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Original Research Paper

Science

PREVALENCE OF AEROMYCOFLORA AROUND THE HIRMI CEMENT PLANT AREA

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ABSTRACT Fungal spores are present in outdoor air throughout the year. Fungi are an important mycoflora found in well diversified ecological conditions. Present paper deals with the fungal diversity in Hirmi Cement Plant area. The air borne fungal spores in industrial area of Hirmi was studied from June-2013 to January-2014. Total 40 species were isolated from the study site. Aspergillus group was found dominant followed by *Penicillium* and *Cladosporium*. It was also observed that *Cladosporium* species were present maximum during rainy season. During the investigation it was observed that the incident of fungal spores was correlated with meteorological parameters.

KEYWORDS : Hirmi Cement Plant, Aeromycoflora, Aspergillus, Fungal spores.

INTRODUCTION

Aerobiological studies have received much attention recently because of applications in the field of allergy, dispersal of pathogens and in allied aspects of microbiology. Interest in air borne microbes quickened in the 20th century when air machine made it possible to explore the lower layer of the atmosphere. Fungal spores have long been known as one of the important environmental bio-particles causing dermatitis, respiratory and cardiac diseases along with allergic manifestation in human beings (Maunsell, 1954). In Chhattishgarh the credit for developing the aerobiological research work goes to Tiwari and his co-workers. Tiwari et al (2005) reported aeromycoflora of dairy area in relation to environmental factors. The target area of Hirmi Cement Plant is a part of Hirmi Village of Raipur district. It is situated in northwestern part of the Raipur district of Chhattisgarh state. The main aim of the study was to isolate the mycoflora from surrounding area of Hirmi Cement Plant.

METHODOLOGY

For present study surrounding villages of UltraTech Cement Limited, Hirmi Cement Works, Hirmi ,Distt.-Raipur was selected for isolation of aeromycoflora. The site for the study represents a rural & semi urban area. Gravity Petri plates method containing PDA media was used for the isolation of aeromycoflora (Sharma 2001). For isolation of fungi the petriplates containing potato dextrose agar media were exposed in air and incubated at 28'C for 3-5 days.

RESULT& DISCUSSION

During this study total 40 fungal species belonging to 17 fungal genera were isolated. The fungal species isolated during this study were ZYGOMYCOTINA- *Mucorhemalis, Rhizopusoryzae, Rhizopusstolonifer, Syncephalastrumracemosum;* ASCOMYCOTINA-*Ascotricachartarum, Emericellanidulans, Lewiainfectaria;* ANARMORPHIC FUNGI-*Acremoniumrestrictum, Acremonium-killionse, Alternariaalternate, Alternariaracticina, Aspergillus flavus, Aspergillus fumigates, Aspergillus japonicas, Aspergillus niger, Aspergillus ochraceus, Aspergillus speluneus, Aspergillus sydowii, Aspergillus tamari, Aspergillus terreus, Cladosporium cladosporioides, Cladosporium oxysporum, Cladosporium sphaerospermum, Curvulariaclavata, Curvularialuntana, Drechsleraaustraliensis, Fusarium chlamydosporum, Fusarium oxisporum, Fusarium pallidoroseum, Fusarium solani, Gilmaniellahumicola, Nigrosporaoryzae, Penicilliumn funiculosum, Penicillium frequentans, Penicilliumversicolor, Phomaepicocciina, Phomaherbarum;* MYCELIA STERILIA-*Mycelia sterilia (Black), Mycelia sterila (gray), Mycelia sterila (white).*

In Hirmi factory area 40 fungal species belonging to 17 genera were isolated among which Anamorphic fungi were dominant (30 species), followed by Ascomycotina (3species), Zygomycotina (4 species), and mycelia sterilia (3).

Study reveals that *Aspergillus* group has shown maximum occurrence in all three season whereas *cladosporium* species has shown maximum contribution.Similar result was also taken Padhamanabhan (2004) by Kunjam(2007) from Rajnandgaon, Lall (2008) from hospital area Raipur. Similar results have been reported by Karkun et al., (2012) from Chhattisgarh.

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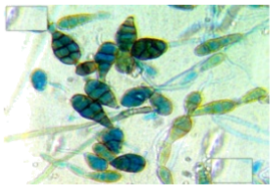
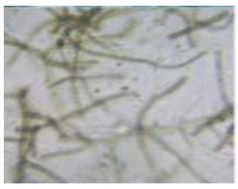
Table:1 Isolated aeromycoflora

1.	*Mucorhemalis*
2.	*Rhizopusoryzae*
3.	*Rhizopusstolonifer*
4.	*Syncephalastrumracemosum*
5.	*Ascotricachartarum*
6.	*Emericellanidulans*
7.	*Lewiainfectaria*
8.	*Acremoniumrestrictum*
9.	*Acremoniumkillionse*
10.	*Alternariaalternata*
11.	*Alternariaracticina*
12.	*Aspergillus flavus*
13.	*Aspergillus fumigatus*
14.	*Aspergillus japonicus*
15.	*Aspergillus niger*
16.	*Aspergillus ochraceus*
17.	*Aspergillus speluneus*
18.	*Aspergillus sydowii*
19.	*Aspergillus tamarii*
20.	*Aspergillus terreus*
21.	*Cladosporiumcladosporioides*
22.	*Cladosporiumoxysporum*
23.	*Cladosporiumsphaerospermum*
24.	*Curvulariaclavata*
25.	*Curvularialuntana*
26.	*Drechsleraaustraliensis*
27.	*Fusarium chlamydosporum*
28.	*Fusarium oxisporum*
29.	*Fusarium pallidoroseum*
30.	*Fusarium solani*
31.	*Gilmaniellahumicola*
32.	*Nigrosporaoryzae*
33.	*Penicilliumfuniculosum*
34.	*Penicilliumfrequentans*
35.	*Penicillium versicolor*
36.	*Phomaepicocciina*
37.	*Phomaherbarum*
38.	Mycelia sterilia (Black)
39.	Mycelia sterila (gray)
40.	Mycelia sterila (white)

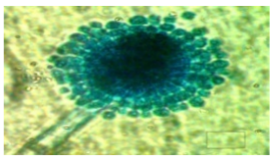
Different species of Aeromycoflora around the Hirmi Cement Plant Area



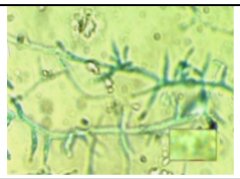
Alternaria alternata



Cladosporium cladosporioides



Aspergillus flavus



Fusarium oxisporum

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