

Isolation and Identification of Some Pathogenic Fungi from Different Infected Vegetables

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ABSTRACT: The present work deals with the isolation and identification of pathogenic fungi. The fungal isolates were *Colletotrichum capsici*, *Phytophthora infestans*, *Fusarium oxysporum*, *Fusarium moniliforme*, *Taphrina maculans*, *Alternaria alternata* and *Alternaria solani* which were isolated from vegetable and were identified on the basis of colony morphology, microscopic examination by using selective and differential media. The morphological characteristics of these fungal elements showed various kinds of spores have been identified up to genus/species level.

KEYWORDS : *Colletotrichum*, *Phytophthora*, *Fusarium*, *Taphrina*, *Alternaria*

I. INTRODUCTION

Plants are infected by different kinds of microbial pathogens and the required inoculum for infection is present in the soil, water and air, in addition to plant host. In many cases, the pathogens may be carried by seeds or propagative planting materials such as tubers, corms, suckers and setts. Whatever may be the source of inoculum, the susceptible plant species or crop varieties may exhibit clear visible local symptoms in or on the tissues where infection is initiated. If the pathogen is able to find favourable conditions for further development, systemic symptoms are induced in tissues or organs far away from the point of pathogen entry into the plant. When the symptom of infection is not expressed externally, it is termed latent infection. Some fungal pathogens infecting unripe fruits do not induce any visible symptom, as they remain dormant. Detection of microbial pathogens refers to the process of establishing the consistent presence of a particular target organism(s) within the plant or in its environments, irrespective of the development of visible symptoms in the plant suspected to be infected by the pathogen(s) in question. Diagnosis, on the other hand, relates to the identification of the nature and cause of the disease problem under investigation.

II. MATERIALS AND METHODS

Infected plant materials were collected in sterile polythene bags from various fields from the Mantha taluka of Jalna district. Collected infected parts of Turmeric, Potato, Pumpkin, Cabbage and lady's finger were cut into small pieces, and then rinsed 3~4 times with sterile Distilled water after treated with 70% (v/v) ethanol for 2~3 s and with 0.1% (w/v) mercuric chloride solution for 3~5 min. The infected parts of the leaves were placed into moisture chamber for 2 to 3 days for the growth of fungi. After the growth of fungal mycelium then it was transferred to PDA plates and incubated for 3-5 days for the complete growth of fungi with sporulation. All the plates were grown in triplicates for the complete isolation and purification of plant pathogenic fungi the microscopic photo plates were tabulated.

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III. MEDIUM USED FOR THE ISOLATION

The composition of the differential medium used for the isolation and identification.

PDA media	Potato	-	200 gm
	Dextrose	-	20 gm
	Agar agar	-	20 gm
	Distilled water	-	1000 ml.

Nutrient agar	Peptone	-	5.0 gm
	Beef extract	-	1.5 gm
	Yeast extract	-	1.5 gm
	Sodium chloride	-	5.0 gm
	Agar agar	-	15 gm
	Distilled water	-	1000 ml

Sabouraud Dextrose agar	Peptone	-	10.0 gm
	Dextrose	-	40.0gm
	Agar	-	15.0gm
	Distilled water	-	1000 ml

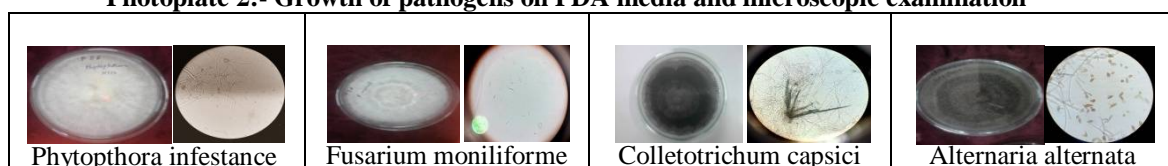
IV. IDENTIFICATION OF FUNGI

The isolated fungi were identified to the genus level and species which was possible on the basis of micro-morphological and macro-morphological characteristics using suitable media, slide cultures (obtained by inoculating micro fungi directly on a small square of agar medium) and the most updated keys for identifications.

