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STUDIES OF AEROMYCOFLORA IN LIBRARY ENVIRONMENT OF GOVT. E. RAGHVENDRA RAO P.G. SCIENCE COLLEGE, BILASPUR (C.G.)

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ABSTRACT

Fungi constitute a major part of air flora along with bacteria, algal spores, filaments, pollen grain etc. The air borne fungal spores cause serious health problem like allergy, asthma, skin diseases etc. Large number of fungal spores presents indoor environments like houses, hospitals, colleges, schools as well as public places like library environment because they growing on books and causes air pollution and health problems. The present investigation describes a qualitative and qualitative assessment in indoor environment of library of Govt. E. Raghvendra Rao P.G. Science College, Bilaspur (C.G.). A total of 25 types of fungal colonies were identified from pre- exposed Petri plates. Aspergillus niger, Aspergillus flavus, Mucor sps., Cladosporium cladospriodes, Alternaria alternata, Fusarium oxysporum, Penicillium crysogenum, Rhizopus nigricans were dominant fungal species isolated from old book section and Aspergillus niger, Alternaria alternata, Aspergillus flavus, Mucor sps., cladosporium herbarium. Fusarium oxysporum, Cladosporium cladospuriodes and Ttrichoderma viridae were dominant fungal species isolated from new book section.

Keywords: *Air borne fungal spores, Library.*

I. INTRODUCTION

Micro flora of air is responsible for several allergic disorders. A range of air borne particles like pollen grain, fungal spores, mites, algal filaments, viruses, bacteria, protozoa etc. present in the atmosphere, they bring about such allergic disorders as bronchial asthma, allergic rhinitis and a tropic dermatitis. Although most fungi have periods of the year when their spores are more prevalent than others, some can be found virtually all the year round. Fungal spores are more commonly present crop fields, outdoor and indoor environment of hospitals, houses, decaying vegetable matter, organic debris, dustbins, biological laboratory, library etc. Several fungi degrade the cellulose, the major constituent of paper is the cellulose, and therefore cellulose-degrading fungal colonies degrade the papers. Libraries are one such environment were working staff, students and other public spend their time to study books, journals, newspapers etc., so they were contact with mycoflora by these papers and books and also the surrounding atmosphere.

II. MATERIAL AND METHODS

In the present investigation the qualitative and quantitative assessment of aeromycoflora in library environment, Govt. E. Raghvendra Rao P.G. Science College, Bilaspur (CG.) was carried out by using Petri plate gravitation method containing Potato Dextrose Agar (PDA) media. Culture plates were exposed at 11 meters height. This exposure was done 15 days interval from July 2017 to January 2018. The experiment was done old book section and new book section.

The Petri plates were incubated at 28°c to ± 2°c for 3-4 days. Then the colonies were transferred on slants of PDA medium. The slides were prepared using cotton blue and lacto phenol. The fungi were identified using literature like Subramanian (1971) and Barnett et. al. (1972)

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III. RESULT AND DISCUSSION

In the present investigation a total of 25 fungal species were isolated (Table - 1), from these in old book section maximum number of colony reported. In this section highest numbers of colony is Aspergillus niger and lowest number of colony is Drechslera sps and pink colour sterile mycelium more % of fungi like Aspergiullus niger (9.49%),Aaspergillus flavus (8.23%), Cladosporium cladospriodes (6.96%), Alternaria alternata (6.33%), Fusarium oxysporium (5.70%), Penicillium chrysogenum (5.06%), Rhizopus nigricans (5.06%), Cladosporium herbarum (4.43%), Fusarium solali (4.43%), followed by Aspergillus nidulans (3.80%), Cladosporium sps (3.80%),Alternaria sps. (3.16%), Helminthosporium sps. (3.16%), Chaetomium sps. (3.16%), Trichoderma viridae (3.16%), brown colours mycelium (2.53%), Biospora sps. (1.90%), Cunninghamella sps. (1.90%), Curvularia lunata (1.90%), Humicola sps. (1.90%), Penicillium sps. (1.90%), white sterile mycelium (1.90%), Drechslera sps. (1.27%) and pink sterile mycelium (1.27%).

