

BIODIVERSITY OF KERATINOPHILIC FUNGI FROM SOILS OF MANGALNATH TEMPLE IN UJJAIN

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Abstract: 50 soil samples were collected from Mangalnath temple and their surroundings in Ujjain. These samples were examined for the existence of keratinophilic fungi by hair-baiting technique. Out of which, 90% samples were positive. *Aspergillus niger*, *Chrysosporium pannicola*, *Chrysosporium indicum*, *Microsporum gypseum*, *Malbranchea gypsea*, *Chrysosporium sp.*, *Trichophyton sp.*, etc. are the isolates. This study is the first of its kind in Malwa region (M.P.). It can be concluded that soils of Mangalnath are rich in keratinophilic fungi.

Keywords: Hair- bait technique, Keratin, Keratinophilic fungi, Mangalnath.

Introduction: Keratinophilic fungi are present in the environment with variable distribution patterns that depend on varied factors, one of which, of fundamental significance, is human and/or animal presence. Soils that are rich in keratinous materials are the most conducive for the development and occurrence of keratinophilic fungi. They are involved in the breakdown of keratinaceous substrates such as hairs, nails, feathers, wool, horn, hooves, skin, etc [1]. The Hair-bait technique [2] was used for isolation of keratinophilic fungi.

Material and Methods:

Sample collection: In this study, 50 soil samples were collected from various places of Mangalnath temple and their surroundings in Ujjain (M.P.) India. The soil samples were collected from the surface whose deepness did not exceed 4–6cm by using spatula. In doing so, 500 grams of soil was collected in sterile polyethylene bags. Each bag was tightly packed and labelled indicating the place and date of collection. These samples were brought to laboratory for further processing. Various baits (hairs, wool, nails, horn and feathers) were also collected from various sources and stored in plastic bags.

Hair-baiting technique: For the isolation of keratinophilic fungi, the Vanbreuseghem's hair-bait technique was used. For this, keratinous substances from each sample were aseptically spread on the top of each soil sample in sterile Petri dish and supply moistened condition (in duplicates) and incubated at 28°C \pm 2°C for one month and examined daily for fungal growth. The moulds which appear on the bait fragments (fig. II) were transferred to the surface of

Sabouraud's dextrose agar (Himedia) with chloramphenicol (50mg/l) and cycloheximide (actidione 500 mg/l). The Petriplates were incubated at 28°C for 7-10 days. These fungi were identified based on the standard monographs [3], [4], [5], [6], [7], [8].

Results and Discussion: 50 soil samples were screened for the prevalence of keratinophilic fungi. Out of which 45 soil samples (90%) were positive for fungal growth. The result of occurrence of keratinophilic fungi is shown in I and fig.1. *Aspergillus niger* was the most frequently recovered species being present in 26% of the soils of Mangalnath temple. *Chrysosporium pannicola* (24%) was the next most frequently isolated species. *Chrysosporium* species were also earlier reported from Indian soils [9], [10], [11], [12], [13], [14], [15], [16], [17]. *Chrysosporium indicum* (21%), *Chrysosporium sp.* (13%), *Microsporum gypseum* (11%), *Malbranchea gypsea* (2%), *Trichophyton* (1%), etc. are some among the isolates.

It can be concluded that soils of Mangalnath are rich in keratinophilic fungi. This could be attributed to the high organic debris and keratinous substrates present in these soils. If keratinophilic fungi were not readily available to cycle this protein, a high quantity of keratin would have accumulated on earth, as a huge amount of keratin is drop through the vertebrates. The keratinases have vast role where keratins should be hydrolyzed, such as the leather and detergent industries, textiles, waste bioconversion, medicine, and cosmetics for drug delivery through nails and degradation of keratinized skin.

