INTRODUCTION

Air is an important part of human life as it supplies oxygen for the consistency of life. This air is generally charged with inorganic as well as organic particles, the latter including fungal spores, hyphal fragments, pollen grains, algal components, plant hairs and many other biological particles. These biopollutants are dominantly present in the air. Such dominance may affect quality and purity of air. Thus more attention is given to study of composition of air, which leads to an origin of new branch in biological science called Aerobiology.

The Aerobiology is concerned with distribution of living microorganisms in air and the resulting consequences. All the living microorganisms, studied in Aerobiology are generally referred to "Aerospora" (Gregory, 1952). But with the inception of International Biological Programme (IBP) in 1954, Aerobiology not only includes study of microorganisms, but of pollutant gases and particles. Many aerospora show diurnal variations also.

Aerobiology is a scientific and multidisciplinary approach focused on the transport of organisms and biologically significant materials, Edmonds and Benninghoof (1973). The study of aerobiology is concerned with sources of an organism or materials, their release in atmosphere, their dispersion, deposition and impact on human and animal system. Thus aerobiology is related to variety of sciences like Palynology, Plant pathology, Veterinary science, Microbiology, Meteorology, Medicine, Biodeterioration and Mellitopalynology etc.

Aerobiological investigations are generally recognized as:-

a) Botanical and fungal Aerobiology- This is an important outdoor field of aerobiology which deals with dispersal of microorganisms causing plant diseases, dispersal of pollen, causing allergenic reactions on animals and human beings.

Indoor botanical aerobiology deals with the dispersion of microbes in green houses, caves, glass houses, grain storage godowns and library buildings.

b) Medicinal Aerobiology which studies the influences of pollen grains, fungal spores, mites and dust on human beings and animals.

c) Technical / Industrial Aerobiology are concerned with the influence of air pollutants on the environment.

d) Experimental Aerobiology deals with fundamental concepts like mathematical formulations, development of methods, instrumentation and methods of modeling of aerobiological systems.

The aerobiological investigation can be broadly distinguished as outdoor or extramural aerobiology and indoor or intramural aerobiology. The extramural aerobiology deals with the distribution of biological materials in the open atmosphere. Such types of studies were found to be useful in understanding the problems of airborne plant diseases as well as the consequences of aeroallergens on human health. At present there are a number of investigators have studied variety of problems correlated with the aerospora of the free atmosphere.

The intramural aerobiology deals with study of air sample in a closed environment like library, buildings, hospitals, dairy etc. Many air borne microbes are responsible for biodeterioration of storage material, equipments, library materials and archives. Present investigation gives attention on this aspect.

The types of aerospora and variation in their concentration depends upon the number of factors like Meteorological parameters, source strength, distance from source, height, atmospheric conditions, type of receptor, surface topography, hour, day and season.

CONCEPT OF AEROMYCOLOGY:-

The important propagative phase of fungi is spores, of which many are adapted to air transport. Thus fungal spores often constitute a major composition of Aerospora. Thus screening of air is carried out to investigate dispersal of fungal spores in air called as "Aeromycology".

It is well known that many fungal spores cause very serious diseases to plants and they are responsible for enormous damage of economically important crops and thus has far reaching social effects which are difficult to assess. While considering the huge role

of fungi in plant pathology, or as an allergy causing agent to human beings and animals, it is necessary to investigate the air in aeromycological point of view.

Many fungal species also have a role as allergy causing agents in case of animals. In Humans also exist several types of eye, skin and respiratory disorders. Such investigation leads to have an idea about release, dissemination, spread, seasonal variation and infective ability of fungal spores. This is quite useful in developing an efficient forecasting system and effective spray schedule.

Much more work has been carried out in India on Aerospora. This clearly indicates the rich and varied aerospora. While considering the previous studies, efforts were taken to study "The Aeromycology of Karad city and an adjoining area". In present investigation, four different sites were selected. Each site represents different environmental conditions. These sites were:

1) Vegetable Market: - It was showing semi closed environment with important fraction of atmosphere with high variation in fungal spores. Packing leaves, straws, decay of fruits and vegetables are the important sources of fungal spores in such area.

2) Dairy: - It was the type of intramural investigation Dairy has a stock of perishable substances like milk, milk products, sweets etc. This favors growth of moulds on them. These moulds cause their spoilage.

3) Hospital: - It is situated in a crowded part at the center of the city. The aerospora from this place had a maximum chance to show higher allergic or disease causing fungal spores.

4) Library: - With closed system library also has a variable aerospora of its own, showing good variation in fungal spores. Many biodeteriorating agents are associated with books.

All the above four sites were undertaken for investigation. Such investigation was a combination of semiclosed extramural and intramural studies.

These aerobiological investigations were carried out with the help of Rotorod air sampler with collection efficiency 85%. It was installed at the height of 4-5 feet above

from ground level. The samples were collected daily from each location for about an hour in the morning.

The atmospheric temperature, rainfall and humidity were recorded during investigation, because these factors may affect the aerospora of any location.

Scanning of the slides was done microscopically to identify fungal spores. These observations are described in the order of dominance of respective groups. Within the groups frequency of different genera and their percentage contribution to total aeromycoflora was given importance. Description of aerospora is supplemented with respective tables. Some genera of fungal species are given in the photo plates.

Study of all four sites was carried out with respect to

1) Concentration of different fungal spore types.
2) The occurrence of pollen grains, insects scales, hyphal fragments and algal components etc.
3) Some unidentified fungal spores in the present investigation.

All the work done is summarized in the summary.