

Study of Aeromycoflora in the Indoor Environment of College Library

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Abstract - Air Sampling study was undertaken by adopting culture plate technique, method (CPT), aeromycoflora intramural sampling performed in the library of the Govt. College of Education Aurangabad, was investigated for a period from November 2020 to February 2021. Altogether thirteen types of fungal colonies were identified of which 61.53 % of the genera belonged to Deuteromycotina, 23.07%, to Ascomycotina 7.69% to Zygomycotina and 7.69% to unidentified. Among the thirteen genera identified 9 are reported to cause damage and deterioration of books and paper materials They are Mucor, Rhizopus, Aspergillus, Cladosporium, Curvularia, Alternaria, Penicillium, Fusarium and Epicoccum. Concentration of fungal colonies was maximum in March followed by April and minimum in January. The concentration of fungal colonies was maximum in December 50 followed by November -47, January-- 44 and February -43. The present work was carried out to identify and find out the component and contribution percentage of airborne fungi inside the college library and their relevance to book deterioration.

Keywords - Indoor, Aeromycoflora, Library

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INTRODUCTION

Few studies have focused on the aeromycoflora of the indoor environment, despite the fact that certain airborne microorganisms in the indoor atmosphere are responsible for the biodeterioration of library materials. The fungi found in the library's ancient books and paper materials and how they contribute to deterioration. The bio - deterioration includes decolorization of the books as well as mildewing of the substrate, which is the true manifestation of the interaction between organism and material, according to Tilak et al. (1989). Old books with bindery glues and wooden partitions also support the growth of fungi in the favorable condition.

The purpose of the present aero mycological investigation was to better understand the library's indoor aeromycoflora. Any learning institution's primary information and knowledge resource center is the library. According to (Sahare N.H. and Chinchkhede -2017), polysaccharides from green plants that yield fibers that are suitable for papermaking, glue, gum in bonded quantities, and occasionally leather can be utilized as a binding material can all contribute to bio degradation in

the materials held in libraries. Students, teachers, and other stakeholders use these paper resources in the form of books, newspapers, and journals. The majority of their time was spent handling books by library workers. The primary challenge facing librarians is to preserve these materials in meticulous and protective ways for many years.

Recently, it was thought that artificial climate control was the only way that would maintain the right temperature and humidity conditions. Natural ventilation often proves to be the most suitable choice, especially in libraries where maintaining an air conditioning system would be challenging and it would operate intermittently. Good air circulation, however, may allow more effective moisture exchange between objects and the air (Saoji A.A. and Giri S.K. 1997). According to research on Aeromycoflora in libraries undertaken by J. S. Ambhore and V. P. Mali in 2007, in addition to damaging the books, it may also induce allergy disorders in library visitors as well as staff members who spend the majority of their time therein. (Bhagat G.S., Ambhore J.S., Mali V.P., Ambhore J.S., and B. N. Pande 2015)

The resources available in the library establish a perfect environment for the development and sporulation of fungi, and handling moldy books and papers can lead to respiratory and cardiac issues as well as allergic reactions in both staff members and visitors. The aeromycoflora of the Library's indoor environment have been identified during the current research effort. This library's aeromycoflora was reviewed. The primary objective of this study was to identify the aeromycoflora, their concentration, and diversity in the working library's indoor environment.

According to V. J. Ambhore et.al.(2020.) (Kalbende., Dalal L., Bhowal (2012). investigation, the library's indoor environment contained isolated aeromycoflora, some of which were found to be responsible for the deterioration of books preserved there and for contributing to respiratory disorders, allergic diseases, and asthma in readers and visitors. The prevalence of aeromycoflora indoors may be a result of conducive environments (such as cluttered bookcases and old newspapers) for fungal development.

