

Foliicolous Fungi on Some Important Ethano Medicinal Plants from Katarniaghat Wildlife Sanctuary Bahraich (U.P.) India

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Abstract

The Katarniaghat Wildlife Sanctuary is a protected area in the Upper Gangetic plain, near Bahraich city in Bahraich district of Uttar Pradesh, India and covers an area of 400.6 km² (154.7 sq mi) in the Terai of the Bahraich district. In 1987, it was brought under the purview of the 'Project Tiger', and together with the Kishanpur Wildlife Sanctuary and the Dudhwa National Park it forms the Dudhwa Tiger Reserve. It was established in 1975.

The Katarniaghat Forest provides strategic connectivity between tiger habitats of Dudhwa and Kishanpur in India and the Bardia National Park in Nepal. Its fragile Terai ecosystem comprises a mosaic of sal and teak forests, lush grasslands, numerous swamps and wetlands.

Keeping this in mind the authors surveyed with thirty-nine Angiospermic host plants representing thirty-nine genera and twenty families being parasitized by forty fungal species representing thirty-fungal genera.

Keywords: Foliicolous fungi; Katarniaghat Wildlife Sanctuary Bahraich; Ethanomedicinal Plants; U.P.

INTRODUCTION

The leaves provide a very suitable habitat for the growth and development of fungal pathogen by providing ample surface area and nutrient supply. Such leaf inhabiting fungi are known as foliicolous

fungi and the invaded area of the leaf appears as leaf spot or leaf lesion. The weed and forest plants serve as reservoir of leaf spot pathogen which on getting opportunity may spread to agriculture & horticulture plants.

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 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. Since Katarniaghat Wildlife Sanctuary Bahraich belongs to Northern Tarai Region which has higher rainfall than the plains, and the downward rushing rivers of the Himalayas slow down and spread out

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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 favor the luxuriant growth and development of foliicolous fungi. Katarniaghat Wildlife Sanctuary Bahraich which represents a part of 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 morpho taxonomic exploration of fungal organism in general and foliicolous fungi in particular.

In Katarniaghat Wildlife Sanctuary there are many ethanomedicinal plants. Keeping it in view, the authors surveyed the locality of Katarniaghat Wildlife Sanctuary Bahraich during April 2020 to February, 2023.

MATERIALS AND METHODS

During collection, infected leaf samples were taken in separate polythene bags. Suitable mounts of surface scraping and hand cut sections were prepared from infected portions of the leaf samples. Slides were prepared in cotton blue lactophenol mixture & were examined. Camera Lucida drawing were made and the morpho-taxonomic determination of taxa was done using available literature and with the help of resident's expertise

available. All the fungal taxa were identified using microscopic preparation. The fungal holotype specimen accession number has been allotted from TFRI, M.P.

OBJECTIVE OF THE STUDY

The Foliicolous Fungi causes 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.

RESULTS AND DISCUSSION

The authors surveyed periodically the diversified habitats of Katarniaghat Wildlife Sanctuary, Bahraich during April, 2020 to February, 2023 so as to collect and document Foliicolous fungi. The authors collected thirty-nine Angiospermic host plants representing thirty-nine genera and twenty families being parasitized by forty fungal species representing thirty-fungal genera.

The Host Plants and their Parasites are Listed below:

The literature Bilgrami *et al.*^{1,2,3}, 1979, 1981, 1991; Carmichael *et al.*⁴, 1980; Ellis⁵ 1971, 1976; Ellis and Ellis^{6,7}.

1. <i>Ficus benghalensis</i> Linn. (Moraceae)	<i>Cercosporafici</i> Heald & Wolf
2. <i>Dalbergia sissoo</i> Roxb. (Fabaceae)	<i>Thermomyces leguminosus</i> Tsiklinsky
3. <i>Clerodendrum inerme</i> (L.) Gaertn. (Verbenaceae)	<i>Phyllosticta inermis</i> Pandotra & Ganguly
4. <i>Clerodendrum infortunatum</i> Vent. (Verbenaceae)	<i>Cercospora volkemeriae</i> Speg.
5. <i>Rosa indica</i> Linn. (Rosaceae)	<i>Alternaria dianthi</i> Stev. & Hall.
6. <i>Eucalyptus globules</i> Labill. (Myrtaceae)	<i>Muragenella eucalypti</i> Sutton & Sharma
7. <i>Eucalyptus lanceolatus</i> Linn. (Myrtaceae)	<i>Pestalotiopsis glandicola</i> (Cast) Stey
8. <i>Pongamia pinnata</i> Vent. (Fabaceae)	<i>Corynespora pongamicola</i> Singh & Mall
9. <i>Canna indica</i> Linn. (Cannaceae)	<i>Cercospora cannae</i> Kar & Ray
10. <i>Borassus flabellifer</i> Linn. (Arecaceae)	<i>Phomaballiensis</i> Srivastava <i>Sphaerophragmium dalbergiae</i> Diet.
11. <i>Tenospora malabarica</i> Miers. (Menispermaceae)	<i>Atractillina parasitica</i> (Wint.) Deighton & Pirozynski
12. <i>Mangifera indica</i> Linn. (Anacardiaceae)	<i>Meliolafragilis</i> Hansf.

table cont....

