

STUDIES OF AEROMYCOFLORA OF DISTRICT AND SESSION COURT OF DURG, CHHATTISGARH

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ABSTRACT

The objective of this study was to diversity of fungal flora in outdoor and indoor environment of court .Aspergillus sp. I and III were the two dominant fungal sp. in outdoor and indoor environment of court.The total fungi, count in indoor was less than that of outdoor. There was seasonal variation in the total count and diversity of the airborne fungi. While exploring the Aeromycoflora of District and Session court of Durg Dist, Chhattisgarh, 18 fungal floras were observed from court buildings, hall, bar room, library and 19 fungal floras were outside of court area. It was also observed that Curvularia Sp III, Torula Sp and Fusarium Sp were present only outside the court area.The investigation showed a close correlation in the occurrence of fungal flora of outdoor and indoor air .Ccmmonly occuring spores in both were Aspergillus sp.,Alternaria sp.,Cladosporium sp. Penicillium sp. Rhizopus sp. Mucor sp .Environmental factor play an important role for the distribution of the fungal spores.Out of 21 fungal types, Maximum numbers of fungi were isolated from anamorphic group, moderate from Ascomycotin and Minimum from Zygomycotina. Aspergillus sp.I (11.58) is highly contribution while Torula sp (0.85),Drechslera sp (0.42) were observed minimum percentage contribution.

Keywords: Session Court, fungal species

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INTRODUCTION

Seasonal variation affects aeromycoflora of the area. Fungal spores are not equally distributed in the environment their distribution varies according to geographical location and meteorological condition. Air-borne microbes are responsible for bio-deterioration of storage material, equipments, Library materials and other important materials. District and Session court of Durg Dist Chhattisgarh is situated near by national highway six at the centre of the town was studied. The climate of DURG district is moderate but on a warmer side in summer season. In summer the temperature goes to a maximum of 43-45 degree celcius. In winter the minimum temperature falls to 12 degree celcius. Average rain fall is around 1024 mm per year. The aim of this study is to observe dispersion, impacts and the role in bio-deterioration of fungal spores and also observed the aeromycoflora of different sites of courts parisar Durg. The related investigation of such type was that of Tiwari *et al* (2004), Bharadwaj *et al* (2011), Khan and Shrivastava(2011).

MATERIAL AND METHODS

Sampling of fungal spores was done with the help of gravity petriplates methods during March 2012 to June 2012 i.e., the summer season. The sampling was done fortnightly by exposing five petriplates containing PDA media. The petriplates were exposed inside and outside the court's area Durg. Then the petriplates were brought in to the laboratory and percentage frequency and percentage contribution of the total fungal flora were assessed. (Jadhav and Tiwari, 1994).

% Frequency = $(\text{No. of observations in which a species appeared} / \text{Total no. of observations}) \times 100$

% Contribution = $\text{Total No. of colonies of species in all the observations taken together} / \text{Total No. of colonies in all the species} \times 100$

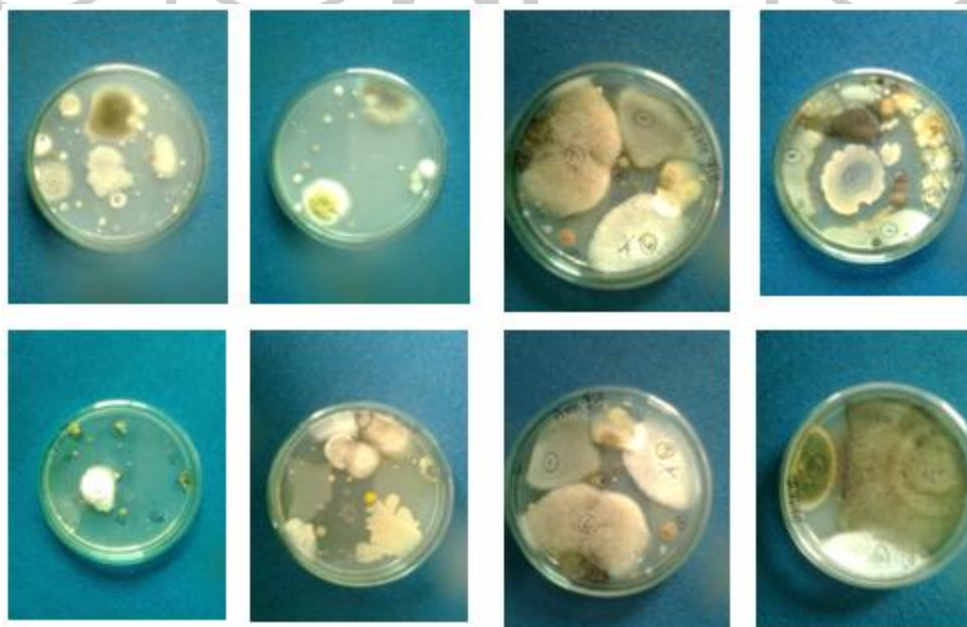


Fig1: Different species of aeromycoflora of Court parisar under compound microscope.

