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FRESHWATER FUNGI A SPECIAL REFERENCE WITH SOUTH INDIA

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ABSTRACT

A study into fresh water is an abundant source of wealthy information, with the help of several research papers review, book, and monographs this article is made. Expanding research on mycology has been opening avenues to the use of fungi in different fields of day to day. There are several scientific tools for the study of fungi, though its study in Southern India is very less. The novel progress is opening new avenues in the field of freshwater Mycology. The gradual increasing progress has helped to author this research article. This is a comprehensive overview of fresh water mycology facets. It is completely based on the taxa of fresh water fungi. It is the study on fresh water fungi only. The importance of fresh water fungi is discussed.

KEYWORDS: *Fresh Water, Fungi, Source, Information, Use, Tools, Sothern India, Progress, Taxa, Importance*

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INTRODUCTION

The standing fresh water bodies Ponds, streams, brooks, ditches, rivers, and rivulets come under fresh water bodies. Lakes are deeper than Ponds, so the light may not penetrate deep into the bottom of the fresh water body. It results to form zones in the water body. Once look at the zones of the fresh water ponds. It consists lentic, lotic, and benthic zones tropical areas of the world.

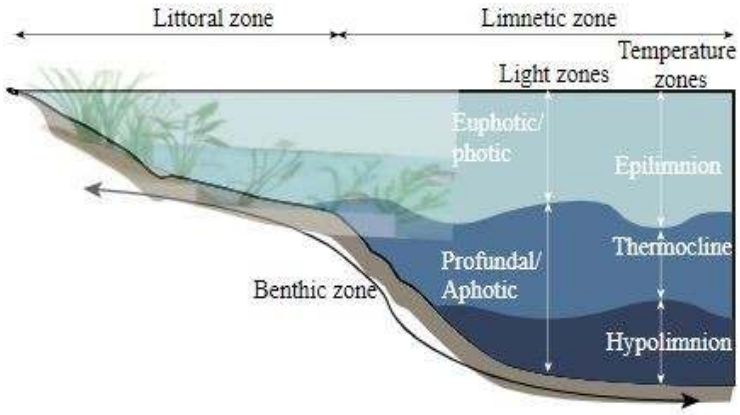

Figure 1: Fresh Water Zones.

Source of pic: https://www.insightsonindia.com/world-geography/physical-geography-of-the-world/biogeography/biomes-5/freshwater-biomes/

There are total 997species of freshwater fungi information meagerly available in India, from these fungi 209 species belong to Oomycetes (IJ, 2018). It is reported by a fresh water fungi studies in 2018. The visibility of Indoldian fungi, hyphomycetes, aquatic ascomycetes, and non-Indoldian, and chytrids is very rarely visible. Due to the temperature, and the reflection of the light change from zone to zone in the fresh water bodies its growth and expansion is predominant. The distribution of these tax is differing from place to place, and even water body to another water body due to water salinity. There is a belief the fresh water fungi evolves from terrestrial ancestors. Several species are clearly adapts to the life in fresh water as their propagules have specialize aquatic dispersal abilities. Majority of fresh water fungal taxa involve in the wood decay, and leafy material decay, and some of the species cause diseases to plants and animal. It is evidential that the moisture, moderate temperature, and damp weather double the growth of fungi. In contrary low humidity, high temperature stunts the growth of fungi, and its spore germination.

OBJECTIVES

The main objective of the paper is

- To study the disruption of fresh water fungi
- To understand the use of fresh water fungi

RESEARCH METHODOLOGY

The data has collected by both the primary and as well as the secondary sources. Most of the data has collected from the secondary sources.

DISCUSSION

The role of fungi in the Biosphere is vital, and crucial. It play a prominent role in recycling nutrients in terrestrial habitats. These are the dominant decomposers of plant debries, and lignin. During leaf decomposition in freshwater bodies such as Basidiomycota, Chytridiomycota, Muucorromycota, and Oomycota. The ecological group of fungi is both meiosporic, and mitosporic ascomycetes. To decompose organic matter, these produce different types of enzymes in fresh water bodies. For the last two decades the studies on fungi, and its role in ecological balance is known. Fungi is also playing prominent role in litter decomposition. They produce nutrients, and energy to high tropic level.

