



Biodiversity of Myxomycetes in the Nilgiris District of Tamil Nadu

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Abstract

The main objective of the present study is to investigate the biodiversity of myxomycetes in the Nilgiris district of Western Ghats in Tamil Nadu. Not much of the work on the distribution of this group of fungi is studied in this region. So the present work was intended to collect the ecologically important group in Nilgiris of Tamil Nadu

Keywords: Biodiversity - Myxomycetes - Nilgiris - Western Ghats

Introduction

Biodiversity with special reference to an important group of fungi Myxomycetes is very much essential for our country, since not much information is available about this small group of fungi. This particular group of fungi has unique combination of both Protozoan and fungus like characters displayed by them. The genetic resources collection of myxomycetes will serve as a depository of our bio resources. These fungi should be documented properly by collecting and identifying them. This little group with 600 – odd species are widely distributed over tropical and temperate regions, in a deciduous and coniferous forests and even in the regions of extreme environments. The presence of melanin in the spore walls of myxomycetes is one of the contributory factor for the successful distribution of this group (Loganathan *et al.* 1989; Kalyanasundaram *et al.* 1994; Loganathan 1998; Loganathan and Kalyanasundaram, 1999; 2000).

Myxomycetes generally occur in any terrestrial habitat, where decaying plant material and moisture are available. They are particularly abundant to moist

temperate forests where potential substrates are plentiful like fallen leaves, logs, stumps and dead wood. The plasmodium does not emerge to the surface of the substratum until ready to fruit. So only the fruiting bodies are observed and collected. The substrate preference also been reported for some common species of myxomycetes. For example some would fruit only on dead wood or bark (*Stemonitis* and *Cribraria*). Majority of *Diachea* and *Didymium* usually fruit on dead leaves and twigs and other debris (Grey and Alexopoulos, 1968).

A detailed study on the physiology, ecology and biochemistry of myxomycetes species were studied by different workers. The distribution of this group of fungi is not studied much in Southern India, particularly in the Nilgiris of Western Ghats. So the present work was intended to collect the ecologically important group in Nilgiris (11° 23' to 27°N latitude and 76° 40'E to 76 ° 45 E longitude, elevation 2000-2500 m.) of Tamil Nadu in Western Ghats.

Materials and Methods

The main objectives of the present study is to investigate the biodiversity of myxomycetes in Nilgiris of Tamil Nadu. The field collections were made to the different places in different climatic conditions in different localities in the coniferous plantations and also from the *Eucalytus* plantations. The substrates were mainly decaying logs of conifer trees and decaying stumps of *Eucalytus*.

In Nilgiris the fruiting bodies of slime moulds generally first appear with the onset of monsoon rains from July and continues to occur until the rainy season ends in early November and the frequency of occurrence reduces during the winter and it is less abundance during the summer season as there is no sufficient rainfall.

The specimens were collected in a specially made card board boxes of 11x 8x2.5 cm in size. The collected specimens were recorded for their characteristics features like habitat, type of the forest where it is fruited. Each specimen was numbered and labeled with the family name, place of collection, collectors information, date of collection at the bottom side of the boxes specified. The boxes were packed in a larger box and transported to laboratory.

Gross morphology of the fruiting bodies with some internal characters like the presence or absence of columella or pseudo columella, presence of lime under

stereoscopic microscope. Microscopic slide preparation were made for details regarding size, shape, colour and ornamentation of spores and capitital threads and their ornamentation. These were identified based on the Martin and Alexopoulos (1969); Lakhanpal and Mukerji, 1981).

The purpose of this work is to collect some basic data on the distribution, composition and diversity of the myxomycetes in the different habitats of Nilgiris. Collections were made using small card board boxes with original substrates as such, dried at room temperature and transferred to preservation

Results and Discussion

In the Montane-Temperate regions of Udagamandalam (Ooty) of Nilgiris district, the Myxomycete fructification were collected mainly from decaying logs of coniferous trees mostly species of *Pinus patula*. The collected specimens were identified down to genus level representing different orders. The most commonly found fructification were those of members of Trichiales. The Physarales were rather rare. The extensive fruiting of the Trichiaceous species *Trichia favogenia* was found on a decaying stumps of *Eucalytus* sp. A total of 15 species were collected. Though the collection was at different time intervals, the extensive fruitings were only during October and November after the rainy season. The specimens were identified based on the monographs of Martin & Alexopoulos(1969); Lakhanpal & Mukerji, 1981). The Table 1. shows the list of the collected specimens.

Table 1. List of the Myxomycete specimens collected

S.No.	Orders & Family	Taxon
	Liceales	
1	Reticulariaceae	<i>Lycogala epidendrum</i> (L.)Fries
2	Cribrariaceae	<i>Cribraria</i> sp.
3.	Cribrariaceae	<i>Dictydium mirabile</i> (Rost.) Meylan
	Trichiales	
4	Trichiaceae	<i>Arcyria nutans</i> (Bull.)Grev.
5	Trichiaceae	<i>Arcyria occidentalis</i> (Macbr.)G.Lister
6	Trichiaceae	<i>Hemitrichia stipitata</i> (Masse)Macbr.
7	Trichiaceae	<i>Trichia favoginea</i> (Batsch) Pers.
8	Trichiaceae	<i>Trichia</i> sp.
	Stemonitales	
9	Stemonitaceae	<i>Stemonitis splendens</i> Rost.
10	Stemonitaceae	<i>Stemonitis herbatica</i> Peck.
11	Stemonitaceae	<i>Lamproderma muscarum</i> (Lev.) Hagelst
12	Stemonitaceae	<i>Clastoderma</i> sp.
	Physarales	
13	Physaraceae	<i>Leocarpus</i> sp.

The finding of the “non-calcareous” species especially the members of the Trichiales forming extensive fructifications on decaying coniferous wood in the Montane-temperate climatic areas was in accordance with expectations, the Physarales being rather rare (Venkatramani and Kalyanasundaram, 1986). They have also pointed out that though the calcareous as well as non-calcareous myxomycete prefer a cool, moist temperate environment, the non-calcareous is more specific in its requirements i.e., an altitude above 500 m, temperature of 10 to 20 C and rainfall of 250 to 500 mm per month. These authors further indicated a preference for leaf litter in the calcareous species and dead wood and bark in the non-calcareous species. In the present context the kind of broad-leaved litter preferred by the calcareous species being absent in the coniferous forests, they were found associated with bryophytes. The bryophyte-myxomycete associations are relatively common in temperate regions, as bryophytes are particularly abundant in coniferous forests and they occur on the same substrates as myxomycetes of decaying wood and litter.

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