REVIEW OF LITERATURE
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History of aerobiology is an interesting aspect. The invention of simple magnifying lens devised by Anton Van Leeuwenhoek. Dynamic nature of air pulsating with the presence of life was definitely proved in the establishments of the presence of minute organisms in air by the end of the 18th century.

In the 1860s a new area of biology was conceived based on the work of Pasture. Pasture (1860) made aerobiological observations in the Alps at elevations up to 2,000 meters and also sample the air at lower level by passing through a nitrocellulose filter. The real experimental aerobiology started with experiments of Miquel (1883), who elaborated techniques to analyzed microbial population of air. Meier et. al. (1933) introduce the term aerobiology. Gregory (1961) proposed the term airspona to describe air borne pollen grains and fungal spores.

The Committee on apparatus in aerobiology (1941) made a comprehensive review of our early knowledge on aerobiology. The observation made by Blackely (1873) a particular significance in the present context of aerobiology in relation to allergy.

The studies made by Durham (1924), Wodehouse (1935) and Gregory (1973) served to set the standards for aerobiological studies relating to pollen and fungal spores. In India, Cunningham (1873) observed for the first time microbiological materials in the air at Calcutta.


AERibiLOGICAL RESEARCH IN ABROAD

Extensive studies abroad on airspona have been carried out by Gregory (1952 on words), Hirst (1952 on words) in United Kingdom, Pady and co-workers (1951 on words) at Kansas USA, Meredith (1961 on words) at Jamaica West-Indies, Ainsworth (1952) in London, Richards (1954) in Britain, Cammack (1955,

Bernstein and Feinberg (1942) have reported a five-year survey of the daily fungal spore components of the air over Chicago. Harsh and Allen (1945) recorded the fungal spore concentration of the air of San Diego and Vicinity. Other noteworthy contributions on aeromycological studies were of Gregory and Hirst (1957) on airspora of Rothamsted, Dransfield (1966) on air of Somaru; Turner (1966) on airspora of Hong Kong, Jack and Daniel (1974) studied the aerobiological of various plant diseases in United States. Lim et. al. (1998) on airspora of Singapore; Ho (1996) reported the outdoor fungal airspora in Hualien (Taiwan); Gonzalez et. al. (1992) studied aeromycoflora of Cadiz (Spain); Yang et. al. (1989) reported qualitative study of airborne fungi at three functional sections of Chengdu city, China. Li and Kendrick (1995) reported a year around comparison of fungal spores in indoor and outdoor air at Canada; Sabariego et. al. (2000) reported the effect of meteorological factors on the daily variation of airborne fungal spores in Granada (South Spain); Colakoglu (2003) reported airborne fungal spores at the Belgrad forest near the city of Istanbul (Turkey); Tan et. al. (1992) studied the tropical airspora in Singapore; Irene et. al. (2002) reported airborne fungal spores in the campus of Ancheita; Ismail et. al. (1999) studied airspora of Uganda; Li and Kendrick (1994) studied the functional relationship between airborne fungal spores and environmental factors in Kitchener Waterloo, Ontario, as detected by Canonical correspondence analysis; Aidoo et. al. (1995) reported a two- year survey of airborne mycoflora in a hospital environment of U.K.; Rodolfi et.al. (2003) studied the occurrence of green house microfungi in Botanical Garden, Italy; Goretti et. al. (1989) studied the fungal spores of Perugia (Italy); Marshall (1997) studied the airborne fungal spores in Antarctic. Talpur et al. (1995) studied the aeromycoflora of Khairpur, Pakistan;
Diez et al. (2006) reported fungal flora in Madrid, Spain; Khan et al. (1999) studied the airspora of Kuwait. All these workers have tried to collect and use the data of airspora at different localities.

