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Isolation of Some Fungi Present on Different Social Gadgets from Various Departments of Shri Shivaji College of Arts, Commerce and Science, Akola

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Abstract: Fungi are a large and highly diversified group of organisms and are of great economic importance. Hardly a day passes when we are not benefitted or harmed directly or indirectly by these organisms. They influenced our life in many ways. Fungi cause diseases in plants, animals and human being. It is estimated that thirty thousand of different diseases causing pathogens. Attack the economically important plants growth for food or commercial purposes. Fungi are also allergens, some persons are very sensitive to some air-borne fungal spores. Current study was aimed to isolate fungi from student's mobile phones from college campus at shri Shivaji College of arts, commerce and science, Akola.

Keywords: *Fungi, Allergens, Mobile Phones, Plants Diseases, Commercial, etc.*

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I. INTRODUCTION

Fungi are a diverse group of microorganisms that play significant roles in nature and human life. They exist in various environments, from soil and air to living hosts, where they can be beneficial or harmful. Some fungi, like *Aspergillus niger* and *Alternaria alternata*, are common environmental molds that can be found on screen surfaces, including mobile phones, as indicated in this study. These microorganisms can contribute to infections, allergic reactions, and food spoilage, but they also have industrial and medical applications, such antibiotic production. (Shende *et al.*, 2015 01-04).This study investigates the presence of fungal species on commonly used surface, particularly mobile phones, which serve as potential carriers of microorganisms. Species like *Aspergillus niger* and *Alternaria alternata* are frequently found in the environment and may contribute to contamination. Identifying and understanding these fungi are crucial for assessing their health risks and implementing proper hygiene measures. (Amira H.A. Al- Abdalall, 2010 11-14).

There are various features in the mobile phone screen and much comfortable to use, such as the internet, social media games, cameras and many more. In line with the advances of technology the mobile phone become an indispensable accessory in social use. Some studies have found high levels of contamination on mobile phone, despite the lack of research on the potential risks of mobile phones as a vector of microbial infections. Nowadays, cellular phones are used practically everywhere, including in restaurants, the gym, the dining room, the kitchen, and even the rest room. This means that cellular phones are constantly exposed to various bacterial as well as fungal infections. Since cell phones are technological devices, they are rarely cleaned. All of these elements, together with the heat produced by cell phones, have been identified as the main causes of the dangerously high levels of microorganisms harboured on the device. According to a study conducted in Egypt, using cell phones in restrooms, critical care units and hospitals may be increases the risk of pathogen contamination, this contamination can be decreased by routinely disinfecting mobile phones. Therefore, the current study represents on the first research on fungal contamination of mobile phones in college campus in various departments. Due to scarcity of studies conducted on fungi associated with mobile phones, the current study aimed to verify the fungal contamination of researchers students and mobiles phones used in both Microbiology and Mathematics Laboratories as well as in Library.

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II. REVIEW OF LITERATURE

- Ahmad *et al.,* (2019): Devices frequently handled by multiple users (e.g., in Schools, offices) have higher fungal loads. Al- Abdalall, (2010): a total of 202 mobile phone samples were analyzed in Damman, Saudhi Arabia. The results revealed the presence of both bacterial and fungal isolates. Bacterial isolates included *Staphylococcus aureus*, *Staphylococcus epidermidis*, *pseudomonas aeruginosa*, *Micrococcus luteus*, and *proteus mirabilis*. Fungal isolates included *Alternaria alternata*, *Aspergillus niger*, *penicillum spp*., and other.

- Chakraborty *et al.,* (2021): Recent studies highlight the growing resistance of environmental fungi to disinfectants, posing challenges for infection control.

- Chakraborty *et al.,* (2021): Environmental fungi are increasingly showing resistance to commonly used disinfectants and antifungal agents, as reported.

- Dr. Kishor *et al.,* (2015): User of mobile phones are found everywhere in the market, the home, hospitals, and schools. They could therefore, be the cause of the spread of the infection in the community.

- Kurli *et al.,* (2018): revealed extensive microbial diversity associated with mobile phones, stressing the need for routine hygiene.

