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# Airborne Fungal Diversity of Residential Area of Gondpipari Region of Chandrapur district (M.S.) India

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**ABSTRACT:** Outdoor and indoor Environment are associated with so many bioaerosol, virus particles, bacteria, fungal spores and many others. Exposure of fungal spores in atmosphere is associated with numbers of adverse effect on health of common people showing respiratory disorder, skin infection, allergic and other health problems. Aeromycological study of residential area of gondpipari region was carried out for the period of six month from July 2019 to December 2019. The present survey was conducted using rotorod air sampler. Aerospora study shows the great diversity of fungal spores in residential area of gondpipari city of Chandrapur district. *Alternaria*, *Curvularia*, *Aspergillus*, *Penicillium*, *Cercospora*, *Nigrospora*, *Cladosporium*, *Mucor*, *Biospora*, Smut spores were dominant fungal spore. Fungal spores were identified qualitatively using available literature.

**KEYWORDS:** Fungal spores, Aeromycoflora, Gondpipari, Bioaerosol. Allergic.

## I. INTRODUCTION

The airborne fungal spores found in great diversity and variation in their occurrence, composition and concentration at different places and indifferent time. (Khilare and Chitnavis, 2002; Tilak 2009). Environment are full of bio pollutant like virus, bacteria, fungal spores, pollen which are responsible for various adverse health effect of human being and plant diseases and also may act as the sources of contamination. Airborne fungal spores are also very important in biodeterioration and play crucial role in biodegradation process of plant and animals origin wastes. It is very essential to study the occurrence of various fungal spores as to help allergic sufferers, also plant pathologist and others. Aerospora are important in the etiology of many respiratory issues, skin problems and so many health disorders. (Durham, 1998; Bajaj, 1998; Verma and George, 1997). Aerobiology is science which concern with bioaerosol as their relation with human health and plant pathology. (Frank land, 1991). Gondpipari city is thickly populated city having good vegetation and agricultural land therefore such studies will be helpful to plant pathologist, allergic patient and others.

## II. MATERIAL AND METHODS

Aeromycological survey was done at selected sites of residential area of gondpipari city for the period of six month from July 2019 to December 2019 sampling was done using rotorod air sampler. Samples were collected on daily bases. For sampling transparent cello tape of approximate size was used, cello tape was coated with petroleum jelly and fix on sampler arm. Sampler was run for 30 minutes at the selected site of residential area of gondpipari region at morning 7 a.m. and evening 6 p.m. After exposer strips was carefully removed and placed on the glass slide than mounted in glycerine jelly for observation. Identification of fungal spores was done using standard literature (Barnett and Hunter, 1972; Tilak 1989) and on the basis of reference slide.



III. RESULT AND DISCUSSION

Fungal spores play important role in human allergic problems, skin infection, plant pathology, food spoilage, biodeterioration and biodegradation. It has become an important to identified airborne fungal spores to help allergic patient, agriculturist and others. During the aeromycological survey of present investigation at the some selected sites of residential area of gondpipari city total 18 fungal spore types were recorded. The major contribution of fungal spores were represented by Deuteromycotina (45.21%) followed by Zygomycotina(9.73%), Basidiomycotina(6.59% ), Ascomycotina (1.35% ), unidentified(24.40%)and others types ( 12.72% ). Out of total spores types and other types deuteromycotina is the major contribution genera. Fungal spores diversity found were *Curvularia*, *Cercospora*, *Penicillium*, *Fusarium*, *Cladosporium*, *Alternaria*, *Aspergillus*, *CurvulariaNigrospora*, *Helminthosporium*, *Mucor*, Rust and smut spores and others.

Table 1.- Total numbers of spore types found in each group.

Sr. No.	Spore Type	Total number of spore	Spore/m <sup>3</sup>	Percentage of Contribution of spores
1	Zygomycotina	2	325	9.73
2	Ascomycotina	1	45	1.35
3	Basidiomycotina	2	220	6.59
4	Deuteromycotina	13	1510	45.21
5	Other types	5	425	12.72
6	Unidentified	1	815	24.40
	Total		3340	100