AEROBIOLOGICAL RESEARCH IN INDIA

A milestone in the history of Indian aerobiology was the establishment of Unit of Indian Aerobiologists during the 4th International Palynological Conference in Lucknow (1977) which eventually lay to the formation of Indian Aerobiological Society (IAS) at Calcutta (1980) during the workshop jointly organized by the British Council and Bose Institute, Calcutta. It is interesting to note that the first aerobiological work was from Calcutta (1873) and after nearly a century at the same place IAS was officially formed.

Aerobiological research in India has relatively short history (Tilak, 1980, 1982). The beginning of the research being traceable to the first systematic investigations by Cunningham (1873) in Calcutta. After a fairly long gap research work was initiated by eminent Prof. Mehta at Agra (1940). Subsequently Sreeramulu conducted exhaustive investigations on varied aspect at Waltair (1962-72). Since then work has been going on at several places like Calcutta, Agra, Mysore and Aurangabad etc. During the last 25 years several centers have taken up the work on varied aspect of aerobiology.

Later a medical scientist group led by Kasliwal at Jaipur and Kalra at Pune made aerobiological investigations with particular reference to allergy during the fifties (1955-58). A new decade of aerobiological research in India started with the studies made by Lakhanpal and Nair at Lucknow and at Almorah in 1958 and 1960 respectively. Following the above studies, Shivpuri (1982) at Delhi has made elaborate investigations on the airborne microflora and its relation to allergy.

In Chhattisgarh, the credit for developing the aerobiological research work goes to Tiwari and his co-workers. Tiwari and Godheja (1985) reported the comparative account of airspora and phylloplane mycoflora of Brinjal at Raipur. JadHAV (1996) studied the aeromycoflora over rice field at Balodabazar, Tiwari (1999) reported aerobiological studies of Raipur with special reference to fungal spores.
EARLY STUDIES

India has the unique distinction of being one of the earliest countries where aerobiological studies initiated. As early as 1873 Cunningham attempted to relate airborne organisms to the incident of cholera and fevers, using an aeroconiscope in Calcutta jails. Nearly about half a century after Cunningham's pioneering work, plant pathologists once again initiated aerobiological studies in India, but this time. Systematic aerobiological investigations on airborne pollen were initiated at Jaipur and at Delhi.

Intensive studies on aeromycology can be said to have started with the work initiated by T. Sreeramulu at Visakhapatnam in 1959 using Hirst Volumetric spore trap. Subsequently, two new centers, one at Aurangabad and the other at Mysore came into existence. While S.T. Tilak initiated the former in 1967, A. Ramalingam started the latter in 1966. Aurangabad has a unique place in the development of aerobiology in India and the credit goes to Tilak who trained a large number of students who in turn established several new centers of aerobiological research especially in the state of Maharashtra. After retirement of Tilak, B.N. Pande is continuing aerobiological studies at Aurangabad. S. Chanda and S.N. Agashe initiated aerobiological studies during mid seventies at Bose Institute, Calcutta. Chanda and his students carried out extensive aerobiological studies in the eastern part of India. Currently, Swati Gupta Bhattacharya is continuing aerobiological work at Bose Institute, after the retirement of Chanda. Since its inception in 1973 the Bangalore center has been involved in conducting aerobiological studies in relation to allergy. After the ultimately death of Sreeramulu in 1974 the aerobiological work of Visakhapatnam is being continued by C. Subba Reddy and A. Jankibai. B.P.R. Vittal started Aeromycological studies at Madras with volumetric samplers in 1979. The earlier studies were review by Nair and Sreeramulu. In Chhattisgarh the credits for developing the aerobiological research work goes to Tiwari and his co-workers. Thus the growth of aerobiology in India during last twenty-five years is phenomenal and the progress was review from time-to-time. Singh at Manipur, Imphal in 1987, under took active aerobiological work.
AERONAUTICAL SCIENCES:

