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STUDY AND SURVEY OF AEROMYCOFLORA OF LAL BAHADUR SHASTRI GOVERNMENT HOSPITAL, SUPELA, CHHATTISGARH

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ABSTRACT

In the present scenario the air surrounding us is getting polluted which is causing ill effect to living beings. The pollution can be due to biological substances like pollen grains, fungal spores, bacteria etc or by non biological sources such as diesel, petrol etc. whatever the cause is, it is affecting the human lives. Therefore a one year survey has been done to isolate fungal species from Supela Hospital, Chhattisgarh. Potato dextrose media was used. According to survey 44 species were isolated and screened. Anamorphic fungal group were found to be dominating. *Aspergillus* species were dominanting followed by *Penicillium*.

KEYWORDS: Fungal spores, *Aspergillus* species and *Penicillium.*

INTRODUCTION

The variety of fungi occupy important place in the biological world and India has been the pannier for such fungi. The major part surrounding ecosystem is air which includes various particles like fungal spores, bacteria, aerosols etc. Aerobiology is an interdisciplinary subject with numerous aspects and characterized by continuous interaction between the biological components and their physical and chemical environment. The number of fungi recorded in India exceeds 27,000 species, the largest biotic community after insect (Sarbhoy). The true fungi belong to kingdom Eukaryota which has four phyla, 103 orders, 484 families and 4979 genera. Fungi is useful as well as harmful. There are almost 1.5 million species of fungi on Earth among which about 300 are infectious to human health (Gracia, Hawksworth). It is an emerging cause of hospital-acquired infection. They cause some severe disease like Aspergillosis which is Caused by the fungus *Aspergillus* and usually associated with lung diseases or weakened immune systems. Candiadis - Caused by yeasts that belong to the genus *Candida*. Ringworm Ringworm is a common skin infection that is caused by a fungus. The present paper deals with the study of fungal species from air present inside hospital of Supela, chhattisgarh, India.

MATERIALS AND METHOD

A survey was done for one year that is from May 2014 to April 2015. The fungal isolation was done by the help of Gravity petriplates method.

For the study of fungal species inside hospital, a survey was done for one year that is from May 2012 to April 2013. Potato Dextrose agar medium was used for the isolation of Fungi. The plates were poured and were exposed for 5 minutes in air inside the hospital. The plates were incubated at 28°C. After incubation period fungal colonies were counted and identified by the help of literature and was maintained in pure culture.

% Frequency = (No. of observations in which a species appeared / Total no. of observations) X 100.

% Contribution = Total no. Of colonies of species in all the observations taken together/Total no. Of colonies in all the species x 100.

RESULTS AND DISCUSSION

The microorganisms were isolated in potato dextrose media. The screening was performed at the interval of one year in every month.

A total of 44 species were isolated among which Anamorphic fungi were dominant (39 species and 370 colonies), followed by Ascomycotina (4species and 8 colonies), Zygomycotina (4 species and 13 colonies). (Table- 1) *Aspergillus* species, *Penicillium* species, *Fusarium* species , Cladosporium species were common in the season.

During the month of winter season from zygomycotina family *Mucor species Rhizopus Oryzae*.

Rhizopus Spp, Choenophora cucurbetarum was isolated followed by (Table -1) Emericilla nidulans and from ascomycotina family. From Anamorphic fungi isolated species Alternaria alternate, Aspergillus flavus. A. fumigatus, A. niger, A. nidulans, A.luchensis, A.black 1, Cladosporium cladosporioi, C. oxysporum, C. sphaerospermum, Curvularia lunata var. aeria, C. pallescence, Fusasium oxysporium, F. purple, Monilia S, Penicillium rubrum, P. chrysogenum, P.osalicum, P.notatum, P. citrinum, P. purpurogenum, P. regulusum, P.sp I, P.sp II, Unknown R3 (a) and Mycelia sterila white .(figure – 1).