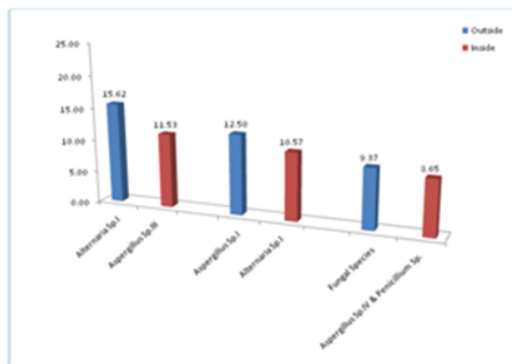


Fig : Percentage of fungal species

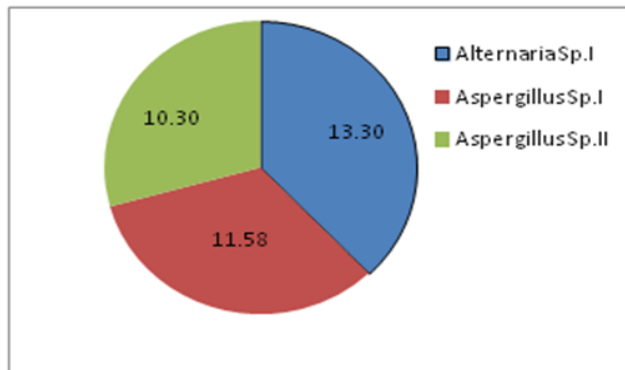


Fig : Total percentage contribution of fungal species & most dominant fungal species in both outside and inside of court

RESULT AND DISCUSSION

During the present investigation period total number of colonies i.e. 104 and 128 in the inside court and outside of the court were recorded from the court parser Durg respectively.

It is also observed that 18 fungal species were observed in the environment of inside of court while 19 fungal species were found in the air of the outside of court. It was observed that in the inside most dominated fungi was *Aspergillus* species III (11.53) followed by *Alternaria* species I *Aspergillus* species I (10.57) and then *Aspergillus* species IV (8.65) and *Penicillium* species I (8.65). In the air of outside of court most dominated fungal species was *Alternaria* species I (15.62), followed by *Aspergillus* species I (12.5) and *Aspergillus* species III (9.37). So common dominant species in outside and inside environment of court are *Alternaria* species I, *Aspergillus* species III and sp. I. Jadhav and Tiwari (1994) recorded the most dominant and frequent fungi were *Aspergillus* species in the environment of Rawan village at Baloda Bazar Tehsil of Raipur District in C.G. Rawan village (which is about 130 km. from Durg Dist.) has a tropical wet and dry climate, temperature remain moderate throughout the year. Tiwari *et al.* (2001) also reported the

Aspergillus species were most frequent in the cloth market of Raipur. Raha and Bhattacharya (1997) reported that *Cladosporium* species were dominated type fungal species. Sahu *et al.* (1994) also recorded *Aspergillus* and *Cladosporium* were dominated during studies in the all two sites that most dominated fungal spores were *Alternaria* species I (13.30), followed by *Aspergillus* species I (11.58) and *Aspergillus* species III.

During studied of some fungal spores were found only restricted environment like *Curvularia* species III, *Fusarium* species and *Torula* species was presented only outside of the court. On the contrary *Drechslera* species was present in the inside of the court and absent in the outside of the court.

Lugauskas *et al.*; (2003) reported *Aspergillus furrigates*; *A.riger*, *Cladosporium herbarum*, *C. cladosporioides*, *C. sphaerospermum*, *Penicillium funiculosum*, *Geotrichum candidum* are most frequent fungal species at the urban area in the Lathuania.

From the information of reference studies, it was found that *Aspergillus flavus*, *A.*

fumigatus , *Alternaria altermata*, *Cladosporium Sp* *Curvularia Sp* demonstrated greater than 60% positive reaction in skin prick tests in many experimental cases . There were many reports for the aflatoxic production in the *Aspergillus Spp*.