- Dubljanin *et al.,* (2022), Fungal contamination was detected on a significant number of medical student's phones, underlining the threat posed by these ubiquitous devices in academic settings.

- Ekrakene & lgeleke, (2007): The presence of these microorganisms, especially in shared environments, raises concerns about hygiene and infection control, particularly in healthcare and academic settings.

- Silva *et al.,* (2024): This concern extends to fungal species, particularly Candida spp., which are known to cause infections ranging from superficial to systemic.

- Taghreed Khudhur Mohammed *et al.,* (2019): It is important to wash the hands carefully after using a mobile phone the phone must be cleaned with alcohol to reduce the transmission of pathogenic microorganisms.

- Yusha'su, Bello, and Sule (2010): To examine microbial contamination on personal and public mobile phones. Their investigation revealed that 80% of personal mobile phones and 100% of public mobile phones were contaminated with bacterial species were *staphylococcus aureus* (76% from personal phones,84% from public phones) (4% from both types). In addition to bacteria, fungal species such as *Aspergillus spp*., *Mucor spp*., *Candida spp*., and *Rhizopus spp*. were also isolated, with *Aspergillus spp*. being the most prevalent among public phones (32%) and *Mucor spp*. among personal phones (40%)
- Zaid Q. Alzamil *et al.,* (2025): According to the current findings, mobile phones have the potential to act as a vector for the spread of harmful organisms that humans have acquired from the community. There are a lot of fungi on hands and cell phones, most of which can make people sick.

III. MATERIAL AND METHOD

The study was carried out for a period of 4 months in College campus of Shri Shivaji college of Arts commerce and science college Akola, by visiting Different Departments, by taking the samples of Staff Mobile phones, Head phones, and Smart watches samples were taken in sample collection kit. From each department sample of Digital Gadgets male and female 4-5 sample was taken. Sampling was done using sterile cotton swab sticks. The swab sticks were rubbed all over the surface of mobile phone, digital watch, Headphone uniformly. After that immediately streaked on Petri plates of Potato Dextrose agar (PDA) media plates. The plates were incubated at 30^0C-35^0C for 48 hours and observed the growth. After three to five days of mixed culture growth, pure culture plates was prepared by transferring mixed culture fungi strain. After that samples were transferred in pure culture plate were kept for incubated at 30^0C - 35^0C for 48 hours and observed the complete growth of specific fungi till they identified by using Fungal key.

- *Method of Pure Culture as Follows:*

- *By Single Spore Isolation:*
  - This method involved isolating individual fungal spore from a mixed culture &growing them on a medium.

- *Requirement*
  - Sterile environment: Use of laminar airflow or flame-sterilized tools.
  - Proper medium: (Potato Dextrose Agar PDA)

- *Identification of Fungi:*

The morphology of identification of the specific fungal strains was based on the fungal culture colony, size, colour, characteristics of the spores of hyphae and reproductive structure were examined critically with reference to their mycological texts (H.L. Barnett& Barry B. Hunter. 1972).

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IV. RESULT AND DISCUSSION

Table 1 Fungi Affects to Human Beings

Sr. No.	Fungi Name	How it Affects to Human Beings
1	***Aspergillus niger***	• Infects people with weakened immune systems.
2	***Aspergillus flavus***	• Fungal spore entre the lungs – spread to brain, heart, kidneys • Symptoms: fever, chest pain, cough (sometimes with blood), shortness of breath. • A condition mostly affecting people with asthma or cystic fibrosis. It causes inflammation in the lungs and symptoms like wheezing, coughing, and shortness of breath. • Skin and subcutaneous tissue (like abscesses or nodules) • Sinuses • Lungs (rare, usually in people with chronic conditions)
3	***Phoma* spp.**	• Phoma can cause fungal eye infections, particularly keratitis • (corneal infection), often after trauma involving contaminated material. • Fever, facial swelling, Black lesions on nasal bridge or inside mouth • Sinus pain, cough, chest pain, shortness of breath
4	***Mucor* spp.**	• Skin infections that may turn black.