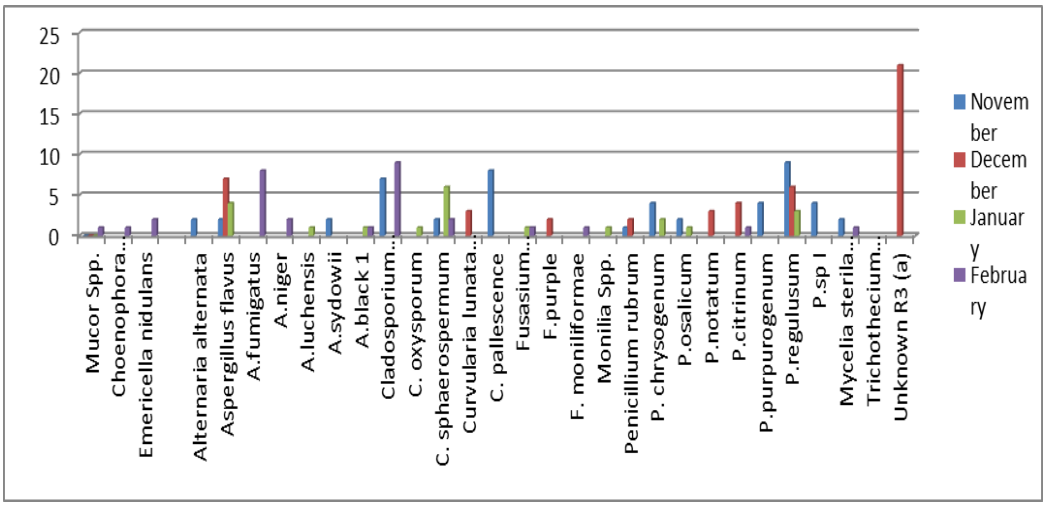

Figure 1: Showing distribution of fungi during winter season.

During the rainy season from zygomycotina Rhizopus. oryzae were isolated From Anamorphic fungi Alternaria alternata, Apergillus flavus, A.niger. A. nidulans, A.luchensis, A.terreus, A.awamori, A.albus, A.versicolor, A.sydowii, A.black 1, A. black 2, A.black 3, Cladosporium cladosporioides ,C. oxysporum, C. sphaerospermum, Curvularia lunata var. aeria, C. pallescence, Fusasium oxysporium, F.purple, F. moniliformae, Monilia Spp, P.sp II,Tricurus stirus, Unknown R5 (a), Unknown R3 (a), Unknown R2 (C1) and from Ascomycotina Emericella nidulans were isolated. (figure-2 and Table-1).

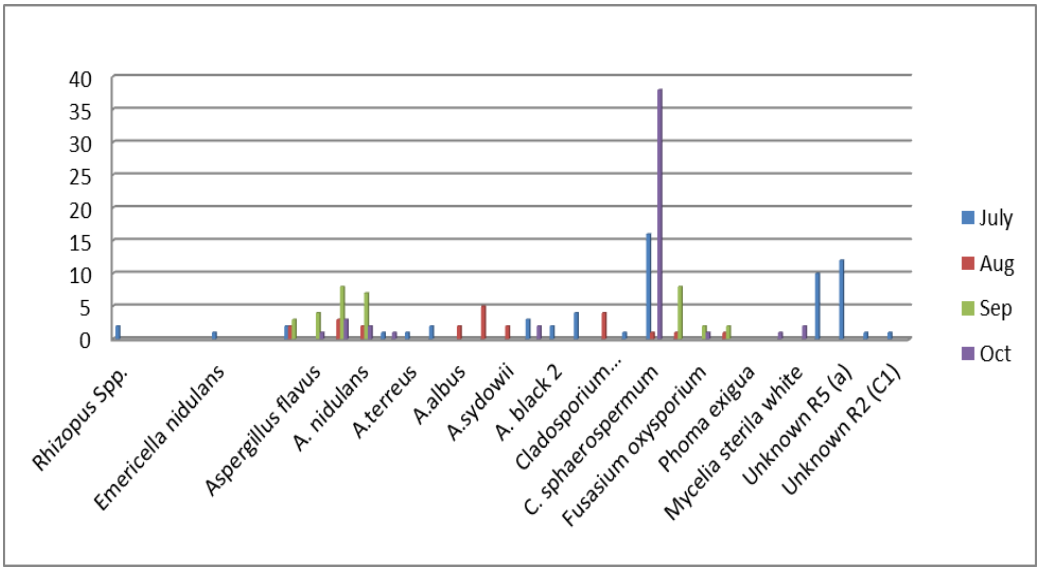

Figure 2: Showing fungal distribution in rainy season.

During summer season from zygomycotina family Rhizopus Spp, Rhizopus Oryzae were isolated followed by Alternaria alternata, Aspergillus flavus, A.niger, A. nidulans, A.black 1, C. oxysporum, C. sphaerospermum, F. moniliformae, Penicillium rubrum, Trichothecium roseum, P.purpurogenum were isolated from anmorphic fungi.(figure-3).