Figure 2: "Variety of Ascospores and Conidia of Freshwater Ascomycetes and Hyphomycetes. Panels a–c, Freshwater Ascomycetes: (a) Minutisphaera Fimbriatispora (Picture Credit, C. A. Shearer), (b) Luttrellia Halonata (Picture Credit, A. Ferrer), and (c) Lindgomyces Ingoldianus. Panels d–f, conidia of Aquatic (Ingoldian) Hyphomycetes: (d) Dendrospora Erecta, (e) Anguillospora Crassa, and (f) Lemonniera sp. Panels g and h, Conidia of Aeroaquatic Hyphomycetes: (g) Cancellidium Applanatum (Picture Credit, S. E. Zelski), and (h) Helicodendron sp. (Picture Credit, C. A. Shearer). Scale Bars: a, c, f, h = 20 µm, b, d, e = 10 µm, g = 200 µm." (ACS, 2021 Publication)

Fungi often occurs in fresh water comprise a phylogenetical diversified group, Ascomycota. These are frequently considered as ecological assembly rather than taxonomic group. It means fresh water fungi appear in a variety of linage. It is heterotrophic in nature, are on photosynthetical production organic matter. For degrading biodegradability the fungi consumes microscopic aquatic macrophytes, algae, and terrestrial plant litter.

More than 280 freshwater fungi information has published since 1992. Out of these 199 of the fungi was discovered in the past. Since its study has from ages these are just confine to freshwater, freshwater fungal-chemistry. There is a need for extensive study of freshwater fungi, because the known is a little. Throughout South America, Africa, and in several areas of Asia fungi distribution is vast. Freshwater fungi produce bioactive compounds, it helps the chemists to discover new drug. Some of the studies are going on these products and the fung's secondary metabolites. There is an essence to focus on the studies of fungi species, ecological roles, and its evolution.

There are several fungal species in freshwater which are creating lots of problems associated with water pipe blockage, organoleptic deterioration, myotoxins, and pathogenicity. Among these mycotoxins are secondary metabolites, these can cause health effects in animal, and the human. The growth of fungi happen at certain level of water only, each and every species need a different level of water requirement. Lack of covers on physical water bodies help to grow fungi through air, and animal.

Once fungal species is introduced into the environment, it establishes on the pipe's inner surfaces, including the interaction and reaction with sealings, coatings, and biofilms within distribution systems. Some species can be found

throughout water distribution networks, no water no fungi growth or reproduction. A key to preventing and controlling its growth in things such as buildings reduce free water availability by removing the water source such as repairing leaks in pipes. Often water treatment may fails to check the growth of fungi from the water source.

The aquatic fungi Chytridiomycetes, and Oomycetes are parasitic in nature lives in freshwater ecosystems. A very less studies have conducted on it. its paracitism greatly influence food supply, nutrient transfer, and freshwater ecosystems population dynamics (Kagami, 2008; Miki et al., 2011). Paracytism and mutualisms are not clearly distinguished (Jobard, et al., 2010) revealed paracytic and mutualistic fungal species exists in freshwater (Litcharward, and William, 1999; Shearer et al., 2007; Strongman, 2007).

CONCLUSION

The freshwater ecosystem is a diversified and complex food web with each species plays an important role as producers, and consumers. For example algae is a producer, and Daphnia, fish are consumers, along with some decomposers, bacteria, and fungi. It plays a unique role in freshwater ecosystem pertain to degradation of dead plants, litter, and leaf, so the energy transfer to the higher tropics of the water body. The uses of fungi is yet to be known to us, and there is a necessarily for extensive study. The secondary metabolites of some fungal species bring a change in colour, taste, and smell of water. Sometimes organic acids production of fungi alters taste, and increases corrosion in water pipes. The breaks include joints leakage, adapters, pipeline, and seals cracks. Breaks in those cause contamination of water. Change in pressure causes fluctuation, power failure, and demand changes happen.

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