

Observation of Airborne Fungal Flora of Poultry Farm

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Observation of airborne fungal flora was carried out at poultry farm situated in Bilaspur (C.G.) India. The culture plate method was used to determine air borne fungi from poultry farm during the period of October 2009 to January 2010. Fungal spores recorded were representatives of the three major groups i.e. Zygomycotina, Anamorphic fungi and Mycelia sterilia. A total of 21 fungi were isolated from air of poultry farm. *Aspergillus niger* (13.5%), showed maximum percentage contribution followed by *Cladosporium* sp. (12.3%), *Penicillium* sp. (12.2%) and *Aspergillus* sp. (10.6%). The maximum fungal species belonged to anamorphic fungi. In air total 920 fungal colonies represented 21 fungal species were observed during the present investigation period. Out of 21 fungal species, 02 from Zygomycotina, 17 from anamorphic fungi and 02 from Mycelia sterilia were observed. *Aspergillus niger* showed the maximum percentage contribution of total aero-mycoflora. The results provide to be helpful to allergologist and clinician in treatment of fungal related disease.

Key words: Poultry farm, *Aspergillus niger*, Aero mycoflora.

The atmosphere contains gases, water droplets and other biotic (bacteria, fungal spores, pollen grains) and abiotic particles which are affected by various environmental factors such as wind, temperature and moisture. Fungal spores are among the most common airborne bioparticles in air and play an important role in biodeterioration, allergy and many diseases. Composition and concentration of airborne mycoflora depend on several factors including topography, time of day, meteorological conditions, types of vegetation, air pollution, agricultural, industrial and other human activities. The present paper deals with the aerobiological survey of poultry farm of Bilaspur (CG). Aerobiological studies are of great importance as

they provide with qualitative and quantitative information about airborne fungi in a given region. Airborne fungi are considered to be an indicator of the level of atmospheric biopollution. Air consists of a mixture of permanent gases and water in different proportions, solid particles, pollen- grains and fungal spores. Aerobiology is a scientific discipline which deals with the studies of organisms or part of the organisms present in the air. The term "aerobiology" came in the use during 1930's as collective and other micro-organisms.

MATERIAL AND METHODS

The gravity petriplate exposure method was used for the trapping of fungal spores using PDA (Potato Dextrose Agar) media at fortnightly intervals. Three Petri plates were exposed for 5 to 10 min. in poultry farm of Bilaspur city. The exposed petriplates were brought to laboratory and incubated at $28 \pm 1^\circ\text{C}$ for 6 to 8 days. At the end

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of incubation period the fungal colonies were counted, isolated and identified with the help of available literature. (Barnett, 1969; Nigmani *et al.* 2006).

RESULTS AND DISCUSSION

During the investigation period total 920 fungal colonies belonging to 21 species were observed. The major types of airspora were *Aspergillus niger* (13.5%), *Cladosporium sp.* (12.3%), *Penicillium sp.* (12.2%), *Aspergillus fumigatus* (10.6%), and *Aspergillus flavus* (9.5%), to the total air spore (Table 1).

Higher concentration of spores was observed during November (258). The results of

present investigation reveal with various work done by researchers. Singh *et al.* (2000), Sharma and Dutta (2001), Devi *et al.* (2002) isolated important fungal types *Aspergillus*, *Cladosporium*, *Alternaria*, *Penicillium* from different poultry farms. Roymon *et al.* (2007) observed *Aspergillus Cladosporium* in common public places. *Aspergillus sp.* was observed throughout the study period & Anamorphic fungi recorded as the most contributed fungal group similar result was also reported by Tiwari *et al.* (2006). Singh (1988) from Delhi reported that the poultry workers dealing with chicken feed have highest incidence of respiratory disorders. The results provide to be helpful to allergologist and clinician in treatment of fungal related disease.

Table 1. Showing number of fungal colonies of aeromycoflora of poultry form

S. No.	Name of Fungi	Total	% Contribution
	Zygomycotina		
1.	<i>Mucor sp.</i>	05	0.5
2.	<i>Rhizopus sp.</i>	29	3.1
	Anamorphic fungi		
3.	<i>Alternaria sp. I</i>	10	1.0
4.	<i>Alternaria sp. II</i>	06	0.6
5.	<i>Aspergillus flavus</i>	88	9.5
6.	<i>Aspergillus fumigatus</i>	98	10.6
7.	<i>Aspergillus niger</i>	125	13.5
8.	<i>Aspergillus ochraceus</i>	39	4.2
9.	<i>Aspergillus nidulans</i>	35	3.8
10.	<i>Cladosporium sp. I</i>	114	12.3
11.	<i>Cladosporium sp. II</i>	72	7.8
12.	<i>Curvularia sp. I</i>	18	1.9
13.	<i>Curvularia sp. II</i>	17	1.8
14.	<i>Curvularia sp. III</i>	15	1.6
15.	<i>Drechslera sp.</i>	04	0.4
16.	<i>Nigrospora sp.</i>	09	0.9
17.	<i>Penicillium sp.</i>	113	12.2
18.	<i>Pestalotiopsis sp.</i>	10	1.0
19.	<i>Pithomyces sp.</i>	01	0.1
	Mycelia sterilia		
20.	Mycelia sterilia black	59	6.4
21.	Mycelia sterilia white	53	5.7
	Total no. of fungal colonies	920	

REFERENCES

- Barnett, H.K., Illustrated genera of imperfect fungi." Mins Burgss Pub. Co. Minneapolis, Minnesota 1969.
- Devi N, Dhar B, Sarma G.C., Airspora of semi urban area of Guwahati city. *Indian J. Aerobiol* 2002; **5**(1&2) 20-31.
- Nagamani, A., Kunwar, I.K. and Manoharachary, C., Handbook of Soil Fungi. I. K. International Pvt. Ltd. New Delhi (India) 2006.
- Roymon, M.G., Nafde, Seema K., Mukherjee, Arpita., Talukdar, Ayantika., Identification of some commonly occurring fungi isolated from indoor air samples of common public places. 14th Nat Conf. 2007; 34.
- Sharma D and Dutta B.K., Observation on the aeromycoflora of indoor working environments of Silchar. *Indian J. Aerobiol* 2001; **14**: 8-15.
- Singh A.B., Airborne fungi of allergenic significance in workplace environment. In Recent trends in Mycosis Proc. of Nat. Sympo. on Mycosis. 1988; 9-18.
- Singh Mohendro, Singh W, Sharma M.H. & Irabanta Singh., Airborne fungi from indoor air of a poultry farm at Lamangdong, Manipur. *Indian J. Aerobiol* 2000; **13**(1&2): 20-24.
- Tiwari, K.L., Jadhav, S.K. and Kunjam, S.R., Aeromycoflora of Slum area of Raipur (C.G.). *Ad. Plant Sci.* 2006; **19**(II): 387-390.