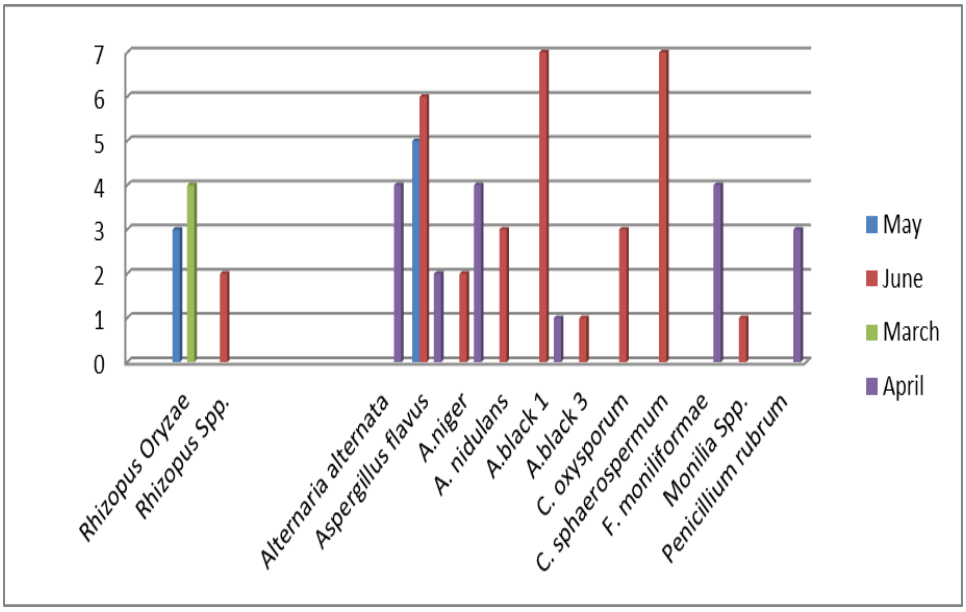

Figure 3: Showing fungal distribution in summer season.

According to survey Alternaria alternata, Aspergillus Flavus, Aspergillus niger, Aspergillus nidulans, Apergillus black and Cladosporium sphaerospermum were found common in seasons that is in winter, summer and rainy season. **Figure 4 and 5** is showing percentage frequency and percentage distribution respectively.

Anamorphic fungi were dominant fungal group, (figure-6). Verma and Pandey reported Aspergillus sp., Cladosporium sp., Curvularia sp., Alternaria sp. the most frequent fungal species in the allergy ward of medical college, Jaipur. Kalkar and Tatte have also reported that the Alternaria, Aspergillus, Cladosporium and Curvularia are most frequent in hospital ward. Luka and coworkers surveyed aeromycoflora of Jackman district hospital, Bilaspur. They isolated 48 fungal species. Karkun and coworkers studied studied fungal diversity from ACC jamul and nonpolluted area. Verma and karkun studied statistical analysis of fungal diversity from ACC Jamul area.

