भाऊ साहेब भुस्कुटे शासकीय महाविद्यालय टिमरनी जिला-हरदा (म.प्र.)

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डिजिटल युग में सोशल मीडिया एवं प्रौद्योगिकी का विद्यार्थियों के मानसिक स्वास्थ्य पर प्रभाव

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का विद्यार्थियों के मानसिक स्वास्थ्य पर प्रभाव

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सुश्री मीनाक्षी यादव

सह-संपादक
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प्राचार्य

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भाऊ साहेब भुस्कुटे

शासकीय महाविद्यालय, टिमरनी जिला- हरदा (म.प्र.)

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Study Of Fungi Growing On Various Modified Pda Media

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ABSTRACT

This research investigates the diversity and occurrence of airborne fungi collected from P. M. College of Excellence in Narmadapuram. A range of growth media, including Potato Dextrose Agar (PDA), Yeast PDA, and Sucrose PDA, were utilized for fungal cultivation. These modified PDA media were used for a comparative study of fungi. The open plate method was employed to collect and culture airborne fungi from different sites. The results provide insights into the ecological roles of airborne fungi, their morphological traits, and potential health effects, including allergic reactions and respiratory illnesses. The findings reveal variations in fungal colony counts over five days, emphasizing the importance of monitoring airborne fungi in indoor and outdoor environments.

Keywords: Airborne fungi, Indoor fungi, Culture

INTRODUCTION

Fungi are a diverse group of organisms that include true fungi, lichens, yeasts, mushrooms, true slime molds, and water molds. They are eukaryotic organisms distinct from plants, animals, and bacteria [1]. Fungi play essential roles in ecosystems as decomposers, symbiotic partners, and sometimes as pathogens [2]. Fungi are found worldwide in various environments such as water, land, and air, and they exist as parasites, saprophytes, or symbionts. Some form symbiotic relationships with algae to create lichens. Due to the absence of chlorophyll, fungi are heterotrophic. Their cell walls are composed of fungal cellulose or chitin. Filamentous fungi are multicellular organisms that naturally occur in soil and organic debris.Airborne fungi are fungal spores or fragments suspended in the air, transported over long distances by wind, water, or human activity [3]. they are a significant component of bioaerosols in both

indoor and outdoor environments. While some airborne fungi contribute to ecological processes like decomposition and nutrient cycling, others pose health risks, triggering allergic reactions, respiratory diseases, and infections [4] study aims to analyze the diversity and prevalence of airborne fungi, their environmental significance, and their health implications.

METHODOLOGY AND MATERIALS Three types of media were used: a common PDA medium and two modified media.

POTATO DEXTROSE AGAR (PDA) MEDIA Potato Dextrose Agar is widely used for fungal and yeast cultivation. It contains potato extract as a nutrient source, dextrose as an energy source, and agar as a solidifying agent.

YEAST PDA MEDIA Yeast extract provides essential nutrients, including vitamins, amino acids, peptides, and nucleotides, to support fungal growth. The modified yeast PDA was prepared by adding 1 g of yeast extract per 100 ml of Potato Dextrose Agar.

SUCROSE PDA MEDIA Sucrose serves as a carbon and energy source for microbial growth. Some fungi and yeast species prefer sucrose, which can selectively inhibit bacteria while promoting specific fungal growth. The modified sucrose PDA was prepared by adding 1 g of sucrose per 100 ml of Potato Dextrose Agar.

AIR SAMPLING Fungal samples were collected from the corridor of the Botany and Zoology Department at P.M. College of Excellence, Narmadapuram, by exposing agar plates for five minutes.

OBSERVATION The plates were incubated at 29°C for 1 to 5 days. The fungal colonies were observed daily. Common indoor fungal genera included *Aspergillus spp.*, *Yeast spp.*, and *Fusarium spp.*, which were predominant in outdoor samples (Fig. 1).