Table 2 Key: Type of Fungal sp. with Percentage

Genus	Type of Microbes	% percentage
Apergillus spp	Mold	62%
Rhizopus spp	Mold	15%
Phoma spp	Mold	10%
Mucor spp	Mold	5%

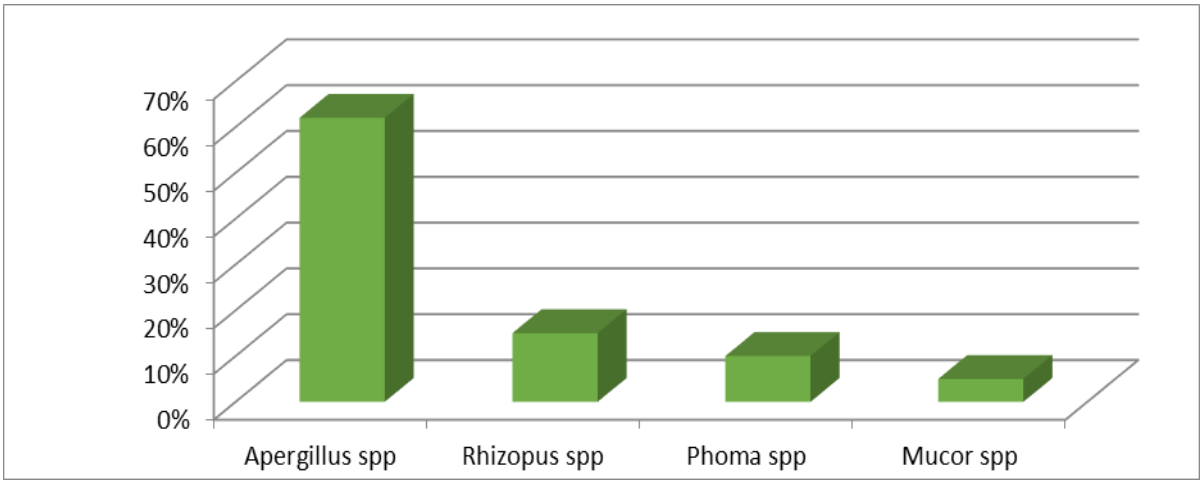

Fig 1 Detail of Pathogenic Fungi:-

The first Type of pathogenic fungi was observed *Aspergillus flavus* this fungi infects the human with weakened immune system.

The Second type fungi was observed *Rhizopus* spp can infect people, Fungal spore entre the lungs – spread to brain, heard, kidneys. Symptoms:- fever, chest pain, cough (sometimes with blood), shortness of breath.

The Third type of fungi was observed *Aspergillus* spp mostly affecting people with asthma or cystic fibrosis. It causes inflammation in the lungs and symptoms like wheezing, coughing, and shortness of breath.

The Fourth type of fungi was observed *Phoma* Skin and subcutaneous tissue (like abscesses or nodules) Sinuses. Lungs (rare, usually in people with chronic conditions) *Phoma* can cause fungal eye infections, particularly keratitis. (corneal infection), often after trauma involving contaminated material.

The Fifth type of fungi was observed *Mucor* spp can infect people affects lungs; seen in cancer patients or organ transplant recipients. Target Areas in the Body are Sinuses and Brain, Lungs, Skin, Digestive system, spreads through the blood. It generally affect the people who have the immune system is not strong enough to fight it.

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V. CONCLUSION

The study showed that all the Social Gadgets used in day to day life under consideration were infected by various types of microbes where fungi on mobile phones showed *Aspergillus* spp, *Aspergillus flavus, Phoma, Mucor* among the isolated fungi. The result shows that avoid excessive use of Bluetooth headphone or traditional headphones as they create an ideal environment for ear fungus. Gently wipe the screen with a clean, lint free cloth remove any visible molds. Restarting your phone can sometime fix minor screen glitches, including black spots that might be mistaken for molds. So it is recommended to use hand sanitizer and wash our hands by each interval before using the phone as well as after finishing use. Wipe the headphone and speaker with a dry cotton swab, not a damp cloth. Finally, let it dry before putting it back in its box or using it. Do not share headphones with others because they are important means of transmission of germs and organisms that cause infections and other diseases. So comprehensive knowledge of the effectiveness of decontamination procedures is needed to develop adequate preventive measures in day to day life.

