**IJPSR (2014), Vol. 5, Issue 4** **(Research Article)**

INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES AND RESEARCH

Received on 13 November, 2013; received in revised form, 04 January, 2014; accepted, 24 March, 2014; published 01 April, 2014

# BIOLOGICAL STUDY TO ASSES HEALTH OF NARMADA RIVER IN JABALPUR

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**Keywords:**

Narmada river, Fungi

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**ABSTRACT:** Present studies was undertaken to find out of aquatic fungi in river Narmada. Fungi are eukaryotic, heterotrophic organisms, including both single-celled yeasts and multi-cellular filamentous fungi. Many fungal species can survive in oligotrophic environments, through scavenging nutrients from the substrate which they colonies, or the air or water in which they live. Fungi also produce secondary metabolites, some of which are toxins. Some of the fungal species and the metabolites they produce are human pathogens or allergens. It is an attempt for water quality studies by the analysis of aquatic fungi at three sampling sites in Jabalpur.

**INTRODUCTION:** In Madhya Pradesh the main sources of River water are Narmada, Betwa, Tawa, Sone, Sindh, Kanhan, Ken, Tapti, Tamas, Satna, Sher, Banjari, Hiran, Narmada and these river are polluted by untreated industrial waste and sewage discharge from cites and Town. The effluent of city and small drains with city waste without any treatment and dilution into these rivers which the result than of they are becoming polluted in this area.

Bank of river is surrounded by variety of dry deciduous and semi ever green forests, significant amount of plant litter accumulated during autumn every year, which provide natural medium for multiplication of a large number of water borne conidial fungi. Survey conducted at Jabalpur (Narmada River) and yielded water borne Candidial fungi [1, 2].

QUICK RESPONSE CODE

DOI: 10.13040/IJPSR.0975-8232.5(4).1490-92

Article can be accessed online on: www.ijpsr.com

DOI link: http://dx.doi.org/10.13040/IJPSR.0975-8232.5(4).1490-92

Therefore, the present study was undertaken with an object to find out number of water borne fungi in Narmada River at Jabalpur.

## MATERIAL & METHODS:

**Field survey:** Periodical tours of different sites selected at the river Narmada were under taken from to collect submerged leaves, twigs, water sample etc.

**Collection of Samples:** Submerged decaying, Skeletonized , dark brown to black leaves and twigs were collected from barriers of water flow and litter bed of water bodies in pre-sterilized polythene bags and brought to laboratory.

**Plant Residue analysis:** The leaves and twigs were washed thoroughly in tap water and distilled water indivisually to remove adhering mud invertebrates and any other debris and placed in separate bottles containing 100 ml of distilled water and a pinch of antibiotic (chlorophenicol) to control bacterial growth. There were incubated at room temperature 25 $\pm 2^{o}$C five to seven days. The bottles were continuously aerated with Aerator".

Starting from the beginning day, the water samples and incubated plant materials were examined regularly under a low power of compound microscope.

**Identification:** The identification was done after studying the morphological and cultural characteristics with the help of manuals, monographs and paper of various workers [1, 2, 3, 4, 5]. Slides were prepared by mounting the culture in lacto-phenol and cotton - blue reagent.

**Preparation and Maintenance of culture:** Fungi isolated were aseptically transferred to agar slants and by repeated sub-culturing pure cultures of different isolates were obtained. The stock culture of the micro-organisms were maintained on the PDA slants and stored at a low temperature in the refrigerator. The other slants were kept in the incubator (BOD) at 28 ± 1°C and were routinely transferred into the fresh slants for experimental purposes.

**RESULT AND DISCUSSION:** An extensive periodical mycological survey of different water bodies in Narmada river at Jabalpur (Gwarighat, Bhedaghat, Tilwaraghate) was made for water born fungi from January to April 2013. Over a period of four months, 30 fungi of water borne fungi were recorded.

The data represented in **Table 1** clearly indicate the decaying submerged leaves were the most suitable substrates harboring maximum number of fungi. It was followed by foam and twig litters. Similar observation were also recorded by [6, 7, 8] occurrence of high number of fungi on leaf litter may volume ratio can trap and be colorized by a variety of species besides these, the leaves having soft tissue which can easily be degraded in comparison to twig having hard tissue. The presence of wood in stream may be important in long term maintenance of population of these fungi [9, 10]. According to [11, 12, 13] the foam analysis technique is believed to give reasonable complete list of waster fungi occurring in a given stream. This can also suggested that the use of different method under integrated programs may also be very important to study the mycoflora of given region.