Similarly in new book section highest number of colony is Aspergillus niger and lowest number of colonies are Curvularia lunata and brown sterile mycelium and dominant sps. of fungi like Aspergillus niger (10.45%),Alternaria alternata (8.96%),Aaspergillus flavus (8.96%), Cladosporium herbarum (8.96%), Mucor sps. (8.96%), Fusarium oxysporum (7.46%), Cladosporium cladosporiodes (7.46%),Rhizopus nigricans (7.46%), Fusarium solani (5.97%), Penicillium chrysogenum (5.97%), Cladosporium sps (4.48%) followed by Helminthosporium sps (2.98%), Humicola sps. (2.98%),Ttridoderma viridae (2.98%), white sterile mycelium (2.98%), Curvularia lunata (1.49%), brown sterile mycelium (1.49%).

These fungi are well known for their cellulose bio deteriorative activities and causing many hypersensitive allergic reactions in human begins. The people suffer from allergic problems, bronchial asthma and various respiratory problems because handling stocked old books and new books, papers and journals for a long time, so clinical investigation of the library staff is essential. It is necessary to more attention towards the maintenance of libraries by taking some significant steps like exhaust fans, fungicides, and use of vacuum cleaner, proper sunlight and aeration.

The old book sections are poorly ventilated and lack sufficient sunlight. So such conditions more % of fungal colonies was counted. The damage papers are black or brown pigments and yellowing of pages, so it is also necessary to maintain these old books and old journals also.

Table – 1 Fungal colony isolated by Petri plate gravitation method from old book sections and new book sections

Fungal Types	Old Books Sections		New Book Section	
	No of fungal colony	% of fungal sps.	No of fungal colony	% of fungal sps.
Alternaria alternata	10	6.33%	6	8.96%
Alternaria sps.	5	3.16%	-	-
Aspergillus niger	15	9.49%	7	10.45%
Aspergillus flavus	13	8.23%	6	8.96%
Aspergillus nidulans	6	3.80%	-	-
Biospora sps	3	1.90%	-	-
Chaetomium sps	5	3.16%	-	-
Cladosporium cladospriodes	11	6.96%	5	7.46%
Cladosporium herbarum	7	4.43%	6	8.96%
Cladosporium sps	6	3.80%	3	4.48%

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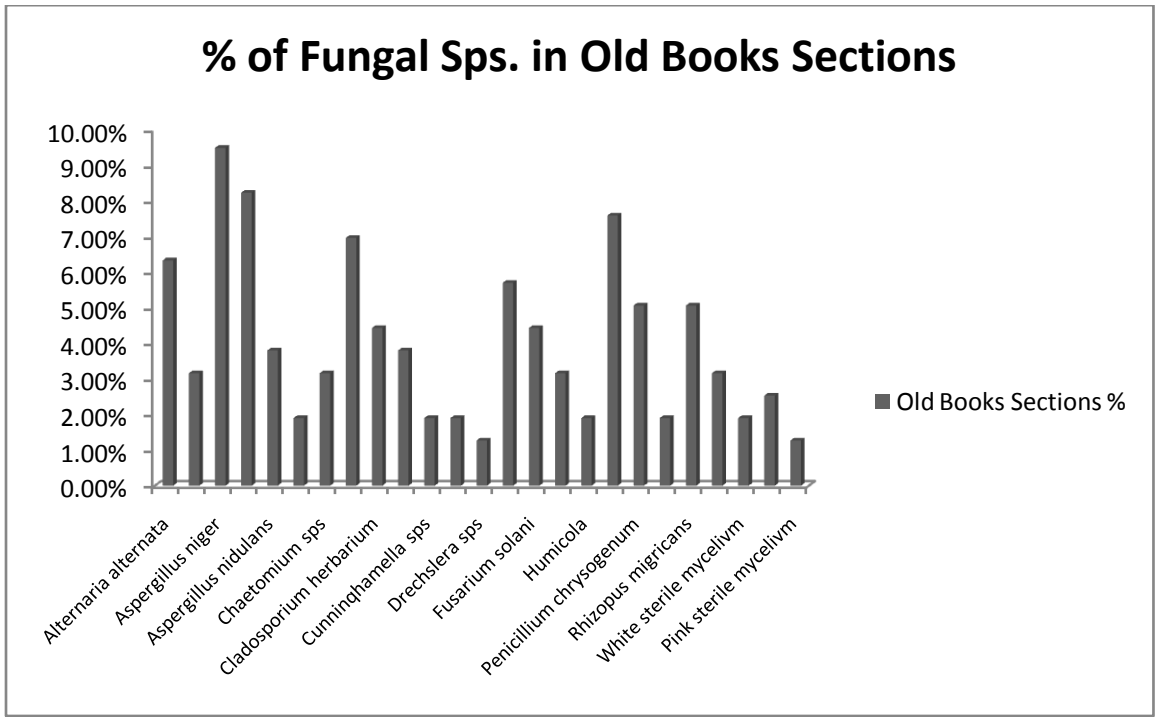
Cunninqhamella sps	3	1.90%	-	-
Curvularia lunata	3	1.90%	1	1.49%
Drechslera sps	2	1.27%	-	-
Fusarium oxysporum	9	5.70%	5	7.46%
Fusarium solani	7	4.43%	4	5.97%
Helminthosporium sps.	5	3.16%	2	2.98%
Humicola sps.	3	1.9%	2	2.98%
Mucor sps	12	7.59%	6	8.96%
Penicillium chrysogenum	8	5.06%	4	5.97%
Penicillum sps	3	1.9%	-	-
Rhizopus nigricans	8	5.06%	5	7.46%
Trichoderma viridae	5	3.16%	2	2.98%
White sterile mycelium	3	1.90%	2	2.98%
Brown sterile mycelium	4	2.53%	1	1.49%
Pink sterile mycelium	2	1.27%	-	-
Total number of colonies	158		67	