Photoplate 1:-Growth of pathogens on differential media



Photoplate 2:- Growth of pathogens on PDA media and microscopic examination



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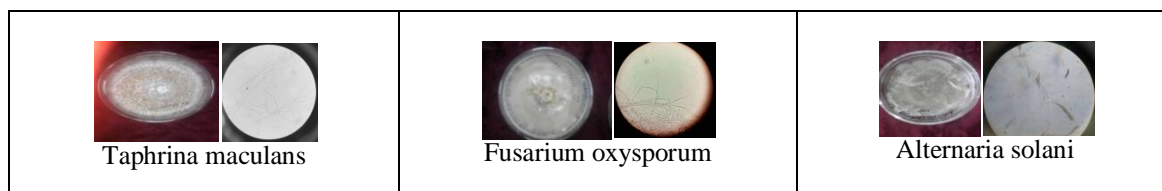


Table1.-Showing the Isolated Pathogen with Respective Host

Sr.No.	Name of Fungal Mycelium	Host	Month
1.	<i>Fusarium oxysporum</i>	<i>Abelmoschus esculentus</i> L.	September
2.	<i>Alternaria alternata</i>	<i>Abelmoschus esculentus</i> L.	September
3.	<i>Fusarium moniliforme</i>	<i>Cucurbita pepo</i> L.	September
4.	<i>Colletotrichum capsici</i>	<i>Curcuma longa</i> L.	October
5.	<i>Taphrina maculans</i>	<i>Curcuma longa</i> L.	October
6.	<i>Alternaria solani</i>	<i>Solanum tuberosum</i> L.	September
7.	<i>Phytophthora infestans</i>	<i>Solanum tuberosum</i> L.	September

V. RESULT AND DISCUSSION

During the investigation period seven fungus were isolated from infected vegetables parts. *Colletotrichum capsici*, *Phytophthora infestans*, *Fusarium oxysporum*, *Fusarium moniliforme*, *Taphrina maculans*, *Alternaria alternata* and *Alternaria solani* were observed. It is found that maximum percentage contribution was observed for *Fusarium moniliforme* and *F.Oxysporum*. During the investigation period (Between July –October) monthly seasonal variation were also observed. Five fungal species were found in the September Month due to low temperature, percentage of humidity it was quite favourable for fungal growth.and remaining two Fungal species were found in Oct. Month. The results of present investigation revealed with work done which was recorded in the table 1. These include *Alternaria*, *Aspergillus*, *Candida*, *Cephalosporium*, *Cladosporium*, *Fusarium*, *Geotrichum Mucor*. Sharma (2010) Sharma *et al* (2011) *al*, (2006), *Penicillium*, *Rhizopus*, *Rhodotolura*, *Saccharomyces*, *Torulopsis* and *Trichoderma*. Oboh *et al*, (2006) reported that the fungal isolates obtained in their study were mainly *Aspergillus* species, while others were *Trichoderma*, *Penicillium*, *Rhizopus* and *Rhodotorula* species which were all able to utilise hydrocarbon as carbon source. Our finding coincides with

the work of Elisane *et al*, (2008), who also isolated four strains from the contaminated soil. They were identified as *Aspergillus* sp. Kostadinovaa *et al* (2014) isolated *Aspergillus* and *Penicillium* from Antarctica. Sharma (2010) isolated same fungi at Darjeeling tea garden soil and Sharma *et al* (2011) reported some same fungi from Lachung soil.the result were compared with the study of other workers for for the fungal strains *Colletotrichum capsici*, *Phytophthora infestans*, *Fusarium oxysporum*, *Fusarium moniliforme*, *Taphrina maculans*, *Alternaria alternata* and *Alternaria solani*.

VI. CONCLUSION

The seven fungus which were isolated from different vegetables plants were very effective in destruction of the plant and found that the production of the vegetables were reduced due to the infection.

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