RESEARCH ARTICLE

COMPARATIVE STUDY OF AEROMYCOFLORA OF TWO PUBLIC LIBRARIES

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ABSTRACT

A systematic aero mycological survey was conducted in Mumbai Marathi Granthalay at Mulund and G. K. Khandekar Granthalay Mulund, Suburb of Mumbai. Both the libraries are associated with public reading facilities; hence many readers visit to these libraries. This investigation was carried out for a period of one year from June 2011 to May 2012. For trapping the fungal spores petri plate method was adopted. The result showed incidence of verities of mycoflora in the environments of both the libraries. Total fifteen fungal spore types have been identified during the period of investigation.

In Mumbai Marathi Library twelve fungal genera were identified. The most dominant genera were *Aspergillus* (25.38%), followed by *Cladosporium* (14.59%), *Penicillium* (13.73%), *Curvularia* (8.12%), and others.

In Khandekar library, total ten fungal genera were isolated. The most dominant genera were *Aspergillus* (22.51%), followed by *Cladosporium* (15.72%), *Penicillium* (12.34%), *Alternaria* (16.35%), etc. In both the cases September was the month of highest incidence. The month of September was dominated by *Cladosporium* spp in both the library. It was observed that both the library were at ground floor and directly exposure to the atmosphere. It is but natural, that the fungal spores get easy to enter in the premises of library. Mumbai Marathi Library having more humidity hence fungal spores were dominating and deterioting the books heavily than other library. Pre-monsoon is the least infested period in both the libraries.

Keywords : Library, Aeromycoflora, Mulund

INTRODUCTION

Now-a-days, public related libraries are the direct exposure to the atmosphere hence huge number of mycoflora easily gets way into it affecting the health of workers as well as detoriation of books. In both the libraries, there is a 5-10% scrap of books every year due to infestation of fungal flora.

During monsoon, humid condition of indoor is more, which enhance the luxurious growth of biofouling fungi. Mumbai Marathi Library is more exposed to fungal spores because of leakages in the building than G. K. Library. Both the Libraries are on ground floor due to which the mycoflora easily introduced in the libraries. To stop this major loss of books, the college libraries are setup under air-conditioned. In Air-conditioned environment it is notified that the loss of books is least compare to open Library. In public libraries, low cost books are affected heavily to mycofloral infestation.

The study of airborne fungal flora is known as aeromycology. The intramural study of fungal spore is of immense importance due to its role in the field of human allergy, plant diseases and also due to microbial deterioration of the materials like library books, textiles, printed surfaces etc. such type of work is carried out by Agarwal, (1974), Tilak (1976).

Cellulose, a main constituent of paper is susceptible to degradation by many species of fungi

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and bacteria. Other components of paper are glue or casein also serves as substrate for fungi. Under favourable conditions, the paper may be stained or discolored by the product of microbial metabolism and ultimately complete destruction of paper. Our Indian, books are more susceptible for such activities hence every year major loss is there. The study of airborne fungal spores inside the libraries have been carried out in many parts of our countries, Vinod (2012), in Mukhergee (1973), Tilak (1984) etc.

The atmosphere of library is very suitable for easy growth of fungi due to low light, intensity, humidity and lack of cleanliness. All such factors, prove helpful in the qualitative and quantitative increase of fungal flora inside the library Pestiside, cleanliness and fully air-condition could stop the loss of books by deterioration.

MATERIAL AND METHODS

The present investigation was carried out for one year from June 2011 to May 2012. Air sampling was carried out by petriplate method using Rose-Bongol Agar media (RBS). The plates were exposed for 15 minutes at a place and 5 feet above the ground, thrice in a week. Identification was mainly based on their morphological character.

RESULTS & DISCUSSION:

In the present study altogether fifteen fungal types of colonies have been noticed (Table.1) of the maximum fungal spores were observed in M.M. Library. The common dominant fungal spores were *Aspergillus, Cladosporium, Penicillium, Altertnaria, Rhizopus,* in both the libraries during the survey period. July-August were the peak months and highest incidence of fungal flora for both the library.

In M.M. Library, a total twelve fungal types have been recorded during the study period. The dominant fungal spores were *Aspergillus Spp (*25.38%) followed by speaks of *Cladosporium Spp* (14.59%), *Penicillium Spp(*13.73%), sterile hypae (6.02%) unidentified (6.03%) and others ranged between 2-3% only.

Table 1: Percentage composition of fungal colonies in the libraries for the period of one year.

Sr. No.	Fungal type	M.M. Library %	G.K. Library %
1.	*Aspergillus Spp*	25.38	22.51
2.	*Alternaria Spp*	--	16.35
3.	*Penicillium Spp*	13.73	12.34
4.	*Cladosporium Spp*	14.59	15.72
5.	*Rhizopus Spp*	8.13	5.42
6.	*Bipolaris Spp*	3.18	--
7.	*Cunninghamella Spp*	2.17	--
8.	*Curvularia Spp*	8.12	6.47
9	*Epicoccum Spp*	2.15	1.21
10.	*Fusarium Spp*	2.11	--
11.	*Trichoderma Spp*	3.14	2.29
12.	*Tricothesium Spp*	2.16	1.51
13.	*Apophysomysis Spp*	3.09	3.01
14.	Sterile hyphae Spp	6.02	8.12
15.	Unidentified Spp	6.03	5.11

Comments: requires thorough editing by English faculty, then accepted for publication.

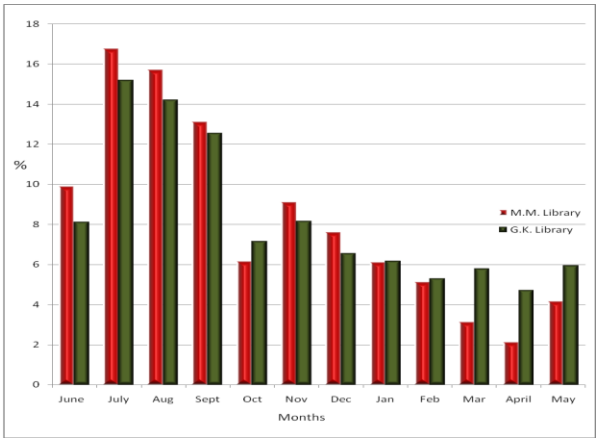

Fig.1: Mean month wise percentage contribution of fungal colonies in both libraries.

In G.K. Library total ten fungal colonies types have been recorded during investigation time. In this also the species of *Aspergillus (*22.51%) *Alternaria Spp* (16.35%), *Cladosporium Spp* (15.72%), *Curvularia Spp (*6.47%) sterile hypae (8.12%) unidentified (5.11%) and remaining ranged between 1-5% only.

The result was also tested bio-statistically using the null hypothesis (ho), t-test has been used between the data of two libraries. It has been found that the calculated value is less than table value.

CONCLUSION:

In the present investigation, noticed that the fungal growth were maximum in open library than closed. Leakages make the walls in wet condition accelerating easy sedimentation of fungal spores. The books should be also kept in closed cupboards. It is also noticed that air-conditioned library unfavore for settlement of mycoflora. Allergenic *Aspergillus,* cladosporium, *Penicillium* are well known (Tilak 1976) so in the light of collected data cleanliness and repair is suggested to minimizes the harmful effect of fungi for the heath of library staff and readers.

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