

MONITORING AIRBORNE FUNGAL MYCOFLORA IN COLLEGE LABORATORY

¹Sangole AA, ²Sangole MT

¹Department of Botany, Shri. R.L.T. College Science, Akola,

²Department of Chemistry, Shri Shivaji Art, Commerce and Science College, Akola,
Maharashtra India

anjali5sangole@rediffmail.com

mamtasangole@rediffmail.com

ABSTRACT

Air is important part of environment. Various airborne particles are present in the environment. Air pollution is the most serious problem to human health. Aerobiological studies are important for providing qualitative and quantitative information about airborne fungal organism. The present study was conducted to analyse the mycoflora from Botany laboratory were investigated between June 2015 to May 2016. In this study, 15 species was isolated and identified from the selected laboratory. The Petri-plate expose method using PDA (Potato dextrose agar) CZA (CzapekDox Agar) media in petri-plate. 15 species were identified rest which are not identified were kept as unidentified fungi. *Aspergillusniger* (18.33%) and *Aspergillusfumigatus* (20.45%) These are the dominant species than rest of the fungi.

Keywords: PDA, CZA, Petriplate, Mycoflora, *Aspergillusniger*

INTRODUCTION

The term aerobiology was first coined by the American plant pathologist "Fred cambellmeier" in 1930. So the term aerobiology came in use since 1930 to denote the airborne fungal spores, pollen grains and other airborne microorganisms. The outdoor environment is never completely free from the incidence of microbial propagules, which are collectively called as "air spora". The term "air spora" is suggested by Gregory in 1952. Airborne fungi, the most important group in the air, have been well known as the cause of contamination problems in the environment and in human activities. Normally, fungi as saprophytes, play a significant role as primary decomposers of substrates in various ecosystems (Nazim et al. 2012). Air is a natural medium for certain very minute particle including many mycoflora. Fungal spores constitute a significant fraction of airborne bioparticles (Meraj et al 2000, Durugbo et al 2013). Investigation on aeromycoflora in libraries was carried out in past by many workers (Ghosh et al 2014, Sinha et al 1998). Airborne mycoflora are largely determined by topography, meteorological parameters, vegetation and biotic factors including human activities (Lacey 1981). However, airborne fungi are involved in the respiratory system infections. For example, polypoid chronic rhinosinusitis has been caused by *Bipolarisspicifera* (Buzina et al. 2003), while *Aspergillusfumigatus* is associated with respiratory symptoms in patients with asthma (Fairs et al. 2013). Accordingly, the aeroallergen from

Alternaria sp. is one of main factors causing allergy in human respiration (Cordon & Millington 2001). Further, some groups of airborne fungi can grow inside office furniture and lead to exposure to volatile organic compounds (VOCs) or occupation-associated cancer epidemics due to aflatoxicosis (Gedikoglu et al. 2012). Aero mycology deals with the study of air borne fungi and their spores. Fungi have both beneficial and nuisance effect on our lives. They destroy our food, Fabrics, leather and other articles. They are also responsible for causing large number of diseases in the plants like Rust, Smut Blight, and Mosaic etc.

MATERIAL AND METHODS

The present study was conducted in college laboratories by petri plate expose method. The petri plate expose method is uses for isolation of fungal species by using PDA (Potato dextrose agar) and CZA (CzapekDox Agar) media at monthly intervals with petri-plate from June 2015 to May 2016. Petri-plate were expose in 10 minute of Botany laboratory and incubate at $30 \pm 10C$. for 4-5 days. For the species identification, specimen microscopic slide were prepared with the help of glycerine jelly as mounting media and lactophenol cotton blue as the standard stain.

RESULT AND DISCUSSION

Present investigation was undertaken to analysed , a total 15 species was isolated and identified the identified species were *Aspergillusniger*, *A. fumigatus*, *A. flavus*, *A. nidulans*..

Alternaria alternata, *Alternaria tenuissima*, *Curvularia lunata*, *Penicillium citrinum*, *Fusarium* spp., *Rhizopus* spp., *Mucor* spp., *Chaetomium* spp., *Helminthosporium* spp., *Geotrichum* spp., *Drechslera* spp. According to the expose petri-plate samples the total percentage of samples were recorded in Table 1. *Aspergillus niger* (21.44%), *A. fumigatus* (21.70%) and *Curvularia lunata*, (17.57%) were of high occurrence. *A. flavus* (5.42%), *Penicillium citrinum* (7.23%), *Alternaria alternata* (5.16%), *Alternaria tenuissima* (5.42%) and *Fusarium* spp. (4.13%) were of moderate occurrence and remaining seven are low occurrence. *A. nidulans* (1.29%), *Rhizopus* spp. (1.80%), *Mucor* spp. (1.29%), *Chaetomium* spp. (1.55%), *Helminthosporium* spp. (1.03%), *Geotrichum* spp. (1.29%) and *Drechslera* spp. (0.77%). *Aspergillus niger* and *A. fumigatus* are highest dominating airspora in selected laboratory.

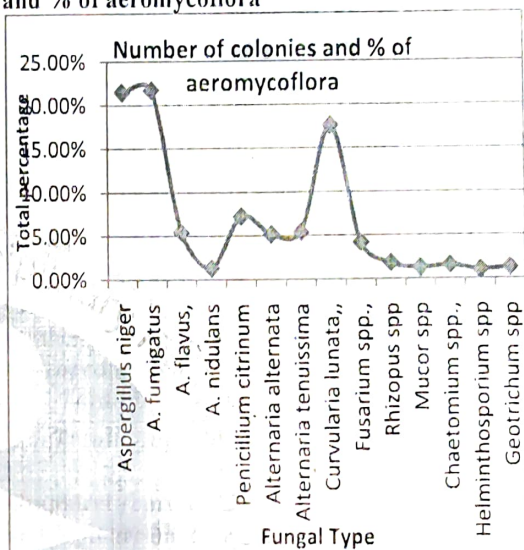
Table 1: Number of colonies and % of aeromycoflora

Sr.No.	Fungal Type	Fungal colonies	Total percentage
1	<i>Aspergillus niger</i>	83	(21.44%)
2	<i>A. fumigatus</i>	84	(21.70%)
3	<i>A. flavus</i>	21	(5.42%)
4	<i>A. nidulans</i>	05	(1.29%)
5	<i>Penicillium citrinum</i>	28	(7.23%)
6	<i>Alternaria alternata</i>	20	(5.16%)
7	<i>Alternaria tenuissima</i>	21	(5.42%)
8	<i>Curvularia lunata</i>	68	(17.57%)
9	<i>Fusarium</i> spp.	16	(4.13%)
10	<i>Rhizopus</i> spp.	07	(1.80%)
11	<i>Mucor</i> spp.	05	(1.29%)
12	<i>Chaetomium</i> spp.	06	(1.55%)
13	<i>Helminthosporium</i> spp.	04	(1.03%)
14	<i>Geotrichum</i> spp.	05	(1.29%)
15	<i>Drechslera</i> spp.	03	(0.77%)
Total		387	-

Contribution percentage of individual species as per the standard formula:

$$\% \text{ of contribution} = \frac{\text{Total no. of colonies of one species}}{\text{Total no. of colonies of total species}} \times 100$$

Graphical representation of number of colonies and % of aeromycoflora



CONCLUSION

From the above discussion it was concluded that, various type of fungal species was identified and isolated. Out of which some are harmful and cause health problem and respiratory disorder. It is may be because of favourable condition for the growth of fungi.

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