II HISTORICAL INTRODUCTION

AEROMYCOLOGICAL STUDIES OF KARAD REGION.

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Aerobiology is concerned with the distribution of living micro-organisms. According to Jacobs (1951) it includes the dispersion of insect population, fungal spores, bacteria, viruses, moulds and pollen, in fact all forms of life both plant and animals that are borne aloft and transported partly or wholly by the atmosphere. It also deals with the study of variety of problems created by air borne diseases and their causes. There are two categories for the study of aeromycology - known as extramural aerobiology (out door aerobiology) and intramural aerobiology (indoor aerobiology).

The study of intramural aerobiology is concerned with public hygiene and has been generally neglected in India. It is true fact, that the house dust is much allergenic in coparision to street dust.

Majority of diseases of man, are caused by bacteria and viruses while those of plants are caused by fungi. The airborne pollen grains of different types of plants and spores of many fungi are allergenic in nature and causes various kinds of metabolic disorders in man, like skin diseases, Asthma, Nasobronchial allergy, hay fever etc. are caused by pollens and spores. In old days classical writers believe that the wind, sometimes

brought sickness (to) man, animals and crops. Hippocrates, the father of Medical Science, held that men were attacked by epidemic fevers when they inhaled air infected with "such pollutions as are hostile to the human race." This was the first information that gave an idea about atmosphere which is full of micro-organisms. Lucretius in 55 B.C. held a quite modern view. He observed the sparking of small particals on a sunbeam in a darkened room and concluded that their movement must result from bombardment by innumerable, invisible, moving atoms in the air. This brilliant intuition enabled him to account many interesting phenomena including the origin of pestilences. It is now known that the bodies which transmit human diseases and plant diseases are larger than the "Lucretius's atom". Thus he had just touched the problems of plant pathology and allergy today.

After Lucretius more than 1500 years passed before man, even began to be aware that the air is full of microscopic living organisms and had wait for further details until the discovery of microscope. The hand made lenses of Anton Van Lecuwanhock rendered visible, the world of minute organisms whose existance had only been imagined. He doubted the belief that flies, mites and moulds were generated spontaneously by decaying animals and vegetable matter. It was P.Micheli (b 1979, d 1737) botanists to

public gardens at Florence, first illustrated "seeds" of many fungi, including mushrooms, cup fungi, molds and slime moulds. He showed that "spores" of some common moulds were indeed "seeds" of the fungi. He noted, however that some of his control slices also become contaminated and concluded that the spores of moulds are distributed through air (Buller 1915). Louis Pasteur, showed that food could be preserved in the air, in presence of oxygen, but its preservation depends on the distruction by heat of "something" present in the air. Pasteur demonstrated visually the existance of an air spora, and pointed out that it should be measured while in suspension and not after the deposition on the surfaces. He made, first rough visual measurements of its concentrations in the atmosphere of the city of Paris and concluded that several thousands of micro-organisms were carried in suspension per cubic meter of air.

Recent studies in Aerobiology, is originated about a century ago, when Louis Pasteur (1861) proved in his classical experiments in combating theory of spontaneous generation of life and in developing germ theory of diseases, that air is the carrier of many common germs. But out existing knowledge regarding the composition of air spora can be said to have started accumulating during 1870's with Ehrenberg's (1872) first published information on

the micro-organisms which he had collected from atmospheric dust and cunningham's (1873) anyalysis of micro-organic contents of air over presidency Jails Calcutta. Other contribution followed by Miqual(1983) of U.S.A. and Stepanov (1935) of U.S.S.R.

In India, the study of air spora in relation to phytopathological problems were initiated by Prof.Mehta of Agra University during 1940's. After Mehta's pioneering work (1952), systematic studies on air spora were initiated by several workers as, - Padmanabhan et al (1952), Rajan, Nigam and Shukla (1952), Sanghavi, Sethi and Kasliwal (1957), Konger and Baruah (1958), Sreeramulu and his co-workers (1958 onwards) Ganeshan and Raghavan (1960), Shivpuri et al (1960), Sengupta and Chattopadhyay (1963), Ramalingam (1966), Mehrotra and Claudius (1968), Mishra and Shrivastava (1969), Shukla (1971) and Tilak and his co-workers (1967 onwards).

The earliest observations of such micro-organisms in air were by Hippocrates, who held that diseases in man spread through inhalation. In a modern days, it is proven fact that, the diseases like T.B., Enfluenza, Small pox, Chicken pox, common cold, fever, are epidemics spread by air.

Blackley (1880) showed that bronchial catarah was due to inhalation of spores of Penicillium and Chaetomium.

Cadham (1924), Van Leeuwen (1924), Jimenez Diaz and Sancher (1932) and Hanson (1928) proved the possibility of

fungal allergy in man. Feinberg and associates (1935, 1935, 1936, 1937) were the first to make a systematic and comprehensive study of fungal allergy, and Feinberg and Durham (1944), Sheldon et al (1953), Naranjo P.(1958), Hyde et al (1956) shows that fungal spores plays an important role in the etiology of nasobronchial allergy. A choice of fungi has a great importance in the study of fungus allergy, hence a knowledge of fungi present in the air and their seasonal variations must be investigated. Investigations in this field by Durhamum (1938) and Bernstan and Feinberg (1942) have showed that Alternaria and Cladosporium are the most common fungi in America. Hara and Durhaman (1939) showed that there are very few fungi in Alaska. According to Jimenez Diaz et al (1960) the most common air born fungi are Cladosporium, Penicillium and yeasts from Madrid and valencia. In Cardiff the most common fungi during the summer months in particular are Cladosporium, Pullularia pullulans, Alternaria, Botrytis and Epicoccum and during the winter months, Aspergillus and oospora (Hyde and Adam 1960). There is a great need for undertaking aerobiological studies in various parts of this country to find out the various aeroallergens present in the atmosphere, or in the environment.

The present investigation deals with the study of the microbial contents inside the Library hall, of S.G.M.

College, Karad. Much of the work done in M.S. state is on extramural aerobiology, especially from Marathwada region, which is rather dry area. In contrast with this the climate of this Karad city is variable in different seasons, maximum temperature is from 26° to 38°c while the minimum temperature ranges from 12° to 25°c. This area receives moderate amount of rainfall (100 cms/annum). It is surrounded by forests of Mahabaleshwar and west coast forest of Sahyadri. Number of industries, Sugarcane factories, large number of different types of vehicles, highway passing near by this city and dust particles carried by wind from place to place daily, produces pollution.

The detailed observations on the presence of the fungal spores, Insect scales, Hyphal fragments, Algal fragments, Xylem fragments, etc. are presented in this work.