

ISOLATION AND IDENTIFICATION OF AEROMYCOFLORA IN POULTRY FARM HANUMANTGAON VILLAGE, DIST.A.NAGAR, MAHARASHTRA, INDIA

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ABSTRACT

Abstract:

Aerobiological investigations are essential for evaluating air quality and understanding the health hazards associated with airborne fungal spores, especially in animal rearing environments. Poultry farm workers are continuously exposed to bioaerosols originating from litter, feed, and bedding material and surrounding outdoor environments, which may result in respiratory disorders such as allergies and asthma. The present study was undertaken to isolate and identify aeromycoflora from indoor and outdoor environments of a poultry farm located at Hanumantgaon village, District Ahmednagar, Maharashtra, India, with the objective of assessing the pattern of fungal exposure and its potential impact on workers' health. Air sampling was carried out using standard aeromycological techniques, and fungal spores were isolated and identified based on cultural and morphological characteristics. The study revealed the predominance of allergenic fungal genera such as Alternaria, Cladosporium, Aspergillus and Penicillium, which are commonly reported from agricultural and animal housing environments. Variations in fungal spore concentration were influenced by environmental factors such as temperature, humidity, ventilation and hygienic conditions within the poultry shed. The results indicate that poultry farm air contains significant levels of airborne fungi capable of posing occupational health risks. Regular monitoring of aeromycoflora and improvement of farm management practices are recommended to minimize exposure and protect worker health.

Keyword - Aeromycology; Airborne fungal spores; Poultry farm; Bioaerosols; Occupational health; Maharashtra

Materials and Methods:-

1. PDA media preparation: -

Air fungal spore were crushed using PDA (Potato Dextrose Agar) medium. Composition of PDA medium is as follows :

Potato infusion - 200gm

Dextrose – 20gm

Agar – 20gm

Distilled water – 1000ml

Media was sterilized in autoclave at 121°C and 15LBS/psi pressure for 15 min.

2. Collection of air sample:-The air sample collected from different places in Rahuri tehsil that is sample A Cow shed in Dhanore village. The air sampling was exposed with Potato dextrose agar medium at the ground level for 5-10 min.

3. Inoculation: -

The exposed sample Petri plate is incubated at 26°C for 7 days for the, purpose of their identification.

Identification of

the fungal spores was done on the basis of microscopic examination and with the help of available literature

4 Observation:-After 2-7 days, fungal colonies were appeared on the PDA media. Compound microscope (make Besto-model 10B,13019/09, Magnification- 10x and 45x) was use to determine the morphological structure of fungi after mounting in cotton blue covered with cover slip on slide.

Photograph of slide are mount are taken with the help of mobile phone camera. Identification of fungal species was based on microscopic observation and using mycological literature (*Hussain et.al 2014*).



Culture Plates showing fungal colonies of Poultry farm

Results and Discussion:-

The air spores of a Rahuri tehsil region is influenced by topography and meteorological parameter of the concerned area. A total 11 different fungal spore types have been identified during the study in which *Aspergillus*, *Penicillium*, and *Rhizopus* are reported as human pathogen. The total no. of fungal spores were found 11. Among the *Aspergillus niger*, *Penicillium* and *Aspergillus flavus* are most dominant found in both sampling site. In present study Pathogenic fungal species like *Penicillium*, *Aspergillus* sp, *Rhizopus* and *Alternaria* sp.

Were recorded. Fungi have role in medicine as a source of many antibiotics, among *Aspergillums* sp. Produce 20 enzymes which are industrially important

Observation of air sample fungal culture showed presence of following 05 species.

SR.NO	Name of the fungi	Poultryfarm 1	Poultry farm2	Poultry farm 3	Poultry farm 4
1.	<i>mucor</i>	+	+	+	-
2.	<i>Aspergillusnigersp.</i>	+	+	-	+
3.	<i>Aspergillusflavussp</i>	+	+	+	+
4.	<i>Penicilliumsp.</i>	+	+	-	+
5.	<i>Phialophoraverrucosasp.</i>	+	+	+	+

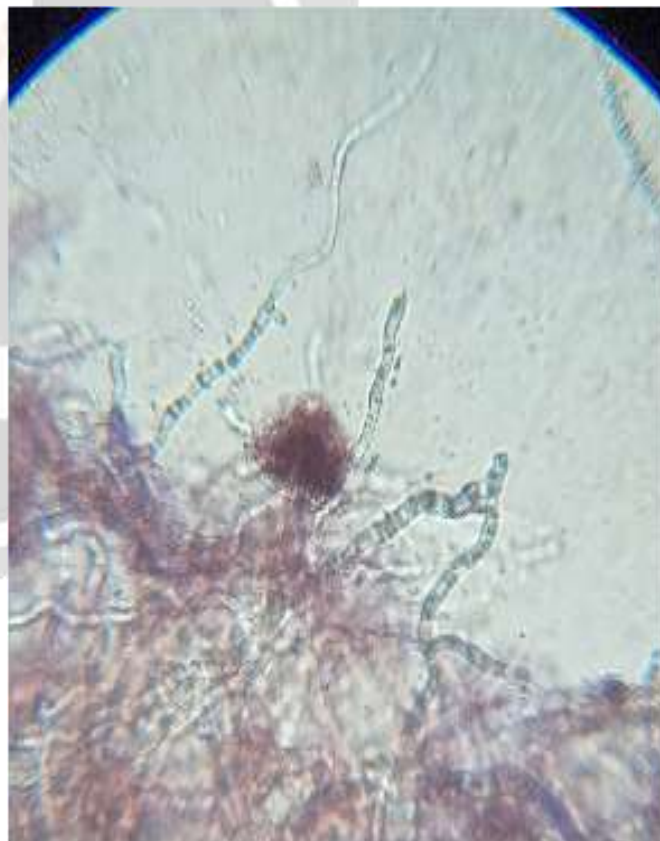
Abbreviations + = present of fungal species, - = absence of fungal species

