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"STUDY OF FUNGAL PATHOGEN CONTAMINATED TO SOME VEGETABLES, FRUITS, NUTS AND SPICES"

Aishwarya R. Mandan
New Art's, Commerce And Science College, Shevgaon, Dist-Ahmednagar, M.S. (India)
E-mail: aishumandan1996@gmail.com

ABSTRACT:

This study was conducted to the isolation and identification of fungi on leafy vegetables, fruits and spices. The basic principle of this method is to provide high level of relative humidity, optimal light, temperature Conducive for fungal development in present study of different fungal spices *Aspergillus, Fusarium, Rhizopus, Pythium, Alternaria* were occurred on different spices, fruits, vegetables and seeds.

Keywords: *Fungal pathogen, contamination, species*

INTRODUCTION:

The study of seed born fungal pathogen has special consideration in the area like seed production and plant quarantine activities. Most of the seeds are infected and they carry dangerous pathogen, if such material is consumed by human being it may cause disease or problem in health many times such fungal organisms reduces the market value of produce because of their discoloration or contamination. Such infection may cause failure in germination. Fungal organism may be carried on plant material such as seeds, barks, rhizomes in the form of spore or spore bearing structure or mycelium inside or outside of the seed. Some of the common seed's fungi include *Alternaria, Curvularia, Nigrospora, Ustilago, Tilletia, Helminthosporium, Pythium, Fusarium, Claviceps and Protomyces* harbour outside or inside the seeds and causing great loss. Studies on seed born fungi with reference to *Brassica* and *Sesame* were conducted by Mishra and Kanaujia (1973), Swarup and Mathur (1972) have studied extensively on seed microflora of some Umbelliferae spices like Coriander, Cuminum and Fennels, while fungi associated with seeds of chilies was conducted by Pandey (1976).

MATERIAL AND METHODS:

The experiment was performed in labrotary of Department of botany, New Arts, Commerce and Science College, Shevgaon at temperature 28°C Dated on 30th January,2020. There are Two well-known methods for studying seed borne infection. Examination of plant material or sample against fungal infection is suitable for understanding fungal structure for detecting fungi on plant surface. These two methods include Blotter method and Agar method. In this experiment, Blotter method is used. The Blotter test method is simple procedure to detect fungal infection. Petri plates were washed with Distilled water then Dried in oven and sterilized by using alcohol. Blotter papers were soaked in water and placed in petri plates after draining off the excess water. A fixed number of samples were placed at equidistance from one another and their number depends on size of material. In case of coriander 12 to 13 seeds while in case of ground nuts 7 to 8 nuts in Petri plates. After placing of the samples, they were incubated at

room temperature for development of fungal culture. The culture were examined After ten days, fungal growth were noted. To avoid the contamination of fungal pathogen from one to other, single sample method was used. The fungal isolates were identified by using culture and morphological feature such as colony, growth pattern, pigmentation and conodial morphology (Tafinta and Shehu,2013).

RESULT AND DISSCUSSION:

1.Coriander: *Coriandrum sativum*

- *Fusarium oxisporum :* fungus appear as white cottony growth of mycelium and powdery mass of spores
- *Alternaria alternata:* fungus appear as ash black coloured growth of fungus.

2.Groundnut: *Arachis hypogaea*

- *Alternaria alternata:* fungus appear as ash black coloured growth of fungus.
- *Aspergillus flavus :* fungus appear as yellow color masses of spores having ball like structure.
- *Rhizopus nigricans*: Fungus appears white mycelium which looks cottony and somewhat powdery.

3.Spinach *: Spinacia oleracea*

- *Pythium* sp.: Fungus appears as necrotic spot.
- *Fusarium* sp.: Fungus appears as white thread like structure.

4.Banana: *Musa paradisiaca*

- *Fusarium oleifera:* whitish growth appears on the surface.

5.Apple: *Malus domestica*

- *Fusarium oleifera:* the fungus appears as whitish colony.

6.Fennel: *Foeniculum vulgare*

- *Rhizopus nigricans:* soft cottony rot like structure appear.
- *Aspergillus niger :* fungus appear as black granular colony.

7.Bay Leaf: *Laurus nobilis*

- *Rhizopus nigricans:* white cottony structure appears.
- *Aspergillus niger :* fungus appear as black granular colony.

8.Grapes: *Vitis vinifera*

- *Fusarium verticilliods* : fungus appear as whitish colony.
- *Aspergilus terreus* : fungus appear yellowish colony with granular growth

9.Green chili: *Capsium annum*

- *Fusarium verticilliods :* white color compact cottony growth is appear.

Ibrahim Abuga (2014) reported the presence of *Aspergillus* Sp. and *Fusarium* Sp. on Groundnut.

E. Mangwende, Q.Kritzinger, M. Truter, T.A.S. Aveling (2018) also reported presence of *Alternaria alternata* on Coriander.

Mukusova P. Srobarova A, Sulyok M. Santini A (2013) reported the presence of *Fusarium* sp. on Grapes berries.

Purti Kulshrestha, Chitra Singh, Ankur Gupta, Saurabhi Mahajan and Rajendra Sharma reported the the presence of *Rhizopus nigricans* and *Aspergillus niger* on Fennel.

CONCLUSION:

It is concluded from the present investigation that there are various fungal species like A*spergillus, Fusarium, Alternaria, Rhizopus, Pythium* etc. which contaminate the seeds, fruits, nuts, vegetables and spices which are harmful to our health.

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Table 1: Fungi occurred on fruits, vegetables, spices and nuts.

Sr. No	Plant Material	Boatanical Name	Family	Fungi Occured
1.	Coriander	*Coriandrum sativum*	Umbelliferae	*1.Fusarium oxisporum* *2.Alternaria alternata*
2.	Groundnut	*Arachis hypogaea*	Papilionaceae	*1.Alternaria alternata* *2.Aspergillus flavus* *3.Rhizopus nigricans*
3.	Spinach	*Spinacia oleracea*	Amaranthaceae	*1.Pythium sp.* *2. Fusarium sp.*
4.	Banana	*Musa paradisiaca*	Musaceae	*1.Fusarium oleifera*
5.	Apple	*Malus domestica*	Rosaceae	*1.Fusarium oleifera*
6.	Fennel	*Foeniculum vulgare*	Umbeliferae	*1.Rhizopus nigricans* *2.Aspergillus niger*
7.	Bay Leaf	*Laurus nobilis*	Lauraceae	*1.Rhizopus nigricans* *2.Aspergillus niger*
8.	Grapes	*Vitis vinifera*	Vitaceae	*1.Fusarium verticilliods* *2.Aspergillus terreus*
9.	Green chili	*Capsium annum*	Solanaceae	*1.Fusarium verticilliods*
10.	Clove	Due to the presence of alkaloaids no fungal contamination observed.		

Picture 1: Plate Cultured with sample

Picture 2: Fungal contaminated samples