

# Isolation and Identification of Fungal Species Associated with the Fallen Fruits from Tansa Forest, Shahpur (Thane-District), Maharashtra, India

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**Abstract:** Twelve fallen fruits from wild habitat were investigated in the study. They were *Terminalia chebula*, *T.bellarica*, *T. catapa*, *Abrus precitrius*, *Morinda citrifolia*, *ficus bengalensis*, *Casurina equisetifolia*, *Michelia champca*, *Pongamia pinnata*, *Helecteres isora*, *Psidium Guajava* and *Phyllanthus emblica* which were collected from Tansa forest, Thane, India. These fruits indicated mycelia growth at their natural habitat during rainy session. Media used for this study were PDA and CDA of different conc. to increase the diversity and isolated fungi were identified on the basis of Morphological and Microscopical characters using Standard Monographs. Isolated species were *Aspergillus* sp., *Candida* sp., *Phytophthora* sp., *Fusarium* sp., *Mucor* sp., *Rhizopus* sp., *Mucor* sp. Among these *Aspergillus* were maximum in occurrence followed by *Rhizopus* sp. then *Fusarium* sp. Finally this study indicate the fungal diversity.

**Keywords:** Wild fruits, Fungal species, maximum occurrence.

## 1. Introduction

Fruits are widely distributed in nature and make important diet for animals. The high concentration of various sugars, minerals, vitamins and amino acids also provide a good platform for the successful growth and survival of various parasitic and saprophytic forms of fungi (Fatima et al., 2010). They may be present as phylloplane fungi, saprobes, endophytes, mycorrhizal fungi, parasites and commensals. Their roles in nature are not always clearly defined and the reasons for their widespread occurrence may be unknown (Parbery, 1996). There have been no comprehensive surveys of the diseases of wild fruits in the tropics or elsewhere. There is no published data on pathogenic fungi which cause the fungal diseases associated with wild fruits from Tansa Forest. Present investigation was carried out to study of various fungal pathogens responsible for the fungal diseases, decay and deterioration of economically important fruits from the Tansa forest district of Shahpur, Maharashtra India.

## 2. Materials and Methods

### The Study area

The wildlife sanctuary at Tansa in Thana district comprises the catchment area of Tansa Lake and the surrounding forests of Shahapur, Khardi, Vaitarna and East Wada Ranges in Shahapur tahsil of Thana district. Minimum Temperature 17.5 ° Celsius, Maximum Temperature 34.4 ° Celsius, Average Rainfall 2,576 mm. Dominant tree species found here include: *Tectona grandis* (Teak), *Acacia catechu* (Khair), *Terminalia tomentosa* (Ain), *Adina cordifolia* (Hed), *Mitragyna parviflora* (Kalamb) and *Pterocarpus marsupium* (Bibla) among others. The sanctuary which consists of mostly southern tropical moist deciduous forests is also home to a huge variety of rare and endangered species of flora and fauna.

### Collection, processing and examination of samples

Collections were made at four different places of Tansa forest such as Aaghai, tansa village, khoste, Mahuli fort

from June 2018 to December 2018. Wild fruits were collected from 12 plants species representing seven angiosperm families. Three species of *Terminalia* were chosen to compare the similarities of fungi on them.

Four Mature fruits each were collected from each individual plants in the field and placed in separate zip-lock plastic bags. All the samples were returned to the laboratory and half were subjected to surface sterilization. They were then incubated at room temperature (~23°C) in plastic bags with sterilized moist tissue. From an initial trial, a period of 1-3 weeks was found to be the optimum time for the development of fruiting bodies on fruits. The technique chosen in this study was similar to that used for the study of endophytic fungi of other plant parts. The aim is to remove all epiphytic fungi from the exterior of the fruit skin and encourage the growth of the internal mycota (Taylor et al., 1999; Fröhlich et al., 2000). The samples were dipped in 95% ethanol for 1 minute, followed by 10 minutes in 3.25% sodium hypochlorite and last, 30 seconds in 95% ethanol.

The surface sterilized fruits showing symptoms of diseases were then sliced into 2mm<sup>2</sup> pieces and plated on to sterilized potato dextrose agar (PDA) in Petri dishes in three replicates. The plates were incubated in an inverted position at 26-30°C for five days.

The isolated fungi were identified on the basis of macromorphological and micromorphological characteristics. The following morphological characteristics viz. colony growth, presence or absence of aerial mycelium, colony color, presence of wrinkles and furrows, pigment production etc. were recorded. In some cases the infected tissues were stained by cotton blue and Lactophenol (Mc Lean and Ivimey, 1965) and observed under compound microscope. The morphological identification of fungal pathogen was based on the morphology of the fungal culture colony or hyphae, the characteristics of the spores and reproductive structures (Barnett and Hunter, 1998). Fungi were isolated and are maintained in Satish Pradhan Dnyanasadhana College, Mycology Section.