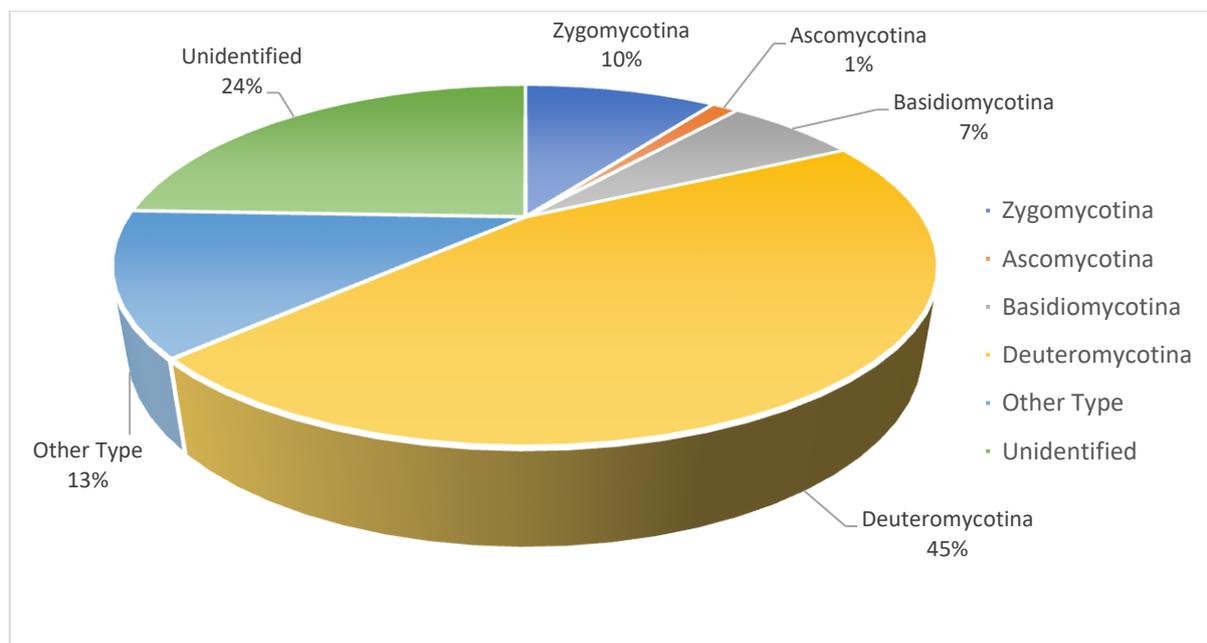


Figure. 1- Percentage of contribution of spore types.

Fungal spores were identified qualitatively using standard literature ( Barnett, 1960; Tilak, 1909) and reference slides. Different types of fungal spores have different seasonal spores occurrence pattern( Bush and Portnoy, 2001). The dominant fungus spores identified in majority of survey during summer and spring season is *Cladosporium*( Comtois



and mandrioli, 1996;Nikkelse $et. al.$ , 1996;Pelizzari, 1996), During winter season *Aspergillus* and *Penicillium*were dominant (Katz  $et. al.$ , 1999). The most abundant fungus spores which are present in aerospora include *Cladosporium*, *Aspergillus*, *Alternaria*, *Penicillium*, *Fusarium*, *Nigrospora*,*Curvularia*, *Helmithosporium*and*Mucor*( Cole $et.al.$ , 1999; Bass and Morgan, 1997).

