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A study of bioallergens in selected areas of Visakhapatam

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ABSTRACT - The air consists of several bioallergens like spores of bacteria, fungi, organic dust and pollen grains which can cause severe allergic reactions in humans. To estimate the bioallergens, a study of air micro flora was conducted in different locations in Visakhapatnam. The fungal density in the air varied from $0.9x10^1$ to $4.3 x10^3$. In the present study twenty two fungal species were reported. The most common fungi identified were *Aspergillus, Cladosporium, Alternaria, Penicillum, Curvularia, Mucor* and *Rhizopus*. *Aspergillus* strains were present in alarming levels followed by *Cladosporium*, *Alternaria* and *Curvularia*. Fungal spores are known to be potential aeroallergen and could well be a health hazard to all people traveling regularly in these areas.

Key words - Bioallergens, Air, Fungi, Health hazard

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The air consists of many bioparticles of different origin like solid impurities from human activities, terrestrial, pollen from flowers and spores of fungi from soil, water and air. Various plants and animal diseases are important source for fungal spores. These spores are liberated into air, cause a potential risk of allergy. Hence the concentrations of the spores are to be known. Hyde and Williams discussed the population of fungal spore in the atmosphere of United Kingdom. Meteorological variations affecting the circulation of fungal spores and the correlation of the observations with particle size was assessed by Ludlam. The significance of fungal spores in the air, in relation to allergy was studied by Sandhu *et al.* Saadabi studied the presence of toxigenic fungi in the air, risk for human health and urgent recommendation for management decisions. The study of airborne fungal spores is essential to overcome life threatening problems. The identification of fungal types and their relative health effects need to be known. There are no such standards that specify acceptable and allowable fungal spores in air either by government or by industry. In Visakhapatnam, there is no such documented information regarding fungal population and their abundance in different areas. The study was undertaken to assess bioallergens in selected areas of Visakhapatnam.

EXPERIMENTAL METHODOLOGY

The study was conducted at the department of Biotechnology, GITAM Institute of Technology, GITAM University, Visakhapatnam.

Study area:

Visakhapatnam consists of two sewage treatment plants where the wastes from different localities are collected and undergo treatment before releasing into the sea. These two places are directly exposed to climatic hazards. Very close to these places many residential areas with high population making a possible drift of fungal spores causing health allergy.

Sampling of fungal spores:

A study was undertaken from August-December 2011 to determine fungal spores in two different sewage treatment plants of Visakhapatnam. From each treatment plant location five areas were selected which are 4 meters away from each other. At each location 10 petri plates containing Sabouraud