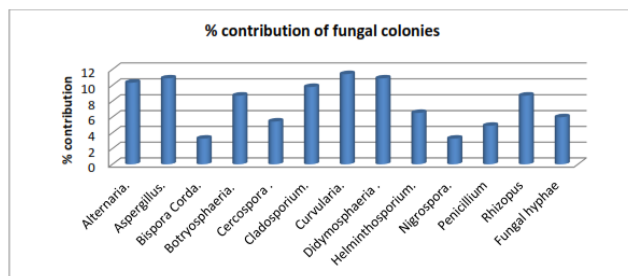
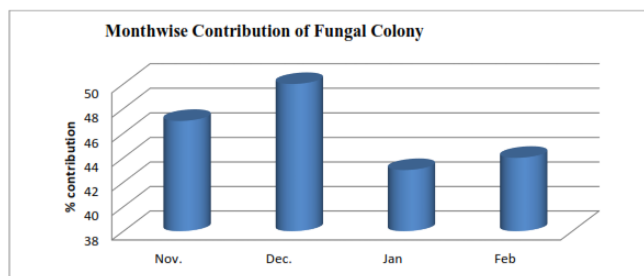
RESULT AND DISCUSSION

The result of aeromycological survey conducted in the Govt. B.Ed. College library, shows that library is full with aeromycoflora in indoor environment. A total of 13 types of fungal colonies were identified from indoor environment of the library, with single sterile hyphae and rest 12 spore types (table 1).According to their occurrence in the exposed petriplate samples, the highest population in terms of percentage occurrence were of *Aspergillus niger* -10.86and *Alternaria alternaria* and *Rhizopus* sp.(outdoor 16%) and *Aspergillus flavus* *Candida* sp. and *Rhizopus* sp (indoor-14.28 % and outdoor-66%).

From Govt. B.Ed. College library total 12 fungi were isolated out of which 11 were spore types and one was sterile hyphae. Highest population among the exposed petriplate samples were of *Curvularia*-11.4%, *Aspergillus*-10.86%, *Didymosphaeria*-10.86%, *Alternaria*.-10.32%, *Cladosporium*.- 9.78%, *Botryosphaeria*.- 8.69%,*Rhizopus*-8.69%,*Helminthosporium*- 6.52%, *Cercospora* - 5.43%. *Penicillium* 4.89%, *Bispora*-3.26%, *Nigrospora*-3.26%. Among all the fungal spore types. The taxonomic group Deuteromycotina showed dominance in the total spore contribution. Vacuum cleaners and antimicrobial properties. Materials needed to be used. This will help in reducing the level of dust and aero spores.

Table 1: Total count and percentage contribution of fungal colony from indoor environment

Sr.No	Fungal Spore.	Nov.	Dec	Jan	Feb.	Total	% contribution
1	<i>Alternaria</i> .	5	6	4	4	19	10.32
2	<i>Aspergillus</i> .	4	5	6	5	20	10.86
3	<i>Bispora</i> .	1	3	-	2	06	3.26
4	<i>Botryosphaeria</i> .	3	4	4	5	16	8.69
5	<i>Cercospora</i> .	4	3	--	3	10	5.43
6	<i>Cladosporium</i> .	5	7	2	4	18	9.78
7	<i>Curvularia</i> .	4	6	6	5	21	11.4
8	<i>Didymosphaeria</i> .	6	4	6	4	20	10.86
9	<i>Helminthosporium</i> .	3	3	4	2	12	6.52
10	<i>Nigrospora</i> .	2	-	3	1	6	3.26
11	<i>Penicillium</i>	2	2	1	4	9	4.89
12	<i>Rhizopus</i>	4	5	4	3	16	8.69
13	Fungal hyphae	4	2	3	2	11	5.97
Total		47	50	43	44	184	99.93



CONCLUSION

Resulting from this investigation aeromycoflora indoors from libraries has been linked to allergy and airborne disorders, as well as the destruction of both cellulosic and non-cellulosic materials found there. The current study shows that the library's indoor atmosphere contains a variety of mycoflora. Further research based on atmospheric parameters may yield information that will help us better comprehend the relationship between abiotic and biotic processes. Concern has also been raised about the impact of airborne fungus spores on human health, which might be investigated using the preliminary information in this research paper. Students and others who are exposed to indoor airborne inhalant mold allergens may experience respiratory symptoms, airway diseases, and allergies.

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