Many are Pathogenic to human beings causing allergic problems including asthma due to differential deposition in the respiratory system. It also causes the skin infection like dermatophytosis or ring worm infection or tinea is by far the most common diseases in human beings.

Sawane (2010) reported maximum air spora during rainy season followed by in summer in the indoor environment of Nagpur.

CONCLUSION

After the study of various sites of the same location it was observed that number and types of fungal spores vary insides and outsides and it was also observed that in the close environment number of fungal spores are less than open environment. Fungal segments are responsible for a variety of respiratory disease in humans, plants and Animals. Air quality of inside court area has become an important issue, which is partly related to fungal contamination. It was also observed that the fungal species in court exhibit seasonal fluctuations and supported by moderate temperature and high humidity.

The present aeromycological survey of court area shows that the airspora of indoor air has its origin in outdoor air. The outdoor and indoor airspora shows a close correlation qualitative and quantitative similarity has been found in fungal biodiversity in the outdoor and indoor survey *i.e. out of 19 fungal spore types recorded from outdoor air, 18 fungal spore types were recorded*

from indoor air. The predominance of fungal spores types, the dominance of Deuteromycotina followed by other fungal groups, concentrations of individual fungal spores types, dominant fungal spores types, Allergic and pathogenic. Spores types show close correlation in occurrence and concentration in the outdoor and indoor airspora.

Impact of airborne fungal spores including their release, dissemination, deposition and effect is of great significance to identify the health hazards and physiological disorders in living beings. Study of this aspect is highly interdisciplinary in nature and has tremendous scope to find the significance application in human health. Exposure to outdoor and indoor airborne inhalant mold allergens develops and respiratory symptoms and airways disease and allergies.

Thus clean environment is of prime importance to reduce the fungal spores load in the air bindings protein fractions of different fungal allergence will help in immunotherapeutic procedure. From the study we can investigate the effects of mycoflora and their allergic disease on human, inhabiting the court area. It is the significance of the studied.

Scope for Future work

1. Further studies on the occurrence of actinomycetes in indoor air could bring about better understanding of their possible role in occupational related health hazards.
2. Characterization of fungal allegiance responsible for the induction of seasonal allergic rhinitis and asthma and to identify the specific IgE/IgG.

Table 1: Of Inside Percentage Contribution of the Aeromycoflora In Inside And Outside of Court Parisar Durg

S.No	NAME OF FUNGAL SPECIES	STUDY SITES INSIDE		STUDY SITES OUTSIDE		TOTAL	
		COLONIES	% CONTRIBUTION	COLONIES	% CONTRIBUTION	COLONIES	% CONTRIBUTION
1	<i>Alternaria sp I</i>	11	10.57	20	15.62	31	13.30
2	<i>Alternaria sp II</i>	5	4.8	8	6.25	13	5.57
3	<i>Alternaria sp III</i>	3	2.88	5	3.9	8	3.43
4	<i>Aspergillus sp I</i>	11	10.57	16	12.5	27	11.58
5	<i>Aspergillus sp II</i>	7	6.73	9	7.03	16	6.86
6	<i>Aspergillus sp III</i>	12	11.53	12	9.37	24	10.30
7	<i>Aspergillus sp IV</i>	9	8.65	6	4.68	15	6.43
8	<i>Aspergillus sp V</i>	5	4.8	8	6.25	13	5.57
9	<i>Cladosporium sp</i>	3	2.88	4	3.12	7	3.00
10	<i>Curvularia sp I</i>	4	3.84	2	1.56	6	2.57
11	<i>Curvularia sp II</i>	7	6.73	10	7.81	17	7.29
12	<i>Curvularia sp III</i>	.	.	5	3.9	55	2.14
13	<i>Fusarium sp</i>	.	.	3	2.34	3	1.28
14	<i>Penicillium sp I</i>	9	8.65	6	4.68	15	6.43
15	<i>Penicillium sp II</i>	3	2.88	2	1.56	5	2.14
16	<i>Penicillium sp III</i>	1	0.96	5	3.9	6	2.57
17	<i>Rhizopus sp I</i>	8	7.69	3	2.34	11	4.72
18	<i>Mucor sp I</i>	4	3.84	2	1.56	6	2.57
19	<i>Torula sp</i>	.	.	2	1.56	2	0.85
20	<i>Unknown sp</i>	1	0.96	.	.	1	0.42
21	<i>Drechslera sp</i>	1	0.96	.	.	1	0.42

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