Indian J.Sci.Res. 7(2): 233-235, 2017 Research Article ISSN: 0976-2876 (Print)
ISSN: 2250-0138(Online)

BIODIVERSITY OF FOLIICOLOUS FUNGI FROM BALRAMPUR UTTAR PRADESH INDIA

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ABSTRACT

Balrampur is a city and a municipal board in Balrampur district in the state of Uttar Pradesh, India. The foliicolous fungi were collected from Balrampur during June to November, 2016. The authors collected eight fungalgenera with eighteen species has been found on twenty different angiospermic host species which belong to twenty genera of thirteenfamilies.

KEYWORDS: Foliicolous Fungi, Balrampur

The leaves provide a very suitable habitat for the growth & development of fungal pathogen by providing ample surface area and nutrient supply.Such leaf inhabiting fungi are known as foliicolous 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. Balrampur is situated on the bank of river Rapti and is the district headquarters of Balrampur district. The creation of Balrampur District was done by G.D.No. 1428/1-5/97/172/85-R-5 Lucknow dated May 25, 1997 by the division of District Gonda. Siddharth Nagar, Shrawasti, Gonda District are situated in the east-west and south sides respectively and Nepal State are Situated in its northern side. One of the most popular Hindu worship place is situated in Tulsipur about 27 kilometers from the district headquarters. It is known as Devi Patan. The temple has the distinction of having included in 51 “Shaktipeethas” of Goddess Durga according to Hindu mythology. Balrampur city is in close vicinity of Shravasti where Lord Gautam Buddha is considered to have displayed his supernatural powers in the spiritual transformation of Angulimala, a famous dacoit who wore a necklace (mala) of fingers (anguli). The area of the district is 336917 Hec. In which the agriculture irrigated area is 221432 Hec. In the north of the district is situated the Shivalics ranges of the Himalyas which is called Tarai Region. Keeping it in view, the authors surveyed the locality of Balrampur during June to November, 2016.

MATERIALS AND METHODS

The climatic condition favors the growth of various types of phanerogamic vegetation along with seasonal and annual crops and other plants. With a view to study the foliicolous fungi in their natural habitat, frequent collection trips will be arranged. The following articles would be required for collecting foliicolous fungi-collection containers, hand lens, pruning scissor or secateurs, light plant pressures, blotting paper, paper envelop, field note book etc.

Laboratory processing and preliminary examination:

Preparations

- Photograph of both host and pathogen will be taken.
- Scrap mount: - If the organisms are superficially attached with the host tissue scrap mounts are made by a sharp razor or scalpel.
- Collodion Preparation: -A drop of collodion solution is applied to a colony on the leaf. The fungus gets embedded entirely and the dried film is peeled off readily from the host surface. Removal of colliding by acetone on a glass slide gives undisturbed preparation.
- Squash preparation: - The fruiting body is mounted, cleared and examined. Then the preparation is tapped vigorously and reheated. In this way the fruiting body is broken and content is released.
- Hand cut Section preparation: A hand cut section of infected tissue is made with sharp razor to study immersed or semi-immersed fungi. Section cutting for host parasite interaction / relation.

Staining and Mounting

For routine microscopic study in the lab temporary slides are made in different type of stains and mountants according to nature of fungal forms involved.

- Lacto- phenol cotton blue: - The lacto-phenol mounting fluid is used for mounting-colored fungi. For locating cytoplasm, septa, guttules other structures and hyaline forms 0.05-0.01% cotton blue is added.
- Poly- vinyl Alcohol: - Benson, 1969 is used in routine staining and mounting.
- Lacto-fuchsin: - By this cell walls are stained more clearly, rapidly and with more suitable color specially for photography [Carmichael., 1955].

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Slides prepared in mountants are sealed with wax or commercial good quality nail polish and are stored for further study.

Camera Lucida

Drawings will be made of the distinctly different taxa of generic or species rank so as to show the morpho taxonomic features of vital importance.

Morpho Taxonomic Treatment

Hitherto undescribed forms of foliar fungi will be executed with the help of present literature and expertise available at hand.