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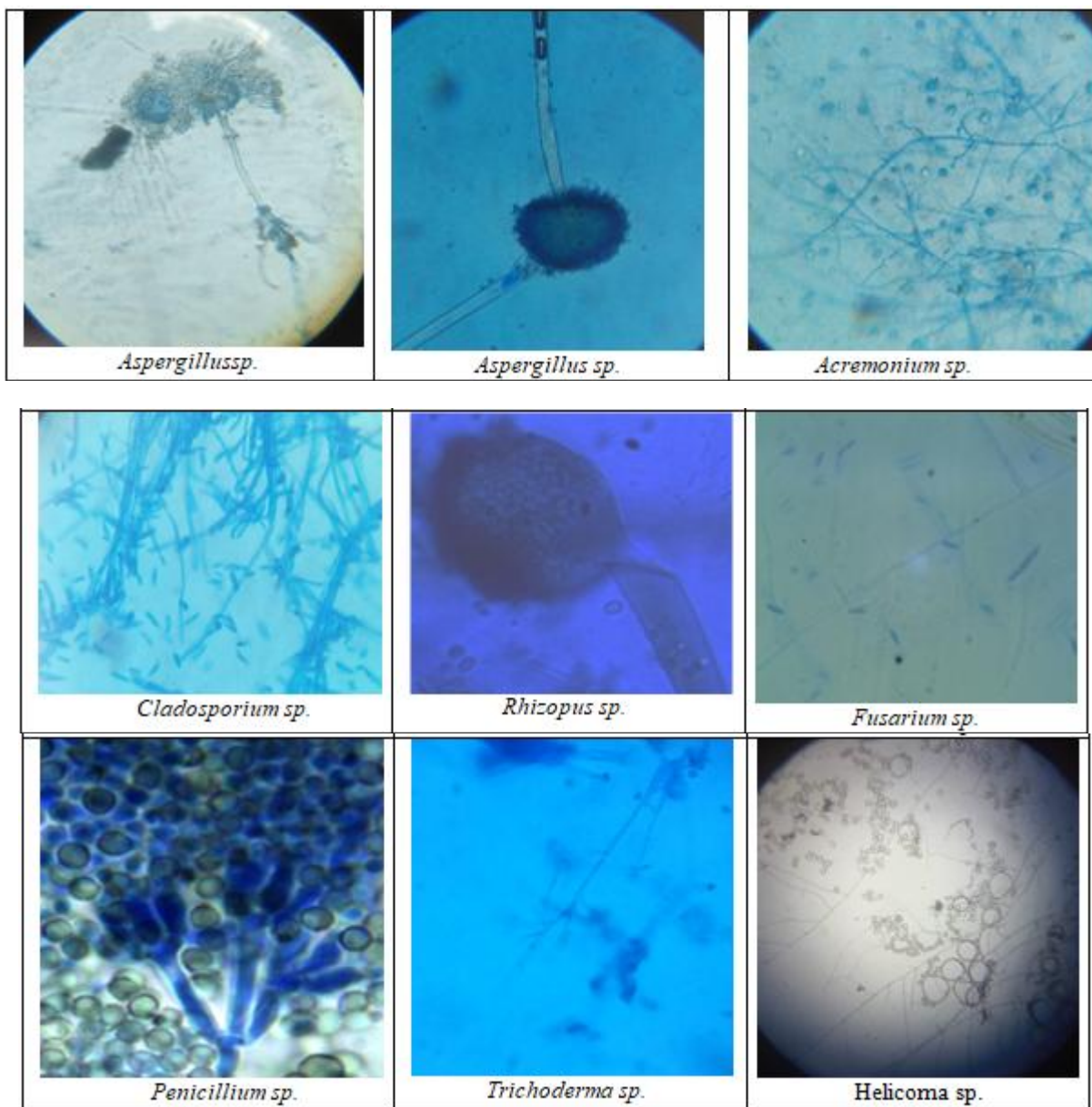
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**Table 1:** Occurrence of fungal pathogens on different fallen fruits of Tansa forest

Fungi	No. of species	Fruits
<i>Aspergillus sp.</i>	05	<i>Pongamia pinnata, Michelia champaka, Terminali chebula</i>
<i>Alternaria sp.</i>	02	<i>Jetropa curcus,</i>
<i>Rhizopus sp.</i>	01	<i>Pongamia pinnata, Michelia champaka, Terminali chebula</i>
<i>Fusarium sp.</i>	01	<i>Casurina equisitifolia</i>
<i>Penicillium sp.</i>	02	<i>Psidium Guajava, Morinda citrifolia</i>
<i>Trichoderma sp.</i>	01	<i>Terminalia chebula, T.bellarica, T. catapa,</i>
<i>Curvularia sp.</i>	01	<i>Phyllanthus emblica</i>
<i>Mucar sp.</i>	01	<i>Helecteres isora</i>
<i>Cladosporium sp.</i>	01	<i>Psidium Guajava</i>
<i>Candida sp.</i>	01	<i>ficus bengalensis</i>
<i>Mucus sp.</i>	01	<i>Morinda citrifolia, ficus bengalensis, Casurina equisitifolia</i>
<i>Phytophthora sp.</i>	01	<i>Pongamia pinnata, Helecteres isora, Psidium Guajava</i>

Table 1. shows that 18 fungal isolates were associated with fallen fruits of tansa forest. During the survey of the fallen fruits in forest, number of fungal pathogens which causes the spoilage of fruits were observed. *Aspergillus, Alternaria, Rhizopus, Fusarium, Penicillium, Trichoderma, Curvularia, Cladosporium, Candida, Phytophthora* were isolated from fallen fruits samples. Among the fungal isolates *Aspergillus* was found to be the most dominant ones responsible for extensive damage of fruits.



### 3. Conclusion

Fungi are among the most diverse organisms on the earth, but the magnitude of their diversity is still unknown. The fungal diversity study will lead to an idea about spatial tanasa forest. Fallen fruits are major contributor to waste generated because many forest trees like rain tree, paper tree and orchid tree are present in the TANASA hill forest. Fallen fruits from these forest trees are being decomposed by a variety of microorganisms. In view of this, the study conducted to isolate species of fungi from leaf litter that can be used to hasten the decomposition process.

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