

## Isolation of soil Mycoflora of Gangtok, India

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### ABSTRACT

Isolation of soil mycoflora from Gangtok was observed by serial dilution method, In investigation period 146 colonies of 22 fungal species were observed the maximum percentage contribution of *Aspergillus fumigatus*, *A. niger* (12.32%) ,was followed by *A. flavus* , *A. luchensis*, *Mucor sp.* (6.84%) and minimum percentage contribution of *Cladosporium sphaerospermum* (0.68%). The maximum fungal species belongs to the Ascomycotina 92 colonies, followed by Deuteromycotina 29 colonies, Zygomycotina 18 colonies and mycelia sterilia (white) 7 colonies were observed.

**Key words:** Gangtok, *Aspergillus fumigatus*, soil mycoflora.

### INTRODUCTION

The quality and quantity of organic materials present in the soil have a direct effect on the fungal population of the soil. The development of microfungi is especially favoured by soils having an acidic reaction and where the aerobic condition is likely to be present near the surface.

Fungi play a focal role in nutrient cycling by regulating soil biological activity. However the role at which organic matter is decomposed by the microbes is interrelated to the chemical composition of the substrate as well as environmental conditions (Arunachalam *et al.*, 1997). Fungi come in many different species, sizes, and shapes in soil. The numbers and kinds of micro-organisms present in soil depend on many environmental factors: amount and type of nutrients available, available moisture, degree of aeration, pH, temperature etc.

GANGTOK is the capital of Sikkim. Gangtok is located in the Shivalik Hills of the eastern Himalayan range, at an altitude of 1,437 metres (4,715 ft) Gangtok features a monsoon-influenced subtropical highland climate. Because of its elevation and sheltered environment, Gangtok enjoys a mild,

temperate climate all year round. The aim of the present investigation is to isolate mycoflora from Gangtok soil, and to observe the percentage contribution of different fungal species.

### MATERIAL AND METHODS

Soil samples were collected from the different soil of Gangtok region(Rumtek Monestry, Flower Show,Tashi view point,M G road market), in a small sterilized plastic bottle. Potato Dextrose Agar (Potato 20%, Dextrose 2% and Agar 1.5%) was used to isolate fungi from soil.

Isolation of fungi – The fungal species were isolated by serial dilution method, 1g of soil sample was suspended in 10ml double distilled water to make microbial suspension, this suspension was used to make microbial concentration ( $10^{-1}$  -  $10^{-5}$ ). 1ml of microbial suspension of each concentration were added to sterile petri dishes (triplicate of each dilution) containing 15ml of sterile potato dextrose agar media. The Petri dishes were then incubated for 4-6 days for  $26 \pm 10^{\circ}\text{C}$ . After incubation the fungi were identified and frequency distribution of fungal species was investigated

## RESULTS AND DISCUSSIONS

During the investigation period 146 fungal colonies of 22 fungal species were observed. The maximum fungal species belongs to the Ascomycotina class - 12 fungal species and 92 colonies. 7 fungal species and 29 colonies found belong to the Deuteromycotina. In Zygomycotina class 2 fungal species and 18 colonies were observed. 7 colonies of mycelia sterilia (white) was observed among total 146 colonies (Table 1). The

**Table 1: Observations of different fungal species from Gangtok soil**

S. No.	Fungal Sp. %.	Contribution
1.	<i>Alternaria alternata</i>	5.47
2.	<i>Aspergillus awamori</i>	5.47
3.	<i>Aspergillus chartarum</i>	1.36
4.	<i>Aspergillus flavus</i>	6.84
5.	<i>Aspergillus fumigatus</i>	12.32
6.	<i>Aspergillus japonicus</i>	2.73
7.	<i>Aspergillus luchensis</i>	6.84
8.	<i>Aspergillus nidulans</i>	1.36
9.	<i>Aspergillus niger</i>	12.32
10.	<i>Aspergillus temari</i>	5.47
11.	<i>Bispora</i> sp	2.73
12.	<i>Cladosporium oxysporium</i>	0.68
13.	<i>Curvularia</i> sp.	5.47
1.	<i>Fusarium</i> sp.	1.36
15.	<i>Mucor</i> sp.	6.84
16.	<i>Mycellium sterilla</i>	4.79
17.	<i>Penicillium chrysosporium</i>	1.36
18.	<i>Penicillium frequentans</i>	5.47
19.	<i>Penicillium</i> sp.	1.36
20.	<i>Pycnidial</i> sp.	1.36
21.	<i>Rhizopus</i> sp.	5.47
22.	<i>Trichoderma</i> sp.	2.73

results of present investigation reveal the various work done by researchers. Some *Aspergillus* species such as *Aspergillus niger* and *A. temari* were isolated from soil of forest and cave ecosystems of Taiwan by Hsu and Agoramorthy (2001). Sharma (2009) studied soil mycoflora of Yumthang valley & observed that maximum contribution was of class Ascomycotina. Microbial analysis of different soil samples of selected site in Obafemi Awolowo University, Nigeria was investigated by Ogunmwonyi *et al.* (2008) they found *Aspergillus niger* as a dominated fungi among all, in the present investigation *A. fumigatus* found dominated in different fungal species. Baxter and Illston (1980) found some fungal species such as *Alternaria alternate*, *Chrysosporium pannorum*, *Cladosporium cladosporioides*, *Fusarium* sp., *Mucor hiemalis*, *M. racemosus* etc. from low temperature region of New Zealand, in the present work we have also found similar fungal genera such as *Alternaria*, *Cladosporium*, *Mucor* etc. from the low temperature region of Gangtok. Fungi belonging to genera *Acremonium*, *Aspergillus*, *Cladosporium*, *Fusarium* and *Trichoderma* were isolates from Antarctic soils by Singh *et al.* (2006). Species of *Penicillium* and *Trichoderma* were found from different tea growing locations in India by Pandey *et al.* (2001) The fungi were isolated from mesophilic temperature ranges of 15 °C to 35 °C. About 90 fungal stains were isolates from the soil of Kotri barrage, Pakistan by Suhail *et al.* (2007). Among the 21 *Aspergillus* species isolated, the *A. niger* was found as dominant.

## CONCLUSION

The fungi obtained from the site of present investigation belong to low temperature region. Now it was concluded that the isolated fungal species were get adopted at the low temperature.

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