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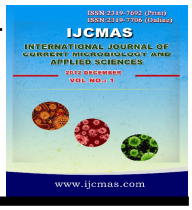

Short Communication

A study on distribution of fungi in sea foams in estuarine ecosystem

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KEYWORDS

Mangroves;
marine and marine fungi;
direct and dilution technique;
direct observation.

A B S T R A C T

The present study was carried out in Muthupet habitat along the east coast of Tamil Nadu. The sea foams were collected and fungal species isolated by plating and direct observation techniques. Totally 64 species of fungi were isolated of which 48 by plating and 29 by direct observation techniques. The marine fungi like *Halosphaeira maririma, Didymosphaeria maritima, Varicosporina ramulosa* and *Pleospoara aquatica* were also isolated. *Aspergillus* was the common genus followed by *Drechslera*, *Alternaria* and *Curvularia*.

Introduction

In an estuarine system, the distribution of fungi in sea foams through tidal waves plays an important role in mangrove litter decomposition, total productivity and energy cycles. Appendaged Ascospores, Basidiospores and tetraradiate conidia are frequently found in sea foams along sandy shores, mostly together with algae and protozoa (Schlichting, 1971).

Microscopic counts of fungi, algae and protozoa and liquefied sea foam demonstrated the potential of the sample and their ecological, seasonal and geographic distribution of marine microorganisms (Kohlmeyer and Kohlmeyer, 1979). Mangrove fungi are almost exclusively saprobes and belong to the family Ascomycetes, Deuteromycetes and Basidiomycetes. The majorities of magnicolous marine fungi are omnivorus and occur mostly on dead cellulosic substrates around the tropics (Kohlmeyer, and Kohlmeyer, 1979).

The present study was therefore initiated to study about the fungi in sea foams of Muthupet mangroves along the east coast of India.

Materials and Methods

The present study has been undertaken in Muthupet mangroves, a coastal deltaic habitat along the east coast of Palk Strait, Bay of Bengal in Tiruvarur district, Tamil Nadu, India. Sea foams were collected near the edges of the land surface by scooping them into sterilized bottles.

Sea foams were subjected to direct, dilution plating and direct observation techniques to isolate fungi. The plating technique was performed using Potato Dextrose agar, Rose Bengal Agar and Corn Meal agar. The plates were incubated at 28C for 4-5 days. In direct observation of sea foams, the sample was centrifuged at 3000 rpm for 5 minutes. The residual was collected and used for observation of fungal spores. The semipermenant slides for the fungi isolated were prepared using lactophenol cotton blue staining method (Dring, 1976) and sealed with DPX mountant. The identification of fungi was based on Hyphomycetes (Subramanian, 1971), Dematiaceous and More Dematiaceous Hyphomycetes (Ellis, 1971, 1976),

Marine Mycology (Kohlmeyer and Kohlmeyer, 1979) and A manual of soil fungi (Gilman, 1959, 1998).

Results and Discussion

From the sea foams, totally 64 species of fungi were isolated, of which 48 species of fungi were by dilution plating technique and 29 species of fungi were by direct observation of sea foams. Among the fungi isolated, 5 species of fungi belong to Zygomycetes, 6 to Ascomycotina, 52 to Deuteromycotina and 1 mycelia sterila. In this study, *Aspergillus* was the dominant genus represented with 15 species followed by *Drechslera* (9), *Alternaria* (8) and *Curvularia* (6) (Table 1).

Table 1: Number of fungi encounted from sea foams by plating

Zygomycotina	*A. tenuis*
Thamnidium sp.	*A. triticicola*
Mucor sp.	*Curvularia geniculata*
Rhizopus oryza	*C. lunata*
R. nigricans	*C. richardiae*
Actinomucor sp.	*C. subulata*
	C. tritici
Ascomycotina	*C. tuberculata*
Emericella nidulans	*Drechslera avenacea*
Neurospora crassa	*D. tripogonis*
Thielavia sp.	*D. siccans*
	D. stenospila
Deuteromycotina	*Drechslera* sp.
Aspergillus carbonarius	*Exosporium* sp.
A. clavatus	*Helminthosporium velutinum*
A. flavus	*Helmithosporium* sp.
A. fumigatus	*Pyrenospora avenae*
A. funiculosns	*P. dictyoides*
A. koningi	*Ascochyta vulgaris*
A. luchuensis	
A. nidulans	
A. niger	
A. ochraceous	
A. sulphureus	
A. terreus	
A. versicolor	
A. wentii	
Aspergillus sp.	
Penicillium purpurrescens	
Penicillium sp.	
Alternaria cincerariae	
A. citri	
A. dennissi	
A. petroselini	
A. solani	

True marine forms namely *Halosphaeria maritime*, *Diymosphaeria maritima*, *Varicosporina ramulosa* and *Pleospora aquatica* were also isolated (Table 2). This was well correlated with the previous findings by Kohlmeyer (1968, 1969) and Kohlmeyer and Kohlmeyer (1977). Conidial fungi associated with foam and submerged leaves play significant role in processing aquatic litter, energy flow and productivity (Manoharachary and Galaih, 1987). Conidial fungi are known to occur on submerged leaves and also in foam accumulated at barriers of water falls in aerated water bodies and these conidia were demonstrated by Dewildman in 1985 followed by Ingold's (1942). 5 Ascomycetes, 1 Basidiomycetes and 4 Fungi imperfecti (including *Alternaria* sp. *Varicosporina ramulosa* were isolated from the sea foams and reported by Kohlmeyer (1966, 1968, 1969) and Kohlmeyer and Kohlmeyer (1971,1977) along shores.

Table 2 : Fungal spores isolated exclusively from sediments of sea foams

Ascomycotina
Halosphaeria maritima
Diymospheria maritima
Pleospora aquatica
Varicosporina ramulosa
Deuteromycotina
Alternaria cincerariae
A. citri
A. dennissi
A. petroselini
A. sonchi
A. triticola
Curvularia lunata
C. richardiae
Clasterosporium flagellatum
Drechslera avenacea
D. ellissi
D. indica
D. poae
D. siccans
D. stenospila
D. urochloae
Diaporthe inaqualis
Helminthosporium velutinum
Melanomma fuscidulam
Periconia laminella
Pyrenospora avenae
Sympodiophora stereicicola
Tetraploa aristata
Mycelia sterila

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