Conclusion:-

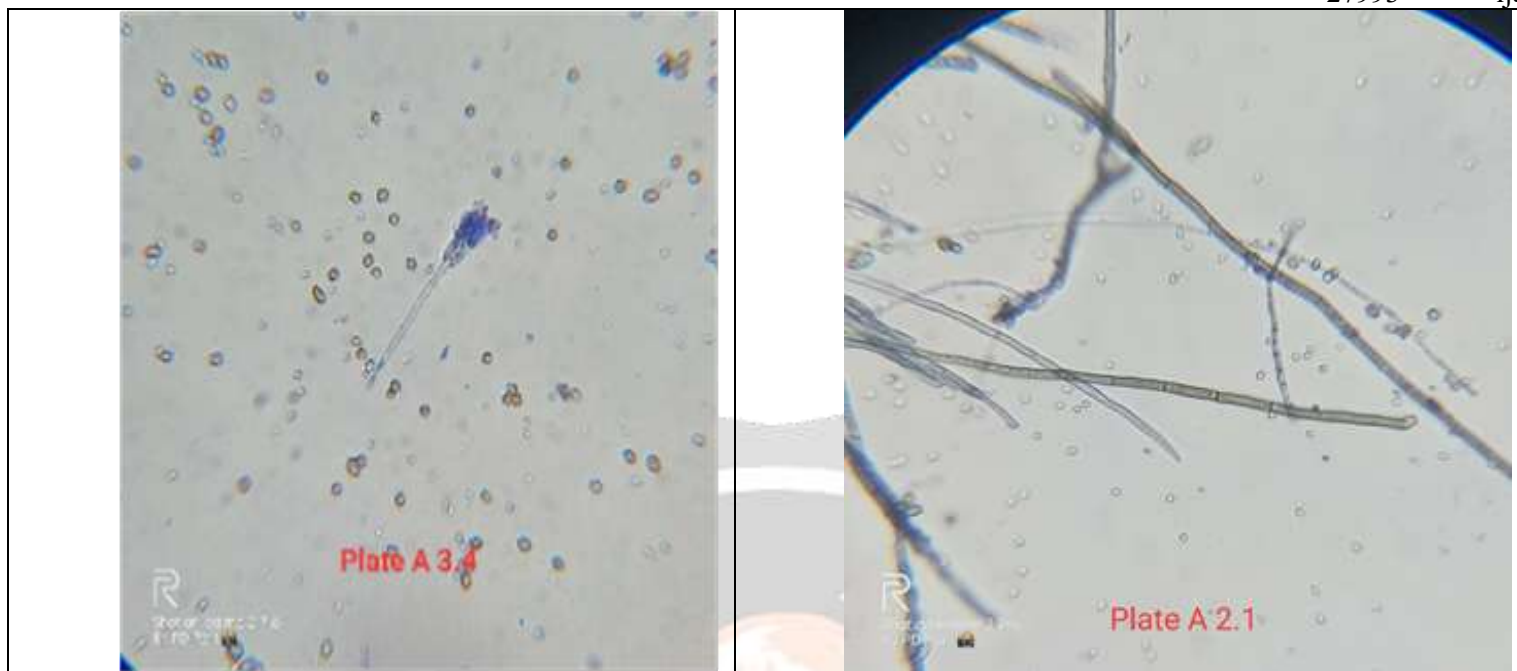
A total 05 different fungal spore types have been identified during the study in which *mucor*, *Aspergillusnigersp*, *Aspergillums*, *Penicillium*, and *Phialophoraverrucosasp.* are reported as human pathogen. They are also harmful for poultry farm and animals.



Aspergillusnigersp



Aspergillusflavus

***Penicillium* sp.*****Phialophora verrucosa* sp.****References**

- [1] Khandelwal, A., Misra, L. & Raju, A. (2005): An analysis of aeromycoflora at a vegetable market of Lucknow. *Changing Trends in Pollen Spore Research*. pp. 1-10.
- [2] Ahire, Y. & Sangale, M. (2012): Survey of aeromycoflora present in vegetable and fruit market. *Elixir Applied Botany* **52**, 11381-11383.
- [3] Bagwan, N. B. (2010): Aeromycoflora of store house and incidence of post-harvest diseases of mango (*Mangifera indica* L.) at Udgir, Maharashtra. *International Journal of Plant Protection* **3**, 94-98.
- [4] Devi, T. K., Medhi, S. & Sarma, T. (2010): Aero mycological study of store houses of onion and ginger in Guwahati. *The Bioscan* (Special Issue) **2**, 547-552.
- [5] Jo, W.K. & Kang, J.H. (2005): Exposure levels of airborne bacteria and fungi in Korean swine and poultry sheds. *Archives of Environmental and Occupational Health* **60**, 140-146.
- [6] Lee, S.-A., Adhikari, A., Grinshpun, S.A., McKay, R., Shukla, R. & Reponen, T. (2006): Personal exposure to airborne dust and microorganisms in agricultural environments. *Journal of Occupational and Environmental Hygiene* **3**, 118-130.
- [7] Abd-Elall, A., Mohamed, M. & Awadallah, M. (2009): Potential airborne microbial hazards for workers on dairy and beef cattle farms in Egypt. *Veterinaria Italiana* **45**, 275-285.
- [8] Surekha, M. (1990): Studies on mycotoxin producing fungi associated with feeds and fodders. Ph.D.