

Species

Cercospora premnae sp. nov. on potent ethno medicinal plant *Premna mucronata* from Shrawasti (U.P.) India

Mall TP

Postgraduate Department of Botany, Kisan P.G. College, Bahraich-271 801 (U.P.), Mail: drtpmall@rediffmail.com; drtejpratapmall@gmail.com

Received 08 June; accepted 13 July; published online 01 August; printed 16 August 2013

ABSTRACT

In present study a new dematiaceous hyphomycetous foliicolous microfungi *Cercospora premnae* Mall sp. nov. on *Premna mucronata* is reported from Shrawasti (U.P.) India, as a result of survey of North Central Tarai Forest.

Keywords: Follicolous fungi, Ethno medicinal plant, North Central Tarai Forest, Shrawasti, Uttar Pradesh.

CITE

Mall TP. *Cercospora premnae* sp. nov. on potent ethno medicinal plant *Premna mucronata* from Shrawasti (U.P.) India. *Species*, 2013, 4(11), 25-27

1. INTRODUCTION

India is the one of the twelve mega biodiversity countries of the world, has two of the worlds eighteen biodiversity hot spots located in the Western ghats and in the Eastern Himalayas. In north of North Tarai Forests, the Himalayas rise as a virtual wall beyond the snow line. Above the alluvial plain lies the Tarai strip, a seasonally marshy zone of sand and clay soils. The Tarai has higher rainfall than the plains, and the downward- rushing rivers of the Himalayas slow down and spread out in the flatter Tarai zone depositing fertile silt and reproductive means during the monsoon season and receding in the dry season. The Tarai, as a result has high water level and is characterized by moist sub tropical conditions and a luxuriant turnover of green vegetation all the year around. The climatological and topographical conditions favour the luxuriant growth and development of foliar fungi. This north Tarai Region of U.P. is next only to Eastern and Western ghats, as one of the hottest spots for biodiversity in general and the diversity of fungal organism inhabiting plant leaves in particular offers an ideal opportunity for the morphotaxonomic exploration of fungal organism in general and foliicolous fungi in particular. Keeping this in view the author surveyed the North Central Tarai forests of UP which include East and West Sohelwa, Shrawasti, Bahraich forest range and Bahraich Wildlife Sanctuary during April, 2010-September, 2011.

2. SCOPE OF STUDY

The foliicolous fungi cause huge losses every year in different parts of the world. The fungal pathogens producing leaf spots infect a large variety of hosts including most of the crops, forests and other plants. The destruction caused by these enemies of leaves is a serious problem before us. The focus of this research is identification & documentation of foliicolous fungi which will assist in the discovery of new fungicides and ideas to overcome from the severity of these enemies of nature as well as in the protection of floral

diversity from the infection of these pathogens and also in the conservation of valuable flora of the area.

3. MATERIALS AND METHODS

During collection, infected leaf samples were taken in separate polythene bags. Suitable mounts of surface scrapping and hand cut sections were prepared from infected portions of the leaf samples. Slides were prepared in cotton-blue lacto phenol mixture & were examined. Camera lucida drawing were made and the morphotaxonomic determination of taxa was done using available literature and with the help of resident's expertise available. The fungal taxa was identified using microscopic preparation.

4. RESULTS AND DISCUSSION

During the survey of the forests of West Sohelwa Forests Range near Motipur rehar at Indo Nepal Border representing North Central Tarai Forests of U.P. (India), on Feb. 08, 2011, a novel dematiaceous hyphomycetous fungi belonging to the genus *Cercospora* *Fresenius* on a potent ethno medicinal plant Roxb.(Syn. *Premna latifolia* var. *mucronata* Roxb.) Bari arani, Ganiar, Agethu, Agnimatha (Verbenaceae) was encountered. The leaves and root bark of this ethno medicinal plant is important constituent in several medicine preparation, anti hepato toxic, anti vata remedy, useful in edema and degenerative disorders, an important constituent of herbal dushmanis, cough expectorant, anti inflammatory, analgesic, suppress nervous system, improves digestion, blood purifier, useful in any type of skin disorders and cardiac stimulant. On critical study and comparison with other known species viz *Cercospora volkameriae* Speg. and *C. lippiae* Ellis and Everh (Ellis, 1976), it was found to be a new species. It has also been customary for plant pathologist and mycologist to describe as a new any *Cercospora* found on a host for the first time (Ellis,1976).Hence is described as *Cercospora premnae* Mall sp. nov. The Holotypes specimen has been deposited in HClO, IARI, New Delhi for allotment of accession number.

Mall,

Cercospora premnae sp. nov. on potent ethno medicinal plant *Premna mucronata* from Shrawasti (U.P.) India, *Species*, 2013, 4(11), 25-27,

© The Author(s) 2013. Open Access. This article is licensed under a [Creative Commons Attribution License 4.0 \(CC BY 4.0\)](https://creativecommons.org/licenses/by/4.0/).