**TABLE 1: DISTRIBUTION OF MYCOFLORA IN RIVER NARMADA AT JABALPUR**

| S. No. | Name of Fungi | FGCCNR No. | G | B | T |
|---|---|---|---|---|---|
| 1 | *Anguillospora Crassa* | (FGCCNR#06) | + | + | - |
| 2 | *A.fragementans* | (FGCCNR#07) | - | + | - |
| 3 | *Chaetocladia* | (FGCCNR#08) | + | + | - |
| 4 | *C.aquatica* | (FGCCNR#09) | + | + | - |
| 5 | *Fusarium* | (FGCCNR#10) | +++ | ++ | +++ |
| 6 | *Asp. Terreus* | (FGCCNR#11) | - | ++ | - |
| 7 | *Penicillum sp.* | (FGCCNR#12) | + | +++ | - |
| 8 | *Penicillum nigricans* | (FGCCNR#13) | + | + | - |
| 9 | *Pericornia Kambakkamensi* | (FGCCNR#14) | + | + | + |
| 10 | *Pericornia diospyrae* | (FGCCNR#15) | ++ | +++ | - |
| 11 | *Ceratosporella deviate* | (FGCCNR#16) | + | - | - |
| 12 | *Asp. Fumigates* | (FGCCNR#17) | ++++ | - | - |
| 13 | *Asp. Niger* | (FGCCNR#18) | - | + | ++ |
| 14 | *Asp. Flavus* | (FGCCNR#19) | + | + | - |
| 15 | *Asp. Nidulans* | (FGCCNR#20) | + | ++ | - |
| 16 | *Diplococcium sp.* | (FGCCNR#21) | + | + | + |
| 17 | *Allescheriella crocra* | (FGCCNR#22) | + | ++ | ++ |
| 18 | *Chaetomium sp.* | (FGCCNR#23) | + | + | + |
| 19 | *Alternaria sp.* | (FGCCNR#24) | + | - | +++ |
| 20 | *Curvularia sp.* | (FGCCNR#25) | + | ++ | - |
| 21 | *Phoma glomerata* | (FGCCNR#26) | + | - | + |
| 22 | *Phoma sp.* | (FGCCNR#27) | ++++ | ++ | + |
| 23 | *Mucor* | (FGCCNR#28) | + | + | + |
| 24 | *Veriticillium* | (FGCCNR#29) | - | + | - |
| 25 | *Tricoderma viride* | (FGCCNR#30) | ++ | + | + |
| 26 | *Tricoderma sp.* | (FGCCNR#31) | + | + | - |
| 27 | *Rhizopus arhizus* | (FGCCNR#32) | + | + | - |
| 28 | *Rhizopus sp.* | (FGCCNR#33) | + | + | +++ |
| 29 | *Monilia sp.* | (FGCCNR#34) | + | + | + |
| 30 | *Torula sp.* | (FGCCNR#35) | + | + | ++ |

+ = Presence of species; - = Absence of species; G = Gwari ghat; B = Bhedaghat, T = Tilwara ghat; NR = Narmada river

**CONCLUSION:** Fungi are a common component of the microflora in River Narmada systems. The specific community of fungal species found varies between systems, and may also vary over time. Some species are resident in the system while others are transient and do not become established. A number of species have been regularly isolated from different location, including some that are known human pathogens.

Therefore, the present investigation that indicates water of the Narmada river is less polluted. River water all along is more or less satisfactory for drinking purposes with an increasing awareness in the field of water pollution control and the desire of maintain river at their highest quality level, strict environmental compliance is required to check the pollution load.

**ACKNOWLEDGEMENT:** The authors are thankful to the Director of Biodiversity Conservation and Rural Biotechnology Cente, Jabalpur for providing support to the study and other necessary facilities and other technical support for this work.

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**How to cite this article**:
Singh J, Gupta S and Tiwari J: Biological study to asses health of Narmada river in Jabalpur. *Int J Pharm Sci Res* 2014; 5(4): 1490-92.doi: 10.13040/IJPSR.0975-8232.5(4).1490-92