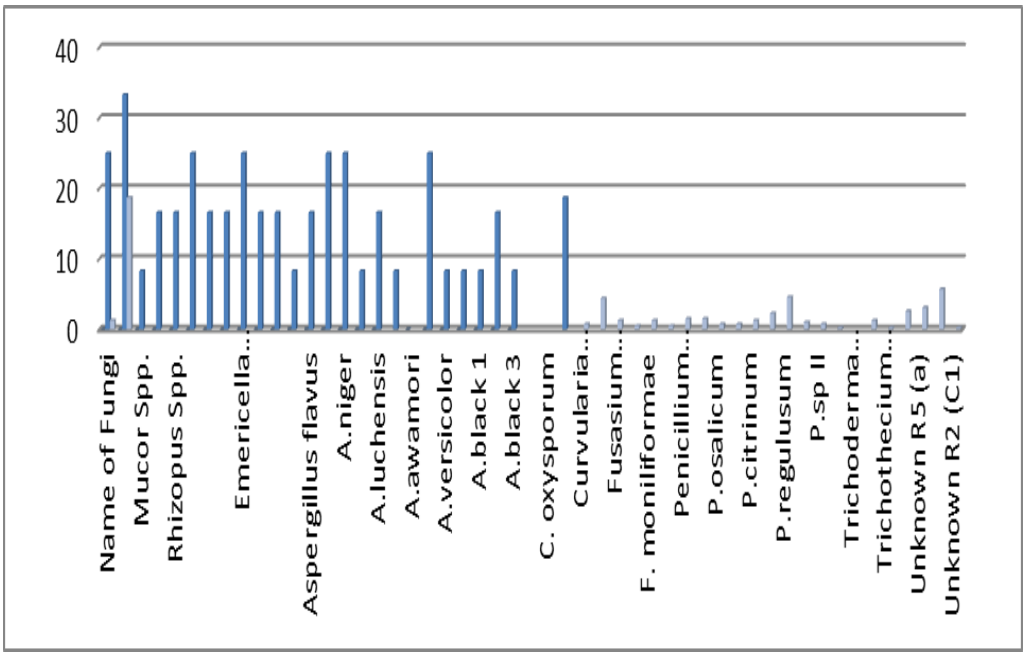

Figure 4: Showing Percentage frequency of fungi in all the seasons.

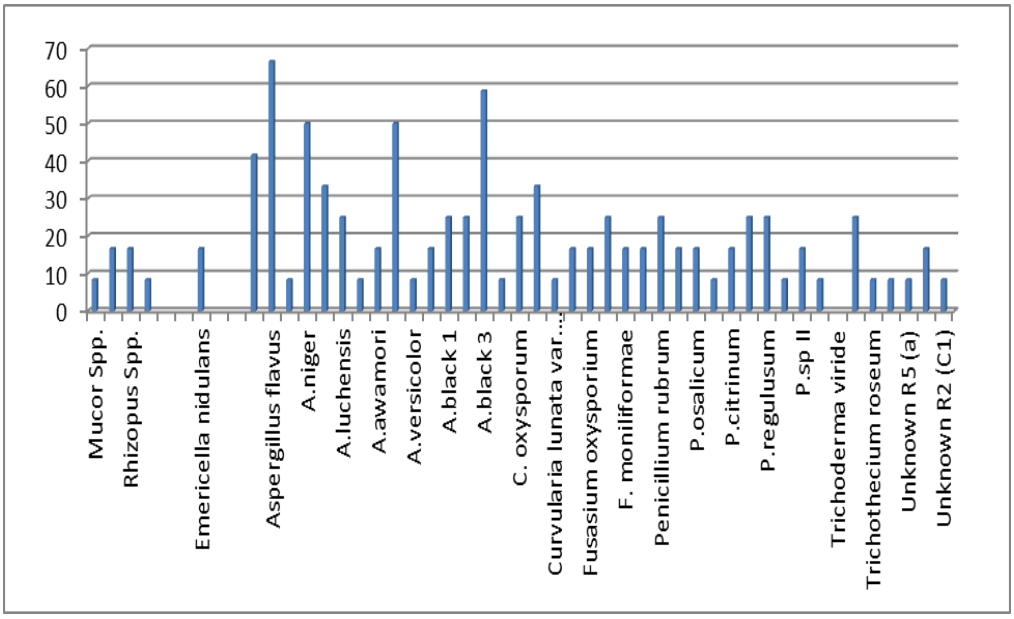

Figure 5: Showing Percentage distribution of fungi in all the seasons.

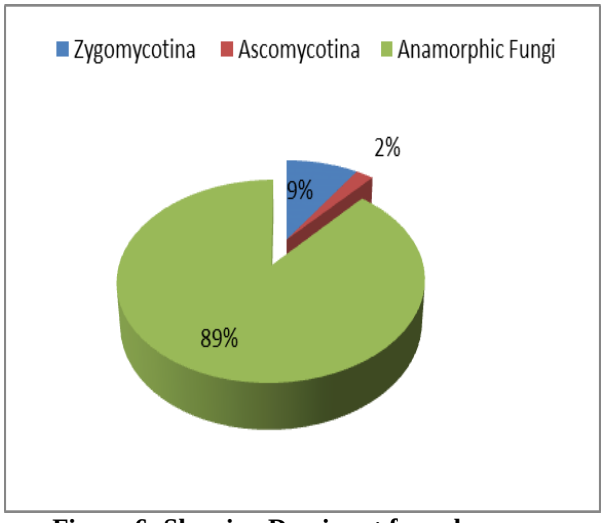

Figure 6: Showing Dominant fungal groups.

CONCLUSION

After the study conducted so many different fungi were isolated. Fungi are responsible for a variety of respiratory disease in humans, plants and animals. It is necessary to have sterilizes environment inside the hospital.measures can be taken against these fungi. It was also noticed that the fungi exhibit seasonal variations and grow best in moderate temperature and in humidity

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