

# PRELIMINARY INVESTIGATION ON AEROMYCOFLORA OF SOME LIBRARIES IN DAVANGERE

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## Introduction

Aerobiology is defined as a discipline of investigation of aerial transport of biological materials (Agashe *et al.* 2002). Pollen grains and fungal spores and some bacteria are among the most abundant airborne bioparticles. This increased awareness has made the study of microorganisms present in the air important and hence the study of aerobiology has acquired a prominent place in various fields of environmental science.

Fungal spores are an important component of the bioaerosol. There are about 80,000 species (Hawksworth *et al.* 1983) most of which are cosmopolitan in origin. The biological features of fungi i.e. their ease of dispersion makes fungi one of the chief agents of contamination of any type of substrate including cellulose materials in the books of library. Many are pathogenic to human beings causing allergic problems including asthma due to differential deposition in the respiratory system and also these fungi along with bacteria are responsible for the deterioration of the materials in the library.

## Objectives

1. Identification of predominant fungal spores present in the library.
2. Study of qualitative and quantitative (wherever possible) variations of the fungal spores.
3. Study of these fungal spores in relation to their allergenicity on library users.

## Methodology

Aeromycoflora studies were carried out between February to May at two libraries in Davangere namely, Bapuji Institute of Engineering and Technology library and second the Central Library of Davangere. Leitz microscope with camera attachment was used for scanning of fungal spores and photomicrographs were taken using CCD camera attachment. The culture plates were exposed for 2-3 hours at different places in the library. After the exposures, plates were incubated at 25<sup>0</sup> C for 3-5 days and kept for colony growth. After few days colonies were observed for number and distribution of fungal colonies on agar plates and recorded in the note book for total number of

colonies, species present. For species identification specimen microscopic slides were prepared using glycerin jelly as mounting media and lactophenol cotton blue stains.

### **Results and conclusions**

The results of the 3 months data on aeromycoflora survey showed that the indoor library atmosphere was never free of fungal spores. A total of 10 types of fungal spores were identified up to generic level and rest all spore types which are not identified were grouped under unidentified spore types. Air borne fungal spores recorded were representatives of the three major groups i.e. Ascomycotina, Zygomycotina and Deuteromycotina.

On the basis of this study the following conclusions were made.

1. The indoor environment of Bapuji Institute of Engineering and Technology library and Central library of Davangere are rich in fungal spores.
2. The morphological characters of predominant fungal spores have been studied and incorporated.
3. Among fungal spores the group Deuteromycotina formed a dominant part of the air spora. The dominant airborne fungal spore types were *Aspergillus*, *Penicillium* which accounted for 40-60% of the total fungal catch followed by *Mucor* and *Syncephalastrum* species.
4. Respiratory/allergic disorders have been correlated with the incidence of potential allergy causing fungal organisms in the library environment as explained by other workers.

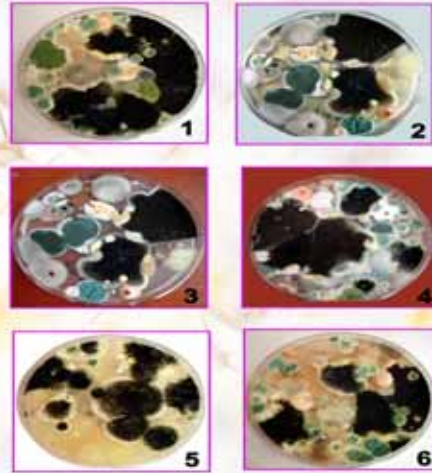
### **Scope for Future work**

- Further studies on the occurrence of actinomycetes in indoor air could bring about better understanding of their possible role in occupational related health hazards.
- Characterization of fungal allergens responsible for the induction of seasonal allergic rhinitis and asthma and to identify the specific IgE/ IgG binding protein fractions of different fungal allergens will help in immunotherapeutic procedures.

### SAMPLING SITES



### EXPOSED CULTURE PLATES SHOWING FUNGAL GROWTH



### PLATE-1



### PLATE-2