Aerobiological investigations and survey of different outdoor and indoor environments would provide significant and useful data. Various Aerobiologists of the world record the data on the seasonal changes in the catches of the total airsora. Cunningham (1873) probably was the first person who made microscopic examination of air for Calcutta (India). Meier et al. (1933) made microscopic examination of spores in upper air. Ainsworth (1952) investigated the incidence of airborne Cladosporium in the London region. The microscopic examination of the atmospheric fungal flora of Kanpur was carried out by Rajan et al. (1952). The study of seasonal changes in the three common constituents of airsora of Southern Nigeria was carried out by Cammack (1955). Pady and Kapica (1955) investigated the fungi in air over the Atlantic Ocean. Kalra (1957) have studied the aerobiology of Army Medical Campus, Poona, India. Pady (1957) has made quantitative studies of fungal spores in the air.

The investigation on the indoor aeromycology was carried out for cattle shed (Sreeramulu, 1961), for air inside and out side the caves at Aurangabad (Tilak and Kulkarni, 1972), for paintings of Ajanta and Ellora caves (Tilak et al., 1972), for library (Tilak and Vishwe, 1975; Tilak et al., 1981, Tilak and Saibaba, 1984; Verma and Khare, 1987-a; Tilak and Pillai, 1988; Pandey and Tiwari, 1994; More et al. 2002; Hazra and Majumdar, 2003 and Rane and Gandhe, 2003), for poultry shed (Rati et al. 1980; Verma and Bhandari, 1994, Verma and Srivastava, 2003), for a hospital environment (Singh and Singh, 1991; Verma and Pandey, 1992), for food storage places (Giri and Saoji, 1996), for hospital...

ward (Sahney and Purwar, 2002), for house of asthmatic patients (Bhiogade et al., 2002), for warehouse (Aher and Pande, 2005; Aher et al., 2004), for potato cold stores (Barui and Majumdar, 2003), for tea processing factories in North-East India (Debnath, 2003), for indoor environment of food storage (Giri and Saoji, 2003), for library, botany department and garden (Tiwari et al., 2004), for dwelling houses (Yousuf et al., 2003), for residences of asthmatics (Bhuvaneswari and Vittal, 2004), for residential house in Kolkata (Majumdar and Barui, 2004), for grain shops of Nagpur (Sawane and Saoji, 2005), for dairy area in Raipur (Tiwari et al. 2005), for coastal buildings in Egypt (Sayed and Morsy, 2006), for School building in Kolkata (Majumdar, 2007), for environment in hospital (Kalkar and Tatte, 2007), for cold storage (Tiwari et al., 2007).

AEROBIOLOGY: CROP FIELD

In India many workers studied the aeromycoflora of crop fields with varied objectives. Some of the workers concentrated on saprophytic moulds, some workers are concentrated in the understanding of the epidemiology of plant disease and a few however concerned with the aerobiology of pathogens causing diseases in respective crops. The aerobiological researches and studies with special reference to different crop and other plants so far undertaken in different part of India and abroad and these studies have lead to the publication of numerous subsequent research papers all over the world.

From the study of aerobiological investigations carried out by various Aerobiologists of the world, it is evident that most of the aerobiological investigations have been carried out with special reference to agricultural crops. Agrobiologists have also carried out their aerobiological investigations with special reference to diseases of crop plants, vegetable plants, fruit and medicinal plants. The important aerobiological investigations have been carried out with reference to crop plants by several workers like Mehta (1952), Cammack (1958), Sreeramulu (1958), Meredith (1961, 1962), Sreeramulu and Seshavatram (1962), Sreeramulu and Ramalingam (1963), Sreeramulu and Ramalingam (1966), Meredith (1966) Schenck (1968), Mishra and Srivastava (1969), Clark and Paul (1970), Sreeramulu (1970), Sreeramulu and Ramalingam (1970), Tilak and Kulkarni (1970), Mishra and Srivastava (1971), Sreeramulu and Vittal (1971), Sreeramulu, (1972), Sharma and Sinha (1973), Kamal and Singh (1974 and 1975), Kumar and Gupta (1976), Kamal and Verma (1977), Mallaih and Rao