➢ *Photo Plates:*

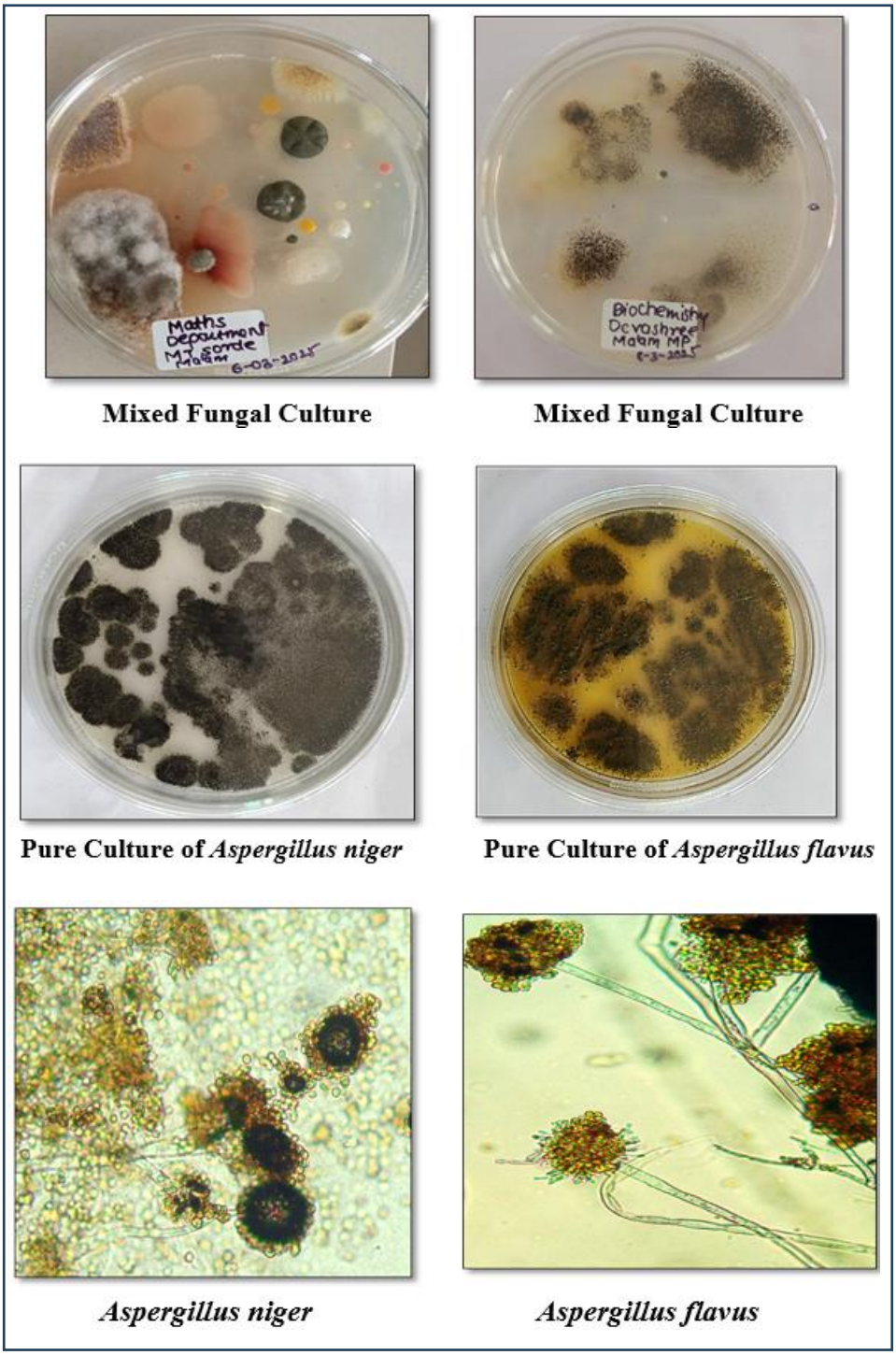

Fig 2 Photo Plates

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