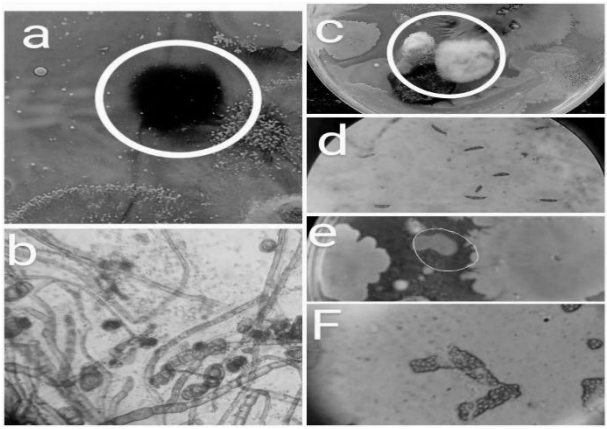

Fig. 1. The colonies of a range of fungi recovered from air. (A) Morphological view of *Curvularia,* (B) Microscopic view of *Curvularia* at 450x. (C) Morphological view of *Fusarium* , (D) Microscopic view of *Fusarium* at 450x. (E) Morphological view of Yeast, (F) Microscopic view of Yeast at 450x.

MORPHOLOGICAL IDENTIFICATION OF FUNGI Fungal identification was conducted using standard mycological procedures. Macroscopic characteristics on SDA, including colony pigmentation, structure, and consistency, were assessed. Microscopic examination evaluated size, shape, and spore arrangement using tease mounts and slide culture methods.

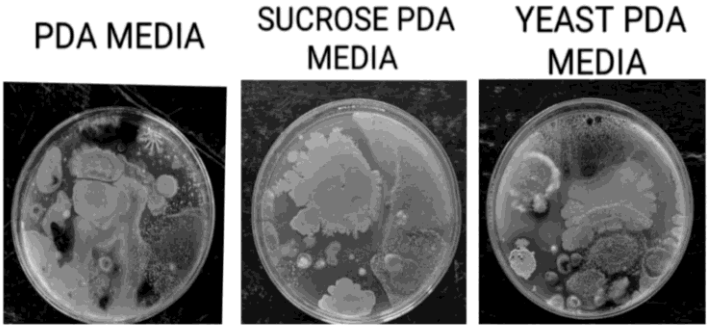

Fig. 2. Image of modified media of fungal growth.

MANUAL COLONY COUNTER A manual colony counter was used to quantify fungal growth [5]. Colonies were counted manually using a marker, and the results are summarized in Table 1.

TABLE 1: CFUs/m3 Detected in Outdoor Air Using Modified Media

DAY	COMMON PDA MEDIA	YEAST PDA MEDIA	SUCROSE PDA MEDIA
1	5 CFUs	4 CFUs	5 CFUs
2	25 CFUs	24 CFUs	22 CFUs
3	27 CFUs	26 CFUs	25 CFUs
4	30 CFUs	31 CFUs	26 CFUs
5	30 CFUs	37 CFUs	36 CFUs

IDENTIFICATION OF FUNGI Initial fungal identification was performed using a dissecting microscope (10x) to observe colony morphology, texture, and color. A compound microscope (100x and 450x magnification) was used to examine internal structures such as septa and sporangia.

RESULTS Fungal analysis conducted in November 2024 (winter) in Narmadapuram, M.P., revealed that *Aspergillus, Mucor,* and *Yeast* were commonly found in all three media types. PDA media supported the growth of *Aspergillus flavus* and *Rhizopus* species, whereas sucrose PDA favored different yeast species (Fig. 3).

CONCLUSION

Studying airborne fungi using modified PDA media is crucial for assessing their impact on public health, especially in high-traffic areas like hospitals, schools, and malls. Poor ventilation and high humidity promote fungal growth, leading to respiratory issues and allergies.Modified PDA media enhance fungal detection by optimizing growth conditions, making them a reliable tool for air quality monitoring. Regular assessments can help prevent health risks and improve indoor air safety. Future research should refine detection methods and develop strategies to minimize fungal exposure.

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