Table 1

Morphological features of *Cercospora premnae*, *Cercospora volkameriae* and *Cercospora premmicola*

Name of species	Colour	Conidiophores Size(µm)	Structure	Size(µm)	Conidia Septation	Shape
<i>Cercospora volkameriae</i>	midpale- brown	50-160 x 4-5	simple	50-140 x 3-4.5	6-14	slightly obclavate
<i>Cercospora premmicola</i>	brown	90-168x3.6	branched	25.5-86 x upto 2	multiseptate	acicular
<i>Cercospora premnae</i>	brown	80-150 x3.5	branched	25-80x2.5	multiseptate	straight

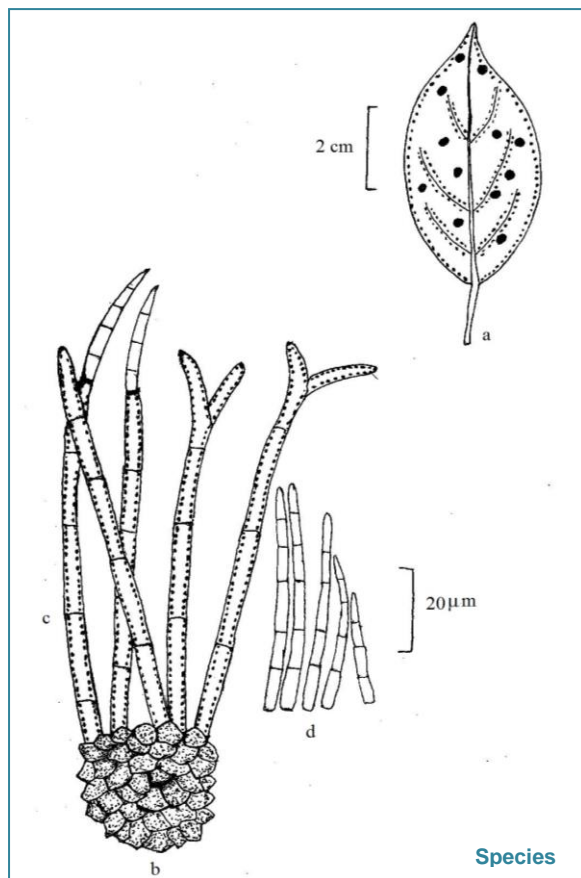


Figure 1

Cercospora premnae sp. nov.

- a. Infected leaf
- b. Stroma
- c. Conidiophores
- d. Conidia

4.1. *Cercospora premnae* Mall sp. nov.

Infection spots amphigenous, with hypophyllous sporulation, olivaceous brown; mycelium partly immersed, sub hyaline, branched, septate; stroma pseudoparenchymatous, immersed, dark olivaceous brown, up to 30 µm diam; conidiophores macronematous, mononematous, fasciculate, smooth, straight to sinuous, brown, paler along the tip, geniculate, branched 80-150 x 3.5 µm; conidiogenous cells polyblastic, integrated, terminal, sympodial, distinctly

cicatrized, paler than the rest cells, conidia simple, solitary, acrogenous, smooth, multiseptate, hyaline, acicular, truncate base with acute apex, straight flexuous, 25-80 x upto 2.5 µm (Figure 1 a,b,c,d).

On living leaves of *Premna mucronata* Roxb. (Verbenaceae); West Sohewla Forest Range, Shrawasti (U.P.) India, 08.02.2011; leg. T.P. Mall, BRH-3185, TPM-0285 (Isotype), HClO (Holotype). Conagonis maculae amphigenae, sporarum partu hypophylla, olivaceo-brunneae; mycelium hyphis semi-immersis, sudhyalinis, ramosis, septalis compositum; stroma pseudoparenchymaticum, immersum, obscure olivaceo-brunneum. Ad 25µm diametro; conidiophora macronemata, fasciculate, levia, rectavel sinusa, brunnea, apcem verses phllidiore, geneculata, racemosa, 80-150 x 3.5 µm; cellulae conidiogenae polyblastieae, integrate, terminalis, sympodiales, cicatricibus distinctis notatae, quam cellulae caeterae phllidiore; conidia simplica, acrogena, singularia, levia, transverse multiseptata, hyaline, acicularia, basi truncate, apice acuto, recta vel flexuosa, 25-80 x 2.5 µm. In foliis vivis *Premna mucronata* Roxb. (Verbenacearum), West Sohewla Forest Range, Shrawasti (U.P.) India, 08.02.2011; leg. T.P. Mall, BRH-3185, TPM-0285 (Isotype), HClO (Holotype).