I: Occurrence in Percentage (%)		
S.No.	Fungus	%
1.	<i>Aspergillus niger</i>	26
2.	<i>Chrysosporium pannicola</i>	24
3.	<i>Chrysosporium indicum</i>	21
4.	<i>Chrysosporium</i> sp.	13
5.	<i>Microsporum gypseum</i>	11
6.	<i>Malbranchea gypsea</i>	2
7.	<i>Trichophyton</i> sp.	1

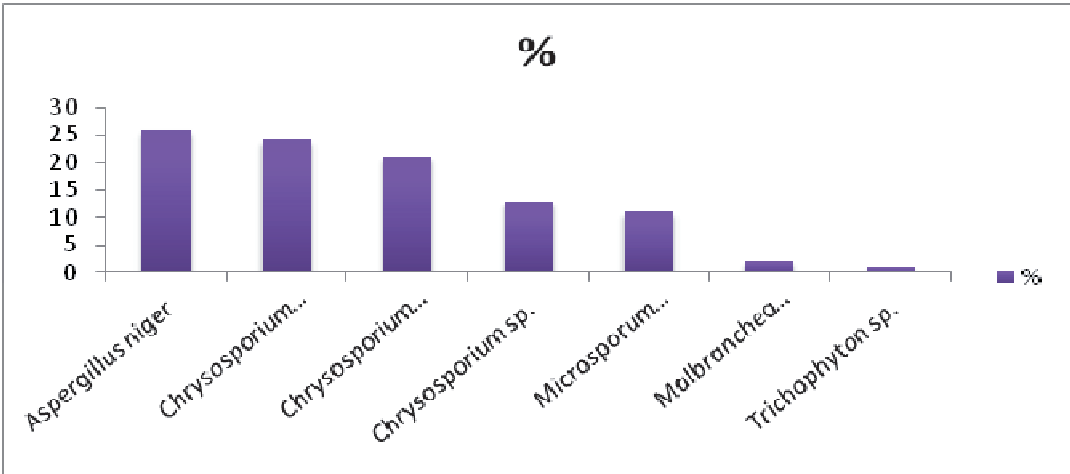


Fig.1: Occurrence of keratinophilic fungi

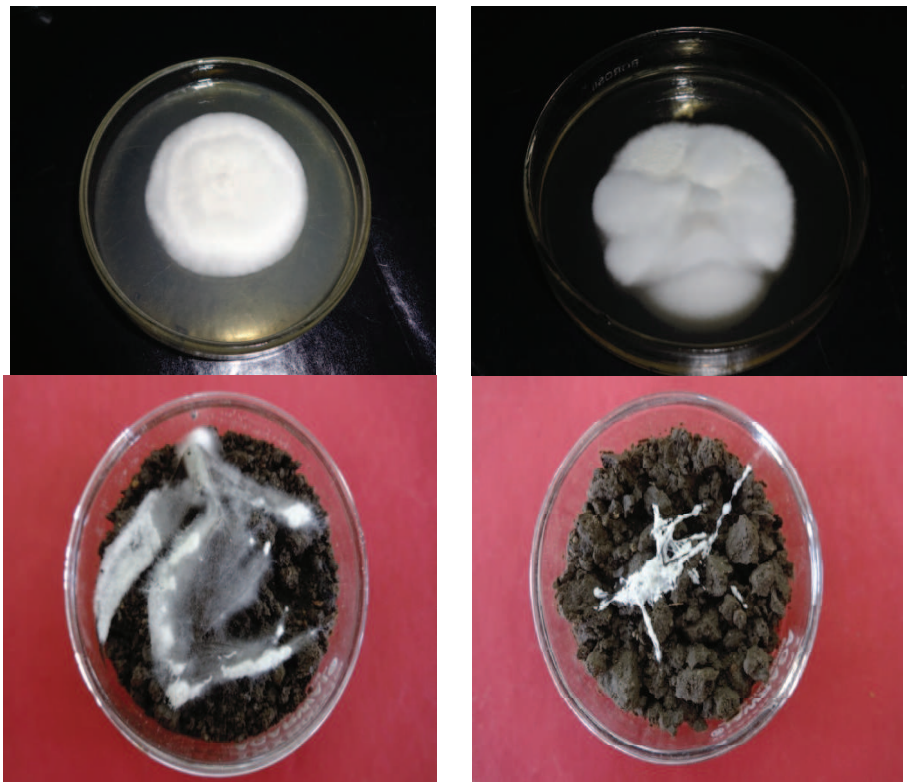


Fig. 2: Keratinophilic fungi

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