Photo Plate- I

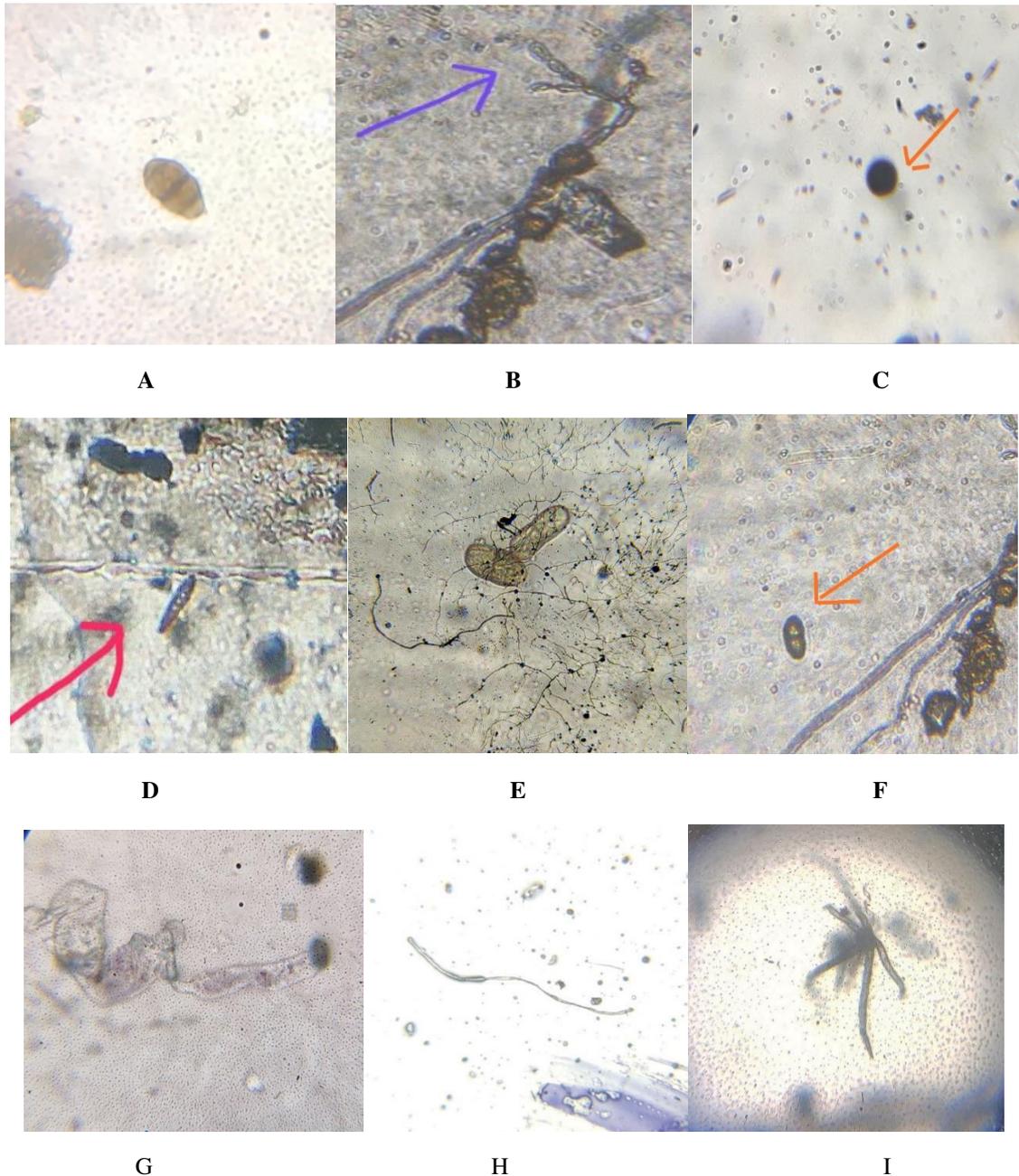
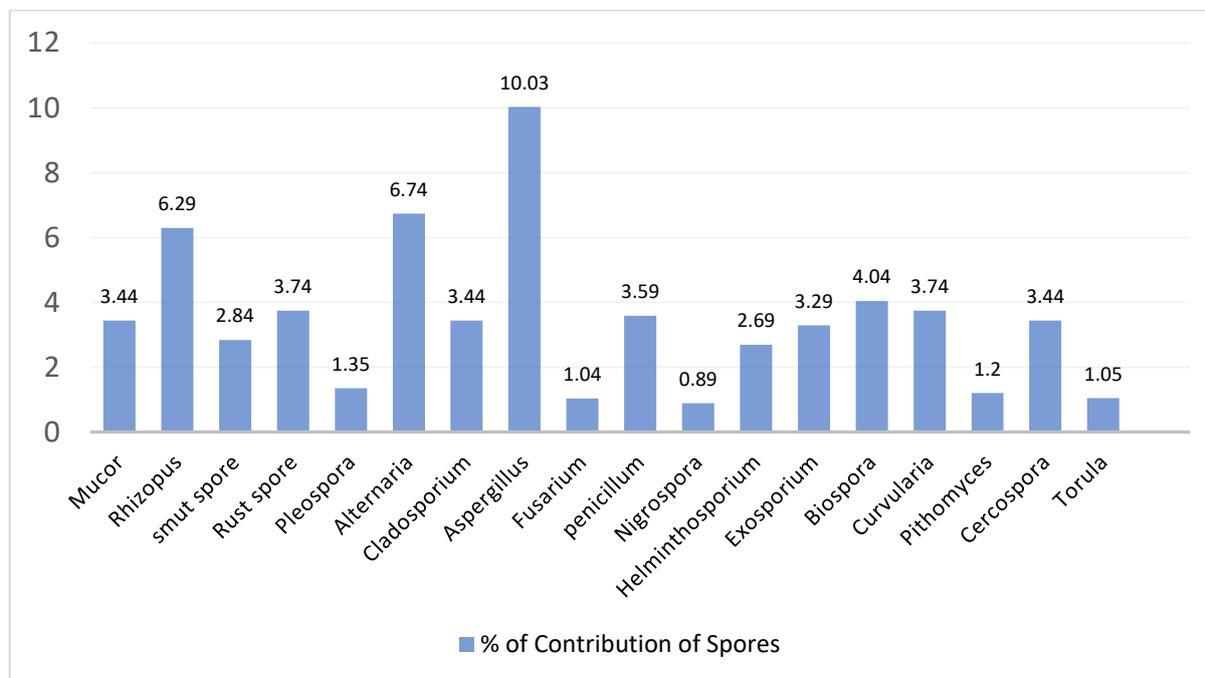


Photo plate I. A- *Curvularia* , B- *Aspergillus*,C-*Nigrospora*, D-*Alternaria*, E-F- *Biospora*, G- H -Algal Fragment, I – *Trichome*.



Figure 2.- Percentage of contribution of Individual fungal spore.



#### IV. CONCLUSION

During the period of investigation different fungal spores diversity were recorded. Majority of contribution of fungal spores were include *Cladosporium*, *Aspergillus*, *Alternaria*, *Penicillium*, *Fusarium*, *Nigrospora*, Smutspores, *Curvularia*, *Helminthosporium*, *Mucor* and in others types include hyphal fragments, insect parts, epidermal hairs, some of algal parts and pollen grains belong to family Asteraceae, Malvaceae along with other family were also found in the environment of residential area of gondipari city. The present survey will be helpful to common people having allergic problems, plant pathologist, agriculturist and many other.

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