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STUDIES ON MANAGEMENT OF *ASPERGILLUS* ROT OF AMLA

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ABSTRACT
Long distance transportation of fruits within and between the country as well as the humid non-aerated store house favors the development of *Aspergillus* rot of fruits in Indian 25-30% losses of fruits during storage estimated Aslam and Khan (1983) these are reports of *Aspergillus* rot of different fruits from different parts of the world. For the management of *Aspergillus* rot of amla (*Emblica officinale* L.). The selected chemicals were sodium bicarbonate, Carbendazim, propionic acid, Diathane-Z78, Thiophanate methyl, mercuric chloride, Difoltan, diphenyl amine, sodium metasulphate, Captan, Tecto-40, Blitox-50, Saprol, Delan and copper oxychloride. There was 100% control of storage rot of amla by the use of sodium bicarbonate, propionic acid and sodium metasulphate at the concentration of 1500 ppm and Thiophanate methyl, Tecto-40 and Blitox-50 control 100% rot at the concentration of 2000 ppm.

KEY WORDS: Alma, *Aspergillus,* chemical control, storage rot

INTRODUCTION

After globalization the import and export of fruits, food stuffs, food grains and vegetable has been increased among the different countries as well as within the country. Hence the fruits or any other food material produced in any country is available everywhere on the world according to their need because of easy transportation facilities among the countries or within the countries. The handling of fruits after harvest and type of packing material used during transportation are the important factors for maintaining quality of fruits. The long distance transportation and rough handling of fruits during packing and storage periods creat skin injuries. Snowdon (1952) reported diseases of fruits occurred due to injuries caused during transportation and storage. Aslam and Khan (1983) estimated 25-50 % losses of harvested fruits due to post harvest diseases.The injured fruits are highly susceptible to the fungal infection. The common microflora responsible for post harvest loss of fruits is the species of *Aspergillus* (*A. niger. flavus, A. carbendazim, A. tenacious*), Rhizopus, Penicillium, Fusarium and Colletotrichum etc. Still there are no methods developed against the loss of fruits caused caused by fungal flora after harvest periods.

In the present studies, the chemical control of post harvest rot of certain fruits especially caused by *Aspergillus niger* has been studied to avoid the great losses. The *Aspergillus niger* is a saprophytic fungus which causes post harvest diseases of orange (*Citrus reticulata* Blanco) Kanaujia, 1979e; Sweet orange (*Citrus sinensis* L.) Srivastava and Tandon, 1969b; amla (*Emblica officinalis* Gaertn) Rao, 1966b; bottle guard (*Lagenaria vulgaris* Ser) Khanna and Chandra, 1974; Lichi (*Lichi sinensis* Gourtn Sonner) Anonymus, 1962a; Luffa (*Luffa acutangula* L.) Khanna and Chandra, 1974; Apple (*Malus sylvestris* L.) Srivastava, 1981; mango (*Mangifera indica* L.) Verma and Kamal, 1951; Pomegranate (*Punica granatum* L.) Srivastava,et al, 1964; Guava (*Psidium guajava* L.) Saha, 1945.

MATERIALS AND METHODS

The amla (*Emblica officinalis* Gaertn) fruits infected by *A. niger* was collected in a clean polythin bag. The rot fungus (*A. niger*) was isolated by inoculating small piece of infected part of fruit on PDA (potato dextrose agar) medium. The inoculated late of incubated at room temperature 25+ic. The *A. niger* was re cultured repeatedly to get pure culture. The pathogenecity test of the fungus was confirmed according to the Koch postulates. Then the culture was used for further study. For the study of management of soft rot disease causing fungus *Aspergillus* fresh healthy fruits of some size were collected from the market and brought to the laboratory. A separate polythin bag was used for each fruit. All the fruits were rinsed with sterile distilled water. Then a set of 5 fruits of amla punctured superficially with the help of sterile needle in sterile conditions and then the fruit set was dipped in a particular concentration of a respective fungicide. Then the fruits were inoculated at the punctured region with 4mm disc of pure culture which was removed with the help of sterile borer in sterile conditions. The similar technique in adopted for each concentration of all the selected chemicals used against the rot causing fungus the set of 5 non-treated fruits were inoculated and incubated were considered as control. On 10^{th} day of inoculation period the diameter of rotted area was noted and percentage of rot development at a particular concentration of each fungicide has been calculated by the following formula.

$$\text{Percentage of rot control} = \frac{X}{Y} \times 100$$

Where, X = average infected area of an fruit Treated with a particular concentration of a respective fungicide

Y = average infected area of an non treated by inoculated fruit (control)

The chemicals selected for the control of fruit rot fungus *A.niger* were sodium bicarbonate, carbendazim, propionic acid, Diathane-Z78, Thiophenate methyl, mercuric chloride, Difoltan, Diphenyl amine, sodium metasulphate, Captan, cerasan, Tecto-40, Blitox-50, Saprol, Delan and copper oxychloride. The concentration of chemicals used during the study was 100ppm, 200ppm, 500ppm, 1500ppm and 2000ppm each.

RESULTS AND DISCUSSION

The mercuric chloride sodium metasulphate, Sodium bicarbonate, propionic acid and saprol were found to be more effective at the concentration of 1000 ppm and the rot control was 92.4%, 90.0%, 90.0% and 100% respectively. The percentage of storage rots control of amla at the concentration of 1500ppm was 94.5% (Carbendazim), 98.0% (Diphenyl amine), 95.2 (copper oxychloride). The chemicals like Difoltan, captan, Diathane -Z78 and cerasan were not effective against the *Aspergillus niger* rot of amla fruits during storage periods. Tonaca and Nonaca (1981) reported the use of copper sulphate against the storage rot of onion bulbs caused by *A.niger*.

Table: 1 . Chemical control of *Aspergillus* rot of amla (*Emblica officinale* L.) during storage periods.

Sr. No.	Chemical used	% rot controlled on 10th day of inoculation period Concentration of chemical in ppm					
		100	200	500	1000	1500	2000
1	Sodium bicarbonate	00	00	24.0	90.7	100	-
2	carbendazim	00	00	20.3	43.0	94.5	-
3	Propionic acid	00	20.2	52.0	90.0	100	-
4	Diathane- Z 78	00	00	00	25.0	27.0	30.0
5	Thiophenate methyl	00	00	00	48.1	82.0	100
6	Mercuric chloride	00	72.0	56.0	92.4	-	-
7	Difoltan	00	00	00	15.0	17.5	22.6
8	Diphenyl amine	00	11.5	42.5	87.0	98.0	100
9	Sodium metasulphate	00	38.4	76.1	90.0	100	-
10	Captan	00	00	00	00	15.0	23.5
11	Cerasan	00	00	00	00	22.0	29.5
12	Tecto-40	00	00	12.5	39.5	87.2	100
13	Blitox-50	00	00	17.2	43.0	73.6	100
14	Saprol	00	28.0	76.0	100	-	-
15	Delan	00	00	30.5	68.1	100	-
16	Copper oxychloride	00	16.2	43.2	83.5	95.2	100
17	Control (inoculated but non-treated)	00	00	00	00	00	00

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