13. <i>Clerodendrum viscosum</i> Linn. (Verbenaceae)	<i>Cercospora clerodendri</i> Miyake <i>Meliola clerodendricola</i> Henn.
14. <i>Mallotus philippensis</i> Muell. (Euphorbiaceae)	<i>Pestalotiopsis adusta</i> Ell. & Ev.
15. <i>Tectona grandis</i> Linn. (Verbenaceae)	<i>Corynespora cassiicola</i> (Berk & Curt) Wei.
16. <i>Tamarindus indica</i> Linn. (Fabaceae)	<i>Hypoxylonectriodes</i> Speg.
17. <i>Andrographis peniculata</i> (Brum. f.) Wall ex Nees (Acanthaceae)	<i>Cercospora andrographidis</i> Thirumalachar & Govindu
18. <i>Ocimum sanctum</i> Linn. (Lamiaceae)	<i>Cercospora osmicola</i> Petrak & Ciferri <i>Corynespora cassiicola</i> (Berk & Curt) Wei.
19. <i>Ficus religiosa</i> Linn. (Moraceae)	<i>Drechslera colocaceae</i> Tandon & Bhargava
20. <i>Saracaindica</i> Linn. (Fabaceae)	<i>Corynespora cassiicola</i> (Berk & Curt) Wei.
21. <i>Dalbergiasissoo</i> Roxb. (Fabaceae)	<i>Thaxteriaphaeo stroma</i> (Dur. & Mont.) Booth
22. <i>Agave tequilana</i> Linn. (Asparagaceae)	<i>Cercospora agavicola</i> Ayala
23. <i>Justiciabrandegeana</i> Linn. (Acanthaceae)	<i>Asteridiella justiciae</i> Hosag. & Rajkumar
24. <i>Vicia faba</i> Linn. (Fabaceae)	<i>Cercospora zonata</i> Wint.
25. <i>Murrayakoeningii</i> (L.) Sprengel (Rutaceae)	<i>Meliola eugeniae</i> Hanf.
26. <i>Agave tequilana</i> Linn. (Asparagaceae)	<i>Alternaria tenuis</i> Nees <i>Drechslera ravenelii</i> (Curt.) Subram. & Jain
27. <i>Panicum maximum</i> Linn. (Poaceae)	<i>Alternaria tenuis</i> Nees
28. <i>Caryotaurens</i> Linn. (Arecaceae)	<i>Ascochyta caryotina</i> Rao
29. <i>Caladium bicolor</i> (Aiton) Vent (Araceae)	<i>Alternaria alternata</i> (Fr.) Keissler
30. <i>Elettaria cardamomum</i> (L.) Maton (Zingiberaceae)	<i>Periconia byssoides</i> Pers. ex Meral <i>Corynespora cassicola</i> (Berk & Curt) Wei.
31. <i>Mirabilis jalapa</i> Linn. (Nyctaginaceae)	<i>Periconia byssoides</i> Pers. ex Meral
32. <i>Azadirachtaindica</i> Linn. (Meliceae)	<i>Pseudocercospora meliae</i> Rai & Kamal <i>Alternaria dianthi</i> Stev. & Hall.
33. <i>Jasminum sambac</i> (L.) Aiton (Oleaceae)	<i>Glomerella cingulata</i> (Stonem.) Spould & Shrenk. <i>Phomopsis pavgi</i> Shukla
34. <i>Ocimum sanctum</i> Linn. (Lamiaceae)	<i>Alternaria solani</i> Sorauer
35. <i>Crinum latifolium</i> Linn. (Amaryllidaceae)	<i>Myxocyclus polycistis</i> Ellis & Ellis
36. <i>Prosopis spicigera</i> Linn. (Mimosaceae)	<i>Morenoina clarkia</i> Ellis
37. <i>Cucurbita maxima</i> Duchense (Cucurbitaceae)	<i>Drechslera halodes</i> (Dreschs.) Subr. & Jain
38. <i>Croton roxburghii</i> Bat. (Euphorbiaceae)	<i>Alternaria crotonis</i> Kamal
39. <i>Ficusvirens</i> Linn. (Moraceae)	<i>Alternaria alternata</i> (Fr.) Keissler

1997; Hosagaudar *et al.*^{8,9}, 1996, 2006; Jamaluddin *et al.*¹⁰, 2004; Mukerji *et al.*¹⁹, 1974; Sarbhoy *et al.*^{22,23}, 1986, 1996; Singh and Mall²⁴, 2007; Verma *et al.*²⁷, 2008; Mall^{15,16,17}, 2011 a, b, Parmar *et al.*²⁰, 2012; Kumar and Mall¹²⁻¹⁴, 2012, 2013, 2015; Mall¹⁸, 2015 a, b, Rani *et al.*²¹, 2015; Tripathi *et al.*²⁶, 2016; Singh

*et al.*²⁵, 2020; Jain Mary Jose *et al.*¹¹, 2023 reveals that the fungal taxa mentioned above are hitherto unexplored from Katarniaghat Wildlife Sanctuary, Bahraich. Hence are the new records for Indian mycoflora from Katarniaghat Wildlife Sanctuary, Bahraich U.P.

CONCLUSION

Foliicolous fungi have attracted the attention of Mycologists since the very beginning of Mycology, due to distinct and sometimes eye catching symptoms produced on the leaf surfaces and also due to their pathological importance. However, taxonomic studies of foliicolous fungal forms in general have been generally considered as only of Academic interest, although there is growing acceptance now that taxonomic treatment of a fungal organism is the prerequisite to any studies concerning its biology. By this we can develop many fungicides and control these diseases and also save our environment.

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