The present fungus is closer to *Cercospora volkameriae* Speg. (Ellis, 1976) and *Cercospora premmicola* (Shukla et al., 1982) described on Verbenaceae, but to justify the distinct identity of *Cercospora premnae* a comparative account of morphological features of *Cercospora volkameriae* and *Cercospora premmicola* is given in Table 1. Survey of literature Bilgrami et al., (1979, 1981, 1991); Ellis, (1971, 1976); Ellis and Ellis, (1995); Jamaluddin et al., (2004); Mukerji and Juneja, (1974); Sarbhoy et al., (1986, 1996); Shukla et al., (1982) and Verma et al., (2008) reveals that this fungus is not found to be reported on living leaves of either *Premna mucronata* or any other members of Verbenaceae, its description as a new species is worthwhile. The specific epithet of *Cercospora premnae* is based on host name.

5. CONCLUSION

The Region of Shrawasti U. P. is rich in phytodiversity in general as well as the diversity of fungal organisms inhabiting plant leaves in particular and it provides great scope for study of foliicolous fungi. Correct identity of a fungus absolutely free from ambiguities is vital for its employment in applied disciplines in general and it is more so for plant pathology where precision of details about the biology of the pathogen is primarily conditioned by its identity. In fact, without being equipped for ascertaining the correct identity of a fungal pathogen all studies concerning its phytopathological aspects would simply be misleading. However the end is still not insight and further investigation is warranted.

ACKNOWLEDGEMENT

Author is thankful to the Principal Kisan P.G College, Bahraich for providing laboratory facilities and UGC for award of Minor Research Project No. F. 8-1 (224) 2010 (MRP/NRCB).

REFERENCES

- Bilgrami KS, Jamaluddin, Rizwi MA. Fungi of India Part-II. Host Index and Addenda. Today and Tomorrow's Printers and Publishers, New Delhi, 1981, 268
- Bilgrami KS, Jamaluddin, Rizwi MA. Fungi of India Part-III. List and References. Today and Tomorrow's Printers and Publishers, New Delhi, 1991, 778
- Bilgrami KS, Jamaluddin, Rizwi, MA. Fungi of India Part- I. List and references. Today and Tomorrow's Printers and Publishers, New Delhi, 1979, 467
- Ellis MB, Ellis JP. Microfungi on Land Plant: An Identification Hand Book Richmond Publishing Co. Hand Book 2nd Edition Dec. 1997, 868
- Ellis MB. More Dematiaceous Hyphomycetes. CMI, U. K., 1976, 507

Mall,

Cercospora premnae sp. nov. on potent ethno medicinal plant *Premna mucronata* from Shrawasti (U.P.) India, Species, 2013, 4(11), 25-27,

© The Author(s) 2013. Open Access. This article is licensed under a [Creative Commons Attribution License 4.0 \(CC BY 4.0\)](https://creativecommons.org/licenses/by/4.0/).

6. Ellis MB. Dematiaceous Hyphomycetes. CMI, Kew, U. K., 1971, 608
7. Jamaluddin, Goswami MG, Ojha BM. Fungi of India (1989-2001). Scientific Publishers India, Jodhpur, 2004, 326
8. Mukerji KG, Juneja RC. Fungi of India (1962-72) Emkay publ. Delhi, 1974, 224
9. Sarbhoy A K, Varshney JL, Agarwal DK. Fungi of India (1982-92). CBS Publishers and Distributers New Delhi, 1996, 274
10. Sarbhoy AK, Agarwal DK, Varshney JL. Fungi of India (1977-81). Associated publ. Co. New Delhi, 1986, 350
11. Shukla DN, Singh AK, Kumar P and Kamal. Fungi of Gorakhpur-XV. Indian Phytopath 1982 , 35 (1) : 86-91
12. Verma RK, Sharma Nidhi, Soni KK, Jamaluddin. Forest Fungi of Central India. International Distributing Co. Lucknow, 2008, 41

RELATED RESOURCE

1. Mall TP, Singh DP, Kumar A, Sahani S. Follicolous fungi: earth's living treasure from north-tarai forests of Postgraduate Department (Uttar Pradesh) India, *Indian Journal of Science*, 2013, 3(8), 88-96
2. Mall TP, Singh DP. Follicolous fungi in North Western Tarai Forests of Uttar Pradesh. *Indian Phytopath*, 2008, 61(379), A 31
3. Mall TP. Follicolous Fungi of North Central Tarai Forests of Utter Pradesh (India). *Nature and Environment*, 2011-2012, 4&5, 13-22
4. Mall TP. Status of Susceptible hosts of Foliar Fungi from North Central Tarai Forests of Uttar Pradesh (India). *Res. Environ. Life Sci.* 2012, 5, 11-16