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Aeromycological study of Chandragiri hill top, Chhattisgarh

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Abstract
Aeromycoflora of Chandragiri Hill Top was studied with the help of Petriplate method. Total 275 fungal colonies represented 28 fungal species were observed during the present investigation period. Environmental factor play an important role for the distribution of the fungal spores. Out of 28 fungal types, Maximum numbers of fungi (24) were isolated from anamorphic group, (03) from Ascomycotina and minimum (01) from Zygomycotina. The fungal species were *Cladosporium oxysporium, Fusarium* Mycelia sterilia, *Aspergillus, Penicillium, Curvularia, Cladosporium, Rhizopus ,Trichoderma* species were observed. It is found that maximum percentage contribution is observed for *Cladosporium oxysporium,* followed by *Aspergillus niger,* A. *Versicolor*, *A fumigates.* On the contrary, minimum percentage contribution is observed for *Aspergillus terreus.*

Keywords: Hilltop, fungal species, Chandragiri

INTRODUCTION

In the present era aerobiology is a vast branch of science which draws information from various disciplines life plant pathology, forestry, mycology, allergology, materology, Palynology, Palaebotany, veterinary Scince and biodeterioration. Several forms of microbes are found in the atmosphere, some of which may be pathogenic to host and some are allergic for human beings. The fungal spores are liberated in air from various sources in massive concentration and can remain airborne for a long time. Fungal spores are important source of various plants and animals diseases. Hence, its concentration should be known. The study of atmospheric constituents, living and non- living e.g. Airborne fungal spores are essential step for existence of life and over come on life threatening problems.

The bioparticulates implicated to cause allergic symptoms are pollen grains, fungal spores, insect debris, house dust mites, animal dander, chemicals and foods etc. Among all these agents, pollen grains and fungal spores are the most predominant allergens in the air. However, for the effective diagnosis and therapeutic management of these ailments, detailed information on the daily, seasonal and annual variations of various bioparticles is essential similarly aerobiological investigation.

Dongargarh is one of the prominent pilgrim places in Rajnandgaon District of Chhattisgarh. It is about 35 km from Rajnandgaon and 67 km from Durg. Adding to the religious value of Dongargarh, a famous Jain temple is also being constructed on a hill known as Chandragiri with the blessings of famous Jain saint Acharya Shri Vidyasagar Ji Maharaaj. The temple is specially recognized for an ancient statue of Teerthankara God Chandraprabhuji. This Chandragiri hill top is revered by lakhs of people of Chhattisgarh. The present paper deals with the aerobiological survey of Chandragiri hill top with environmental fctors.

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MATERRIALS AND METHODS

For study of aeromycoflora, ten sterilized Petri plates containing PDA media are exposed 5 to 10 min. in selected site. These exposed Petri plates brought in to the laboratory and incubated at 28±1^{0}C for incubation period. At the end of incubation period fungal colonies are counted, isolated and identified with the help of available literature and finally identified by the authentic authority:National Center of Fungal Taxonomy, Delhi.

ECOLOGICAL STUDIES

For ecological studies, at the end of the incubation period of the indoor and outdoor aeromycoflora, percentage frequency and percentage contribution of fungal flora is calculated (Sharma K. 2001) with the help of the following formula:

$$\text{Percentage frequency} = \frac{\text{Number of observation in which a species appeared}}{\text{Total no. of observation}} \times 100$$

$$\text{Percentage contribution} = \frac{\text{Total no. of colonies of a species in all observations taken togather}}{\text{Total no. of colonies}} \times 100$$

RESULT AND DISCUSSION

28 fungal floras were isolated from sampling site (Table 1). Fungal species recorded were representatives of the three major groups i.e.Zygomycotina, Ascomycotina and Anamorphic fungi. It was also observed that the anamorphic group was dominated fungal

group. The fungal species were *Cladosporium oxysporum, Fusarium, Aspergillus, Penicillium, Curvularia, Cladosporium, Rhizopus, Trichoderma* species were observed.

Table 1. Isolated fungal flora of Dongargarh

S. No.	Name of Fungi
	Zygomycotina
1	*Rhizopus* sp.
	Ascomycotina
1	*Chaetomium globosum*
2	*Emericella nidulans*
3	*Neosartorya fischeri*
	Anamorphic fungi
1	*Aspergillus niger*
2	*A.fumigatus*
3	*A.nidulans*
4	*A.terreus*
5	*A.flavus*
6	*A.flavipes*
7	*A.versicolor*
8	*A.oryzae*
9	*A.ochraceous*
10	*Acremonium scalrotium*
11	*Alternaria alternata*
12	*Botryodiplodia theobrome*
13	*Chaetomella raphigera*
14	*Cladosporium oxysporium*
15	*Curvularia lunata*
16	*Curvularia lunata var. aeria*
17	*Epicoccum purpurascence*
18	*Fusarium pallidoroseum*
19	*Myrothecium roridum*
20	*Nigrospora oryzae*
21	*Paecilomyces varioti*
22	*Penicillium chrysogenum*
23	*Phoma sp.*
24	*Trichoderma viride*

Total 275 fungal colonies represented 28 fungal species were observed during the present investigation period. Environmental factor play an important role for the distribution of the fungal spores. Out of 29 fungal types, Maximum numbers of fungi (24) were isolated from anamorphic group, (03) from Ascomycotina and minimum (01) from Zygomycotina. The fungal species were *Cladosporium oxysporium, Fusarium* Mycelia sterilia, *Aspergillus, Penicillium, Curvularia, Cladosporium, Rhizopus ,Trichoderma* species were observed. It is found that maximum percentage contribution is observed for *Cladosporium oxysporium,* followed by *Aspergillus niger,* A*. Versicolor*, *A fumigates.* On the contrary, minimum percentage contribution is observed for *Aspergillus terreus.* The results of present investigation revel with various work done by researchers. Anamorphic fungal groups were recorded as dominant fungal group similar results were also recorded by Sharma (2009) at Raipur. The results obtained during present investigation are similar with work done by Pandey *et al.* (2001).The isolated fungal species were found to be adapted to low temperature**.** Arora and Jain (2003) reported *Cladosporium*, *Aspergillus* and *Penicillium* as most frequent fungi from Bikaner. Lugauskas *et.al* (2003) reported *Aspergillus fumigates*, *A. niger*, *Cladosporium herbarum*, *C. cladosporioides*, *C. sphaerospermum*, *Penicillium funiculosum*, *Geotrichum candidum* as most frequent fungal species at the Urban areas in Lathuania. Kulshrestha and Chauhan (2000), Kunjam (2007) and Sharma (2007) also observed that the *Alternaria*, *Cladosporium* and *Aspergillus* are the most dominant aeromycoflora in the air of different fields. Majumdar & Ranjan(2007) isolated *Aspergillus, Cladosporium, Alternaria* in Kolkata. Roymon et.al. (2007) observed *Aspergillus Cladosporium* in comman public places. *Aspergillus sp*. was observed throughout the study period similar result was also reported by Tiwari *et al*. (2006). Anamorphic fungi recorded as the most contributed fungal group throughout the study period similar result also recorded by Tiwari *et al*. (2006).

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