- New taxon will be described in English or Latin or both as and when required.
- Material (holotypes) will be deposited in recognized Herbaria for accession no.
- The Mycobank number of each new Taxa will be procured.

RESULTS AND DISCUSSION

The authors surveyed during June to November, 2016 in diversified habitats of Balrampur for the collection, study and documentation of the leaf spot micro fungiinfecting variety of the angiosperems has resulted in abundant gathering of the fungal specimens.The holotype of collections for allotment of accession number from HCIO is in process.Eight fungal genera with eighteen species have been found on twenty different angiospermic host species which belong to twenty genera of thirteen families.

The fungal species and their respective hosts are enumerated below:

S.N.	Name of the fungus	Name of the Host & family
1	*Alternaria alternata* (Fr) Keissler	*Calotropis procera* R.Br. Madar, Aak (Asclepiadaceae) *Codiaeium variegatum* (L) A Juss. *Croton* (Euphorbiceae) *Litchi chinensis*Sonn. Litchi (Sapindaceae)
2	*Alternaria dianthi*Stev& Hall	*Hibiscus mutabilis* Linn. Gurhal (Malvaceae)
3	*Alternaria dianthicola*Neergaard	*Caladium bicolor* (Aiton)Vent. (Araceae) *Calotropis procera* R.Br. Madar, Aak (Asclepiadaceae)
4	*Alterenaria*sp. Nees.	*Dracaena draco* (L.) L. (Asparagaceae)
5	*Aspergillus* sp. Mich.ex Fr.	*Crinum latifolium* Linn. Sudarshan (Amaryllidaceae)
6	*Cercosporaabelmoschi* Ell. &Ev.	*Abelmoschus esculentus* (L.) Moench Ladyfinger, Bhindi (Malvaceae)
7	*Cercosporaalstoniae* sp.nov.	*Alstoniascholaris* R.Br. Black board tree, *Saptaparni*, Milk Wood Pine (Apocynaceae)
8	*Cercosporacirtullina* (Cooke)	*Cucurbita maxima* Duchesne Kaddu, Pumpkin (Cucurbitaceae)
9	*Cercosporachevalleri* Sacc.	*Amorphophallus companulatus*DecneSooran, Jimikand (Araceae)
10	*Cercosporafici-religiosae* Chiddarwar	*Ficus religiosa* L. Peepal (Moraceae)
11	*Cercosporascipicola* (Fuckel) Van Zinderen Bakker.	*Cymbopogon*jwarancusa (Jones Schutt) Jwarancus (Poaceae)
12	*Cercospora* sp. Fres.	*Sida acuta* Burm. F. (Malvaceae)
13	*Cladosporium colocasiae* Sawada	*Colocasia esculenta* L. (Schott) Arvi (Araceae)
14	*Curvularia fallax* B. Oedijn	*Livistona chinensis* R.Br. (Arecaceae)
15	*Meliola mangiferae* Earle	*Mangifera indica* L. Aam (Anacardiaceae)
16	*Meliola* sp. Fr.	*Jasminum sambac* (L) Aition. Bella (Oleaceae)
17	*Periconia venezuelang* Ellis	*Dracaena reflexa* Lam. (Asparagaceae)
18	*Pseudocercosparacarissae* Singh & Mall.	*Carissa carandas* L. Karonda (Apocyanaceae)

The literature Bilgrami *et al.,* 1979, 1981, 1991; Ellis 1971, 1976; Jamaluddin *et al*., 2004; Sarbhoy *et al*., 1986, 1996; Singh and Mall, 2007 reveals that the fungal texa mentioned above are hitherto unexplored from Balrampur. Hence are the new records for Indian micoflora from Balrampur. Majority of the fungus has parasitized on one or two host species. The description shows that *A. alternata*is found only on four hosts.

ACKNOWLEDGEMENTS

The author is thankful to the Principal, M.L.K. (P.G.) College, Balrampur and Head of Department Botany for providing facilities.

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