

JP-Microbiology

The Estimation of Moulds Air Pollution in Tilda, Raipur

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Article Info	Summary
Article History Received : 11-12-2011 Revised : 29-03-2011 Accepted : 05-04-2011	Aerobiological studies have received much attention recently because of applications in the field of allergy, dispersal of pathogens and in allied aspects of microbiology. Aerobiology is a branch of biology that deals with the study of the air borne organisms. The present study investigated the isolation and identification of airborne fungi from Tilda, Raipur. Air samples were taken by exposing a Petri dish with Potato dextrose agar medium for 15 min and after incubation the number of growing colonies was counted. The sampling procedure for fungi was performed 50 times at the research sites weekly during July 2009 to June 2010. A total of 312 fungal colonies were counted on Petri plates over a one year period. In total, some 26 mould species belonging to 15 genera were isolated. <i>Alternaria alternata</i> , <i>Cladosporium</i> and <i>Aspergillus</i> species were the most abundant species in the study area (13.66, 5.80 and 5.50% of the total, respectively).
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Introduction

There are multi-thousands of recognized species of fungi. They are found in soil, in water, on animals, on vegetation, in humans, and in almost every part of the environment. Fungal spores are always present in the air, with rain and snow washing down most if not all spores from the air, and sunshine and wind cause an increase in the atmospheric distribution of such spores.

Fungi are eukaryotic, filamentous and mostly spore-bearing organisms, which exist as saprophytes or as parasites of animals and plants. The development of allergies to fungi follows the same biological phenomena as allergies to other environmental allergens. Fungal spores are ubiquitous and the number of fungal species present in the environment is estimated to be at least one million. Some genera of airborne fungal spores such as *Alternaria*, *Aspergillus* and *Cladosporium* are found throughout the world. The airborne spores of these fungi are generally considered to be important causes of both allergic rhinitis and allergic asthma. The present paper deals with the aerobiological survey of Tilda, Chhattisgarh with environmental factors.

Materials and Methods

Tilda, Chhattisgarh is famous for rice mills. Fungal flora of the air was determined from 4 different parts of the town for weekly in the during investigation period (July 2009 to June 2010).

Survey of Aeromycoflora

For study of aeromycoflora, ten sterilized Petri plates containing PDA media are exposed 5 to 10 min. in outdoor environment. These exposed Petri plates brought in to the laboratory and incubated at 28±1°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 Centre of Fungal Taxonomy, Delhi.

Ecological Studies

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

Result and Discussion

26 fungal floras were isolated from sampling site (Table 1). Fungal species recorded were representatives of the four major groups' i.e. Zygomycotina, Ascomycotina, Anamorphic fungi and Mycelia sterile. It was also observed that the anamorphic group was dominated fungal group. The fungal species were *Cladosporium oxysporum*, *Fusarium* Mycelia sterilia *Aspergillus*, *Penicillium*, *Curvularia*, *Cladosporium*, *Rhizopus*, *Trichoderma* species were observed. It is found that maximum percentage contribution is observed for *Cladosporium oxysporum* (26.90) *Aspergillus niger* (18.19), followed by *A fumigatus* (8.33). On the contrary, minimum percentage contribution (0.32) is observed for *Aspergillus terreus*. The results of present investigation reveal 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 common 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).

Table 1: Isolated fungal flora

S. No.	Name of Fungi	Percentage Contribution	Percentage Frequency
1	<i>Rhizopus sp.</i>	4.48%	75%
2	<i>Chaetomium globosum</i>	1.28%	16.66%
3	<i>Aspergillus niger</i>	18.91%	83.33%
4	<i>A. fumigatus</i>	8.33%	58.33%
5	<i>A. nidulans</i>	0.96%	16.66%
6	<i>A. terreus</i>	0.32%	8.33%
8	<i>A. flavus</i>	3.20%	50.00%
8	<i>A. oryzae</i>	0.96%	16.66%
9	<i>A. ochraceus</i>	0.96%	16.66%
10	<i>Acremonium scalotium</i>	0.64%	16.66%
11	<i>Alternaria alternata</i>	3.20%	41.66%
12	<i>Botryodiplodia theobromae</i>	2.24%	41.66%
14	<i>Cladosporium oxysporium</i>	26.90%	66.66%
15	<i>Curvularia lunata</i>	4.48%	25.00%
18	<i>Fusarium pallidoroseum</i>	4.48%	58.33%
20	<i>Nigrospora oryzae</i>	4.48%	41.66%
21	<i>Paecilomyces varioti</i>	0.96%	25.00%
22	<i>Penicillium chrysogenum</i>	3.20%	33.33%
23	<i>Phoma sp.</i>	2.54%	16.66%
24	<i>Trichoderma viride</i>	2.24%	41.66%
25	<i>Mycelia sterilia</i> (white)	4.16%	41.66%
26	<i>Mycelia sterilia</i> (Black)	0.96%	25.00%

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