echmella* (Asteraceae), May 10, 2005, Faizabad (U.P.), India, leg; V.K.Pal, S.N.C.A.F. Herb. 05 (Isotypus), H.C.I.O. 45905 (Holotypus).
Infection spots epiphyllous, white, turning to brown, in distinct patches in beginning becoming effuse later on. Mycelium external, epigenous of hyphae branched, septate, subhyaline, 4-6 µm in diameter. Appressoria indistinct. Conidiophores erect, cylindrical, straight to flexuous, 19-55 x 4-10 µm. Foot cells cylindrical, straight, 9-12 x 4-5 µm followed by 1-5 cells. Conidia in chains, simple, generally ovoid, 11-58 x 5-19 µm. Germinating conidia with germ tubes observed.

As evident from the literature survey, no anamorphic form of powdery mildews, comparable to the present collection, is on record. Moreover, the morphological features of conidiophores and conidia are typical to this collection. Proposal of new species is, therefore, worthwhile.

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