CHAPTER-10

SURVEILLANCE OF AIR BORN POLLEN AND SPORES IN COLLEGE CAMPUS

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Summary

Aerobiology is the study of dispersion of air microorganism, pollens, seeds, especially fungal spores which can create the infections in plant and human begins, Particles in the air are called Aerosols. Bioaerosols which constitute the airospora are algae, fungi, bacteria, viruses, pollen, etc. For the aerobiological studies one sampling methods were followed, During gravity slide method the slides were coated with Vaseline and were exposed for 2-3 days on the terrace. The Data were collected from November 2022 at site 1. (Department of Physics) Wing B. site.(Department of Physics) November. For morphological details pollen grains were observed under Trinocular fluorescence Microscope (Carl Zeiss) attached with camera. Pollen grains were identified with the help of specimen slides and available literature. Fungal spores were identified with the help of identification keys.

Keyword: Aerobiology, Bioaerosols, Fungal spores, Gravity slide method

Introduction

Aerobiology is the study of dispersion of air microorganism, pollens, seeds, especially fungal spores which can create the infections in plant and human begins or in another words aerobiology means study of airborne bio-particles (Sing/ Mathur, 2012). Aerobiology is the study of airborne bioparticles present, in the atmosphere. The term aerobiology was coined in 1930 by F. C. Meier, who was the plant pathologist working in the department of agriculture, USA (Agashe S. N. 2006). Airospora, i.e. microbial population of the atmosphere which is composed of fungal spores, algal filaments, pollen grains and insect scales etc. It is an interdisciplinary science wherein attention is given to

source of an organism or material, take off, dispersion, deposition and impact on plants, animals & human systems (Ahire, 1990). The airospora of a region is influenced by topography & meteorological parameters of the concerned area. Aerobiology is a scientific discipline that, deals with the transport of organism and biologically significant materials through the atmosphere (Isard and Gage, 2000).

Particles in the air are called Aerosols. Bioaerosols which constitute the airospora are algae, fungi, bacteria, viruses, pollen, etc. Biotic environmental pollutants comprised are chiefly of pollen and fungal spores3. The size of airospora, varies from $0.02 \ \mu m$ to $100 \ \mu m$ and several centimeters in plants fragments. The aeroallergens responsible for sensitization and production of specific antibodies may vary from place to place, and from region, and fluctuate with geographic and climatic conditions such as temperature, humidity and rain. It was demonstrated that exposure to pollen of certain plants caused hay fever and seasonal asthma in some individuals. The study of airborne pollen has gained significant importance in recent years because of its application and treatment of patient suffering from allergy. Although the atmosphere consists of an array of pollen and fungal spores; only a few of them are responsible for allergic manifestation. A detailed pollen calendar of a region is a prerequisite for immunological treatment of pollen allergies. (Agashe,S.N.2006).

Material and Methods

For the aerobiological studies one sampling methods were followed:

Gravity Slide Method

During gravity slide method the slides were coated with Vaseline and were exposed for 2-3 days on the terrace. The exposed slides were then mounted with glycerin jelly and observed under trinocular fluorescence microscope. Glycerin coated slides were also exposed to atmosphere for 3 days. After that scanning was done using the microscope.

Data Collection: The aerobiological study was conducted at three different locations in College campus by usingGravity slide Methods. The Data were collected from November 2022 at site 1. (Department of Physics) Wing B. site.(Department of Physics) November.

Identification: For morphological details pollen grains were observed under Trinocular fluorescence Microscope (Carl Zeiss) attached with camera. Pollen grains were identified with the help of specimen slides and available literature. Fungal spores were identified with the help of identification keys.

Observation and Results

During the study period from November 2023 to 2024 diffrent pollens types were observes. Thesepollen types belongs to families. Butea manasparma. Magnifera indica, Plumeria Flower these all were found in Wing B. The total of 7 Pollen types of 7 Pollen types were recorded during of November 2022. And were distributed to three of us by Wings B and Wing-B.

The pollen trapped during investigation reported to be allergic. The pollen grain are important Cause of allergetic disorders and they vary from place to place. Thus the pollen grains recorded during the observations may be allergenic from Palien freins Placecorded Placering during the observations may be allergenic. However the amount of pollen grains suspended in environment may play an important role for causing the allergenic reaction. The weather conditions such as temperature, humidity, wind velocity etc. May affect the relate and dispersal of pollen grains.

 Table 1 : Percentage of airborne pollen during November (2023)- February (2024) by

 Gravity method.

Sr. No.	Pollen Grains	Pollen Percentage	Month	Family
1.	Plumeria rubra	0.01	Nov	Apocynaceae
2.	Butea monosperma	0.02	Nov	Fabaceae
3.	Mangifera indica	0.01	Nov	Anacardiaceae



Fig. A- Plumeria rubra Fig. B- Butea monosperma Fig. C- Mangifera indica

Conclusion

The Aerobiological investigation gives an idea of the airborne pollen types present at all site of R. L. T College Butea sokola. Pollen types Plumeria flower and eves present at all site Magnifera indica, Butea monospermawere Conidia, Curvalaria sp., Dressheslera sp. from sites. It can be to this study that the atmospheric condition sechestera sp. from sind velocity, humidity and ecological conditions such as vegetation also have effect on the distribution, abundance and presence of palynomorph in atmosphere. The present study reveals that there were large numbers of pollen grains than fungal spore in the air during sampling period. They were found in clumped or scattered form. The knowledge about plant's flowering seasons, pollen and spore dynamics and its relation to meterlogical parameters.

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