



Indoor and outdoor aeromycospora studies in coastal village ANANDHU RANGANATHAN, BIJAYA KUMAR NAYAK AND ARUN NAGALINGAM

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Author for correspondence :

ARUN NAGALINGAM K.M. Centre for P.G. Studies, Lawspet, PUDUCHERRY (U.T.) INDIA Email: yoursarun85@gmail. com

See end of the article for **Coopted authors**'

SUMMARY: Studies on the prevalence of airborne fungal spores with their seasonal periodicity in the indoors and outdoors of the houses in Kalapet, a coastal village of Pondicherry were carried out by implementing Petri plate sedimentation method from October, 2008 to September, 2009. Composition and concentration of fungal spores considerably varied from indoors to outdoors as well as from season to season. Outdoor air harboured maximum fungal spores (53%) in comparison to indoor air (47%). Occurrence of fungal species was predominated with more number of propagules during mid winter (December) and early rainy (July) periods in comparison to other months. In qualitative analysis, out of the total species recorded, Aspergillus was found with the highest frequency and had eleven members i.e., A. awamori, A. fumigatus, A. niger, A. flavus, A. flavipes, A. nidulans, A. ochraceous, A. japonicus, A. terreus, A. versicolor and A. wentii, but quantitatively, Penicillium was isolated highest in its contribution to total CFUs followed by Aspergillus. Out of the 33 isolated fungal taxa, Aspergillus fumigatus, A. awamori, A. niger, Rhizopus stolonifer and Alternaria alternata were the predominant aeroallergens, which cause different types of respiratory/lung diseases in atopic human beings. In seasonal periodicity, winter contributed the maximum spore load (41%) followed by rainy (33%), summer was found with the least (26%) in harboring the spore mass in the indoors and outdoors in the village environment. Alternaria alternata, which is accounted as a human allergen for sporosis inducer and an agent for hay fever and other pathologies, was also intermittently recorded. In addition to the above aero allergenic fungi, a few plant pathogenic, saprophytic, field and storage fungi were also recorded during the study period.

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Incidence of micro fungi in the environment has traditionally been a matter of concern for both allergologists and biologists with an interest in health and environmental pollution problems. Such concern has fostered studies aimed at the qualitative and quantitative characterization of the aeromycoflora in many villages throughout the world. Fungi, on account of their biological features and ease of dispersion of their spores both indoors and outdoors can contaminate of any type of substrate. Because of their ubiquity, fungi generally cause major diseases in plants, animals and in human beings (Nayak *et al.*, 1998).

Outdoor aero-allergens are an important part of the exposures that lead to allergic diseases (Salvaggio and Aukrust, 1981). Primary sources for outdoor allergens include vascular plants (pollen, fern spores, soy dust), and fungi (spores, hyphae). Non-vascular plants, algae, and arthropods contribute small numbers of allergenbearing particles. Particles are released from sources into the air by wind, rain, mechanical disturbance or active discharge mechanisms. Once airborne, they follow the physical laws that apply to all airborne particles. Although some outdoor allergens penetrate indoor spaces and exposure occurs mostly outdoors. Even short-term peak outdoor exposures can be important in eliciting acute symptoms. Centrally located monitoring stations give regional-scale measurements for aeroallergen levels. Pollen and fungal spore exposures have both been implicated in acute exacerbations of asthma and sensitivity to some fungal spores predicts the existence of asthma. Synergism and/or antagonism probably