



**ISOLATION OF POST HARVEST FUNGI FROM MANGO
(MANGIFERA INDICA) FRUITS**



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ABSTRACT

*India ranks first in production of mango. Total annual production estimated about 8.21 million tones. All the states of India grow mango trees for its delicious fruits. There are many plant pathogenic organisms such as bacteria, fungi which causes different types of diseases of fruits during storage periods and symptoms caused due to fungal diseases vary greatly that depend on type of pathogen, host (fruit) and environmental factors. The fungi responsible for post –harvest rots diseases mango represented here. There are 28 different types of fungal genera is responsible to cause different types of post harvest rot diseases of mango fruits during storage periods. The post harvest fungi associated with mature mango fruits during storage period which causes different types of rot diseases of mango fruits were *Actinodochium jenkinsii*, *Aspergillus nidulans*, *Aspergillus varicolor*, *Cladosporium herbarum*, *Fusarium decemcellulare*, *Penicillium fellutanum*, *Penicillium sp.*, *Phoma sp.*, *Phytophthora arecae*, *Pstalotiopsis versicolor*, *Pstalotiopsis glandicola*, *Phomopsis amraii*, *Colletotrichum acutatum*, *Botryodiplodia theobromae*, *Phomopsis mangiferae*, *Alternaria**

tenuissima, Pestalotia mangiferae, Colletotrichum gloesporioides, Dothiorella dominicana, Aspergillus niger, Alternaria alternata, Rhizopus sp., Boothiella tetraspora, Rhizopus arrhizus, Pstaliopsis funereal, Pestalotia dichchaeta, Phoma multirostrata and Sclerotium rolfsii. Transportation of unpacked fruits causes about 60% loss of fruits due to skin injuries observed in mango fruits. (Bhale, 2011). Packing material of soft fruits should be always soft and sterile.

KEYWORDS

Mango, post harvest fungi.

RESEARCH PAPER

Introduction

It occurs throughout the India in wild and cultivated form. It is mentioned in oldest literature of India like Vedas. Mango cultivars are grown in India about more than 6000 years back. It has been established in since a very early stage. The armies of Great Alexander found it established in the Indus valley in 327 BC. At present mango trees are cultivated in about 87 countries of the world reported by Goyal, et. al, (2008). India ranks first in production of mango. Total annual production estimated about 8.21 million tones. All the states of India grow mango trees for its delicious fruits. The areas growing mango as a major fruit crop are Uttar Pradesh, Bihar, Andhra Pradesh, Maharashtra, Gujrat, Orissa, West Bengal, Tamil Nadu, Kerala. There are many plant pathogenic organisms such as bacteria, fungi which causes different types of diseases of fruits during storage periods and symptoms caused due to fungal diseases vary greatly that depend on type of pathogen, host (fruit) and environmental factors. The fungi responsible for post-harvest rots diseases mango represented here.

Material and Method:

Collection of fruits: The fruits were collected from fruit markets of Aurangabad. The selected fruits for investigation fungal association were Mango (*Mangifera indica* Linn.), A separate polyethylene bag was used for each type of infected fruit during collection.

Isolation of fungi from infected fruits: The pathogenic fungus responsible for storage rot of mango fruit was isolated on PDA (Potato Dextrose Agar) medium. Initially the fruit were surface sterilized with the solution of 0.1% HgCl₂. To remove the traces of HgCl₂ the fruits were washed with distilled water for 3-4 times. Then a small piece of infected region of fruit was removed with the help of sterile needle and the piece was inoculated on PDA (Potato Dextrose Agar) medium amended petriplates in sterile condition. The petriplates were incubated at room temperature 25⁺-1 C⁰, (Gadgile, et, al. 2010).). Same procedure was followed for isolation of fungus from different types of symptoms of mango fruit and isolated several post harvest fungi listed below in Table.

Purification of culture: The fungus growing from the infected piece was removed and re inoculated on PDA medium for several times to get pure culture. A single thread of hypha was removed and inoculated on PDA amended petriplate to get pure culture of respective fungus. In certain cases a single spore was removed and reinoculated on freshly prepared PDA amended petriplate to get pure culture. The pure culture of each type of fungus used to

test pathogenicity on healthy mature mango fruit set. The fungi were identified on the basis of morphological, reproductive spore's features, type of colony growth, and colour of colony and shape of spores, (Bagwan, N.B. (2010).

Pathogenicity test: The pathogenicity of the each type of fungus was studied according to Koch's postulates. A 4 mm disc of growing fungal colony was removed by sterile borer in sterile condition and inoculated on healthy fruit at the region of superficial puncture made artificially with sterile needle.

A set of 5 mature healthy mango fruits were inoculated to confirm pathogenicity of each type of fungus.

Table: Isolation of post harvest fungi from mango (*Mangifera indica*) fruits.

