Isolation of fungi from the surface water of river

Shaista Parveen*, S. Lanjewar2, K. Sharma3, U. Kutti4

1Mats University, Raipur, India
2Govt College Tilda, India
3Arts and comm. Girls College, Raipur, India
4D.P.S., Raipur, India

Abstract
Water bodies play an important role in the stabilization of any civilization. India is facing a turbulent water future, as its major water source rainfall fluctuates widely, seasonally as well as regionally. Water body provides a large amount of easily accessible fresh water which is important for the stable commodity for any population. Raipur city is capital of Chhattisgarh state, situated in the fertile plains of Mahanadi River. For the study of fungal community present in river water, we have collected fungi from water, to understand the overall diversity among different taxonomic groups of fungi present, as well as their occurrence, frequency and contribution of the fungal species in the river. The quantitative and qualitative fungal composition of river water was surveyed monthly for a year i.e. March 2009 to February 2010. A variety of fungal strains was isolated and identified from the water of river. Out of a total 389 fungal colonies, 31 fungal species belongs to 20 fungal genera were isolated. Aspergillus niger was most frequent species with (83.33%), Rhizopus sp. (75%) followed by A. flavus and A. fumigatus with (58.33%) frequency. It was also found that maximum percentage contribution was observed for Aspergillus fumigatus (15.16%), which was followed by Aspergillus niger with (09.51%) contribution.

Keywords: Ecological study, percentage frequency, river

INTRODUCTION
Water body provides a large amount of easily accessible fresh water which is important for the stable commodity for any population. Even today in Chhattisgarh as well as in Raipur, river make an easy source for irrigation, domestic uses and sometime for drinking purpose also. Water fungi play a crucial role in the freshwater ecosystem in nutrient cycling by breaking down leaves and woody substrates and also as symbionts (Bärlocher and Kendrick, 1981). Ecology deals with the various principles which govern relationships between organisms and their environment. Environment, which is actually a complex of several inter-related factors and is much dynamic (i.e. varying with time and space), works as a sieve selecting organisms for growth from so many forms, as its one or the other factor becomes critical at critical stages of the life cycle of the species. All the fungal species present in an area constitute the fungal community of that area. For the study of fungal community present in pond water, we have collected fungi from water, to understand the overall diversity among different taxonomic groups of fungi present, as well as their occurrence, frequency and contribution of the fungal species in pond water of Raipur city.

MATERIALS AND METHODS
A surface water sample was aseptically collected from one to two meters away from the bank, in pre sterilized bottle from different parts of river; in this manner that the collected water represents the entire water body. The water samples are collected twice a month at fortnightly intervals for the isolations of fungi. During present study Potato dextrose agar (PDA) media has been adopted for isolation of pond Water fungi for one year March 2009 to February 2010. At the end of the incubation period the percentage frequency and percentage contribution of the fungal flora was calculated (Hogg B. and Hudson, 1966).

RESULTS AND DISCUSSION
Out of a total 389 fungal colonies, 31 fungal species belongs to 20 fungal genera were isolated. Aspergillus niger was most frequent species with (83.33%), Rhizopus sp. (75%) followed by A. flavus and A. fumigatus with (58.33%) frequency. It was also found that maximum percentage contribution was observed for Aspergillus fumigatus (15.16%), which was followed by Aspergillus niger with (09.51%) contribution (Fig. 2).

Fungal species recorded were representatives of the three major groups i.e. Zygomycotina, Anamorphic fungi and Mycelia sterile. It was also observed that the anamorphic group was dominated fungal group. The fungal species Cladosporium oxysporum, Fusarium Mycelia sterilia Aspergillus, Penicillium, Curvularia, Cladosporium, Rhizopus, Trichoderma were observed during the investigation period. It is found that maximum percentage contribution is observed for A. Fumigates, followed by A. niger. On the contrary, minimum percentage contribution (0.25) is observed for Aspergillus terreus (Fig. 1).

During study it was found that, the biggest toll group Anamorphic fungi, as a whole, dominated the entire water mycoflora and present throughout year. Out of 31 fungal species which is isolated during study, the broadest spectrum of species are shown by Aspergillus, Penicillium and Fusarium. Aspergillus niger, A.
Aspergillus fumigatus, A. flavus, A. versicolor, and Cladosporium sphaerospermum, are commonest species, show maximum percentage frequency and contribution. Aspergillus is one of the more commonly isolated genera in water (Arvanitidou et al 2000, Sharma & Shaista 2011 and Giorgio Brandi et al 2007). Laila A. Nasser (2005) also found that the genera Aspergillus (9 species out of 45 species, 166 colonies out of 400 fungal total counts) and Penicillium (7 species, 68 colonies) had the greatest diversity of the isolated species as well as the highest fungal total count. In his study Ruby Grover et al. (2007) also found that, Aspergillus has been found to be most speciose genera represented by seven species. As we know fungi are among the most diverse groups of living organisms on earth, though inadequately studied worldwide (Grover et al 2007). This is also true for Chhattisgarh. Because the complete surveys of fungal diversity at the species level, even for a small geographic region, can be an exhaustive task. It is well known fact that due to annihilation of our natural areas is leading to an ever-increasing decline in biodiversity worldwide.

REFERENCES


