

SEASONAL DISTRIBUTION AND PERIODICITY AMONG THE AQUATIC FUNGAL BIODIVERSITY FROM MADAN SAGAR POND, MAHOB(A.U.P.) INDIA

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ABSTRACT

The present study is an attempt to know the Seasonal Distribution and Periodicity among the Aquatic Fungal Flora From Madan sagar pond of Distt, Mahoba (U.P.) during November 2016 to December 2017. On critical examination, identification and purification of aquatic fungi, some members of Phlyctidiaceae, Rhizidiaceae, Cladochytridiaceae, Chytridiaceae, Megachytridiaceae, Blastocladiaceae, Saprolegniaceae, Pythiaceae and Moniliaceae were reported. Maximum number of fungal species was recorded during rainy season i.e. *Saprolegnia diclina*, *Rhizophyidium sp.*, *Nawkowskiella elegans* and *Saprolegnia sp.*, while lowest number of fungal species was observed in summer i.e. *A. cornuta*, *A. oligantha*, *Allomyces arbuscula*, *Blastocladiopsis parva*, *Lamonnieria comuta*, *L. aquatica*, *Protoachlya species*, *R. herderi*, *R. petersenii*, *S. anisospora* and *Spirosphaera sp.* but in autumn season had only rare or few occurrence. Among all of them *Achlya klebsianna* showed maximum frequency and *A. cornuta*, *A. oligantha*, *Allomyces arbuscula*, *Blastocladiopsis parva*, *Lamonnieria comuta*, *L. aquatica*, *Protoachlya species*, *R. herderi*, *R. petersenii*, *S. anisospora* and *Spirosphaera sp.*, showed minimum frequency. These recovered fungi were purified and isolated on YPSS and YPG cultured medium then examined and identified with various relevant literature.

Figure : 00

References : 41

Table : 01

KEY WORDS : Aquatic Fungi, Distribution, Diversity, Madan sagar pond, Occurrence and water samples

Introduction

Dictionary of fungi (5th edition), Commonwealth Mycological Institute, Kew, Surrey, defined aquatic fungi as fungi in water or water liable organism. This diverse group of organism is also called as aquatic hyphomycetes, fresh water hyphomycetes, water borne fungi, zoosporic fungi (Uniflagellated and biflagellated) and recently known as water moulds. The distribution and seasonal fluctuations of aquatic fungal diversity in relation to various environmental factors and conditions as well as to the geographical regions of world have been intensively investigated^{2,19,24,26}. Since the taxonomic study of fungi is basic and fundamental to all the branches of science and without the knowledge of systematic and taxonomy, we can not go ahead for applied aspects hence several investigators were dealing with ecological and study on biodiversity of aquatic fungi^{12,14,23,24,29,30,36,38,39}. Some workers focused their attention towards special genera of fungi e.g. *Achlya*, *Saprolegnia*, *Pythium*, *Blastocladiella*, *Allomyces* and new genera *Dictypleiopsus*^{4,8,10}.

Now a days biodiversity is a burning issue with its advantages and disadvantages, significance, threats and its various affects attracted many researcher in the field of mycology^{2-18,21-26 & 35-40}. Madan sagar pond was previously explored in the area of medicinal plants, algal diversity, phytoplankton, zooplankton study and physico-chemical analysis of the selected site. Since this pond was untouched for such scientific study (mycological) so the present investigation was envisaged for Seasonal Distribution and Periodicity Among the Aquatic Fungal Flora.

Material and Methods

The district Mahoba is situated in the South West corner of the region at 25°01'30"N - 25°39'40" N latitude and 79°15'00"E - 80°10'30" E longitudes. Mahoba is well known district of Bundelkhand region of Uttar Pradesh, India with a geographical area of 2884 sq. km. The name Mahoba is derived from 'Mahotsav Nagar', the city of great festivals, which were celebrated here by ChandraVerman, the traditional founder of the Chandella Dynasty. Madan

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Sagar was built by King MadanVerma (1128-1164 AD). The southern area of the district is covered with hillocks. The average annual rainfall is 864 mm. The climate is typical subtropical punctuated by long and intense summer. About 87% of the annual rainfall is received from

TABLE-1 : Fungi species of Madan Sagar pond of Mahoba

	Win-ter	Spr-ing	Sum-mer	Rai-ny	Aut-umn
<i>Rhizophydium</i> sp.	06	11	10	40	12
<i>Rhizophlyctis</i> sp.	05	15	11	10	18
<i>Cladochytrium</i> sp.	10	14	11	10	16
<i>Karlingia</i> sp.	04	13	10	11	11
<i>Nawakowskiella</i> sp.	08	11	12	30	13
<i>Allomyces</i> sp.	10	15	11	20	12
<i>Blastocladiopsis</i> sp.	08	11	19	11	10
<i>Blastocladiella</i> sp.	10	13	10	20	18
<i>Achlya cornuta</i>	09	10	14	11	10
<i>Achlya klebsiana</i>	10	14	10	14	14
<i>Achlya oligacantha</i>	12	10	12	11	11
<i>Achlya oblongata</i>	11	13	10	11	11
<i>Isoachlya</i> sp.	10	11	11	10	15
<i>Protoachlya</i> sp.	14	12	10	12	10
<i>Pythium</i> sp.	13	16	15	10	10
<i>Lamonnieria</i> sp.	10	11	16	12	11

South-West monsoon. May is the hottest month with temperature shooting up to 47.5°C. With the advance of monsoon by about mid June, temperature starts decreasing. January is usually the coldest month with the temperature going up to 8.3°C. The relative humidity is highest during south-west monsoon ranging between 80% to 85% with its lowest around 30% during peak summer months of April and May.

Blastocladiaceae, (Chytridiales) were not found to grow on culture medium used in the normal course except a few specially devised for them wherever chytrids was present. Its life history was studied as far as possible on the baits themselves. For getting pure culture of fungi of Pythiaceae, Saprolegniaceae and Blastocladiaceae either single sporangia or single zoospore isolation was done. To cultivate and to preserve the isolated fungi, the synthetic media and preservative were used¹.

1. YPSS (yeast starch medium) (i) Yeast extract: 4 g. (ii) Soluble starch : 15 g (iii) K₂HPO₄: 1g (iv) MgSO₄ .7H₂O : 0.5 g (v) Agar: 30 g (vi) Distilled water: 1000ml Streptomycin sulphate and penicilline "a" (0.5 g each) were added after sterilization.

2. YPG (yeast glucose method) (i) Yeast extract : 4 g. (ii) Soluble glucose : 20 g (iii) K₂HPO₄: 1g (iv) MgSO₄ .7H₂O : 0.5 g (v) Agar: 30 g (vi) Distilled water: 1000ml

Isolated and cultured fungi were put under compound microscope with different combinations of eyes pieces. All the possible confirm diagram and detail of morphology, zoosporangia, zoospores, conidia, conidiophores were drawn and measurement has been taken to same scale. Identification of fungus was done with the help of using following relevant monographs, reviews, books and researches reference^{5,9,13,15,25,34,38}.

Result and Discussion

During the period of present investigation overall total 31 fungal species (108 colonies), 16 fungal genera belonging to members of Phlyctidiaceae, Rhizidiaceae, Cladochytriaceae, Chytridiaceae, Megachytriaceae, Blastocladiaceae, Saprolegniaceae, Pythiaceae, and Moniliaceae were isolated from selected sites.

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