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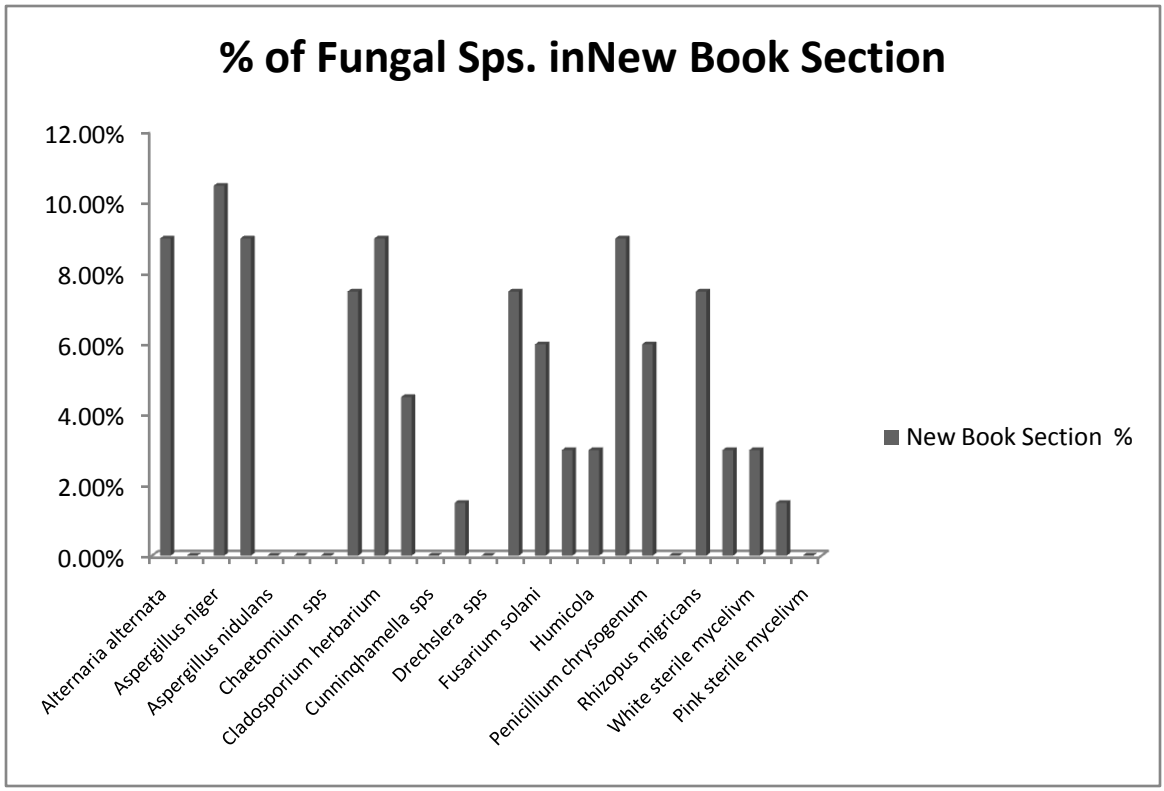

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