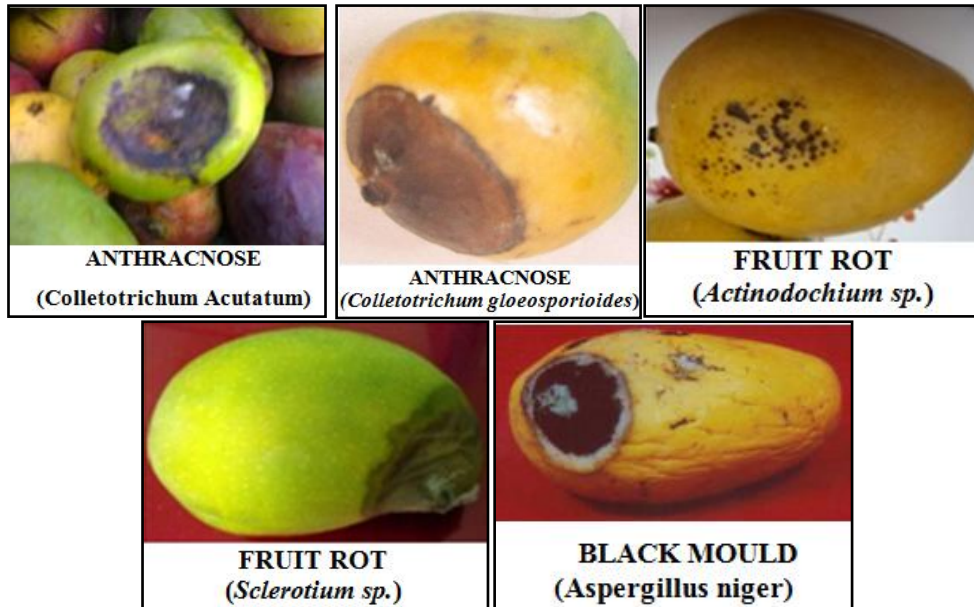
Sr. no.	Post harvest fungus	Disease
1.	<i>Actinodocheium jenkinsii</i>	Spot on fruits
2.	<i>Aspergillus nidulans</i>	Fruit rot
3.	<i>Aspergillus varicolor</i>	Fruit rot
4.	<i>Cladosporium herbarum</i>	Fruit rot
5.	<i>Fusarium decemcellulare</i>	Dry rot
6.	<i>Penicillium fellutanum</i>	Fruit rot
7.	<i>Penicillium sp.</i>	Fruit rot
8.	<i>Phoma sp.</i>	Fruit rot
9.	<i>Phytophthora arecae</i>	Fruit rot
10.	<i>Pestalotiopsis versicolor</i>	Fruit rot
11.	<i>Pestalotiopsis glandicola</i>	Fruit rot
12.	<i>Phomopsis amraii</i>	Fruit rot
13.	<i>Colletotrichum acutatum</i>	Anthracnose
14.	<i>Botryodiplodia theobromae</i>	Stem end rot
15.	<i>Phomopsis mangiferae</i>	Fruit rot
16.	<i>Alternaria tenuissima</i>	Fruit rot
17.	<i>Pestalotia mangiferae</i>	Brown spot
18.	<i>Colletotrichum gloesporioides</i>	Anthracnose
19.	<i>Dothiorella dominicana</i>	Fruit end rot
20.	<i>Aspergillus niger</i>	Black mould
21.	<i>Alternaria alternate</i>	Fruit rot

22.	<i>Rhizopus sp.</i>	Soft rot
23.	<i>Boothiella tetraspora</i>	Dry rot
24.	<i>Rhizopus arrhizus</i>	Soft rot
25.	<i>Pestalotiopsis funereal</i>	Fruit rot
26.	<i>Pestalotia dictyospora</i>	Fruit rot
27.	<i>Phoma multirostrata</i>	Fruit rot
28.	<i>Sclerotium rolfsii</i>	Fruit rot

Results and discussion: There are 28 different types of fungal genera is responsible to cause different types of post harvest rot diseases of mango fruits during storage periods. The post harvest fungi associated with mature mango fruits during storage period which causes different types of rot diseases of mango fruits were *Actinodochium jenkinsii*, *Aspergillus nidulans*, *Aspergillus varicolor*, *Cladosporium herbarum*, *Fusarium decemcellulare*, *Penicillium fellutanum*, *Penicillium sp.*, *Phoma sp.*, *Phytophthora arecae*, *Pestalotiopsis versicolor*, *Pestalotiopsis glandicola*, *Phomopsis amraii*, *Colletotrichum acutatum*, *Botryodiplodia theobromae*, *Phomopsis mangiferae*, *Alternaria tenuissima*, *Pestalotia mangiferae*, *Colletotrichum gloesporioides*, *Dothiorella dominicana*, *Aspergillus niger*, *Alternaria alternata*, *Rhizopus sp.*, *Boothiella tetraspora*, *Rhizopus arrhizus*, *Pestalotiopsis funereal*, *Pestalotia dictyospora*, *Phoma multirostrata* and *Sclerotium rolfsii*. To find out correct control measure strategies it very essential to know the type of post-harvest fungi associated with fruits. Careful handling of fruits can avoid post-harvest losses at maximum extent. Akem, (2006). studied major Post-Harvest Diseases of Mango and their Management. The major loss of harvested fruits takes place due to injuries to the fruits caused during harvest and transportation period. In India the mango is the king of fruit which is produced in large scale. The loss of fruits in India is very great because of poor storage conditions. Mango is a soft skinned fruits hence easily get injured during packing. Sometimes hard packing material injures fruits. Always the mangos should be packed in soft material. Aerated god owns reduces disease intensity. The fruit skin being very soft, get easily punctured due to any mechanical agency during harvesting and packing system (Anonymous, (2006). The smallest injury to the fruit is responsible for post – harvest rots of fruits especially due to growth of post harvest mycoflora.

It is very difficult to restrict the rot of inured fruits. Transportation of unpacked fruits causes about 60% loss of fruits due to skin injuries observed in mango fruits, Amin, et, al. (2008).

Packing material of soft fruits should be always soft and sterile. Spread of post – harvest fungi is also due to poor sanitary techniques followed by the go down owners. Non –aerated go down environment is also responsible for development and spread of post- harvest disease of mango



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