



PLANT LEAF EXTRACTS AGAINST BLUE MOLD OF AMLA CAUSED BY *PENICILLIUM ISLANDICUM* A STORAGE FRUIT ROT

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Abstract:

Penicillium islandicum to know the fungi toxic nature of their plant extracts. Though complete inhibition of the pathogen was not observed in any of plant extracts tested, but considerable amount of inhibition was noticed in some of them. Among the 10th plant extracts tested against *Penicillium islandicum* *Tinospora cordifolia* (77.41%) were significantly superior over all other plant extracts. Next best was *Datura stramonium* (75.00%), *Agalecus mamrus* (70.64 % *Tribulus terrestris* (60.30%), *Adathoda vasica* showed less inhibitory effect (6.66%).

Introduction

Amla (*Emblica officinallis*) is one of the most important fruit plant grown in India. It is good source of vitamin- C. In order to regulate the supply and to enable the farmer to get a remunerative price for the produce, long term storage of amla is a pre requisite. Losses of amla during storage are considerable mainly due to sprouting and contamination by microorganisms. Nearly 30 % of the production is losses during post harvest handling and sprouting, out of which microbial spoilage alone contributes approximately 15-20% of the total loss (Pantasticonanb Bantista, 1976; Bhagchandani et al., 1980).

In India Rajam 1992 reported that among the post-harvest disease of amla, Blue mold rot caused by *Penicillium islandicum* was the predominant one. *Penicillium islandicum*, a soil saprophyte being ubiquitous in occurrence attacks amla by producing various enzymes and toxins and establishes itself in fruit, tissues. Chemically it controlled (Dang and Gupta 1984), but Chemical control may cause the poisoning to the amla fruits hence present study, an attempt has been made to find out suitable plant extracts which were used to control *Penicillium islandicum* and which will be free from hazardous chemical residues.

Materials and Methods

Penicillium islandicum was isolated from contaminated amla fruit. It was purified by single spore isolation technique (Riker and Riker, 1936) and maintained on PDA slants. Antifungal activities of different plant extracts were studied in vitro by poison food technique (Nene2000) (*Datura stramonium*, *Azadirachta indica*, *Adathoda vasica*, *Acharanth usaspera*, *Amaranthus veridae*, *Boravia diffusa*, *Agalecus*

mamrus, *Tinospora cordifolia*, *Tribulus terrestris*). 20 gm fresh leaves and 20 ml of distilled water (w/v) was taken while extraction. The extracted material was then filtered through muslin cloth. The volume of extracted sap was made up to 50 ml by distilled water. The medium was then sterilized 15 lbs. 20 minutes. The sterilized medium 20 ml was poured in three plates equally. The petriplates containing leaf extracts were inoculated with loop holder of 10 days old fungal culture and incubated for ten days. Petriplates with PDA medium acted as control. The petriplates were observed on third day for inhibition of growth of *Penicillium islandicum*.

Table 1-Effect of plant extracts on radial mycelia growth of *Penicillium islandicum*.

Sr. No	Treatment	Family	Average colony dia. (mm)	Inhibition %
1.	<i>Datura stramonium</i> L.	Solanaceae	24.00	75.00
2.	<i>Melia azedarach</i>	Meliaceae	38.00	43.20
3.	<i>Tinospora cordifolia</i> Miers	Menisecerma ceae	21.33	77.51
4.	<i>Tribulus terrestris</i> L.	Zygophylla ceae	36.50	60.30
5.	<i>Amaranthus viride</i>	Amaranthaceae	44.00	47.80
6.	<i>Acharanthu saspara</i>	Amaranthaceae	54.66	35.90
7.	<i>Withania somanifera</i> L.	Solanaceae	52.00	37.70
8.	<i>Agalecus mamrus</i>	Rutaceae	20.33	70.64
9.	<i>Adathoda vasica</i>	Acanthaceae	86.00	06.66
10.	<i>Azadirachta indica</i> L.	Meliaceae	47.66	45.90
11.	<i>Tamarindus indica</i> L.	Caesalpina ceae	35.90	28.50

Graph 1-Effect of plant extracts on radial mycelia growth of *Penicillium islandicum*.

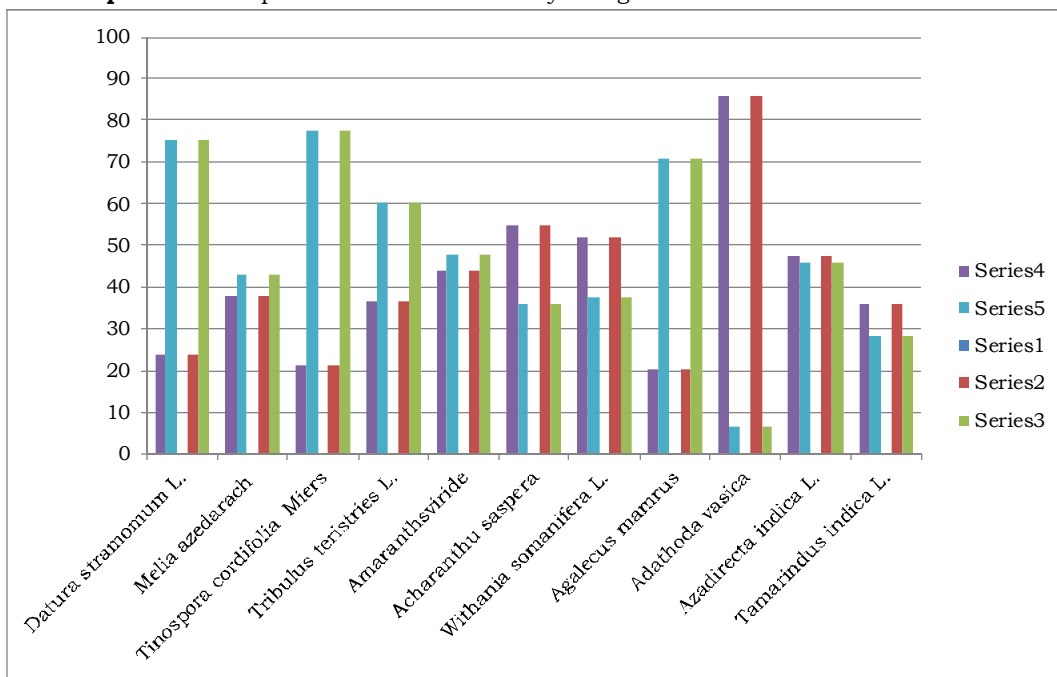
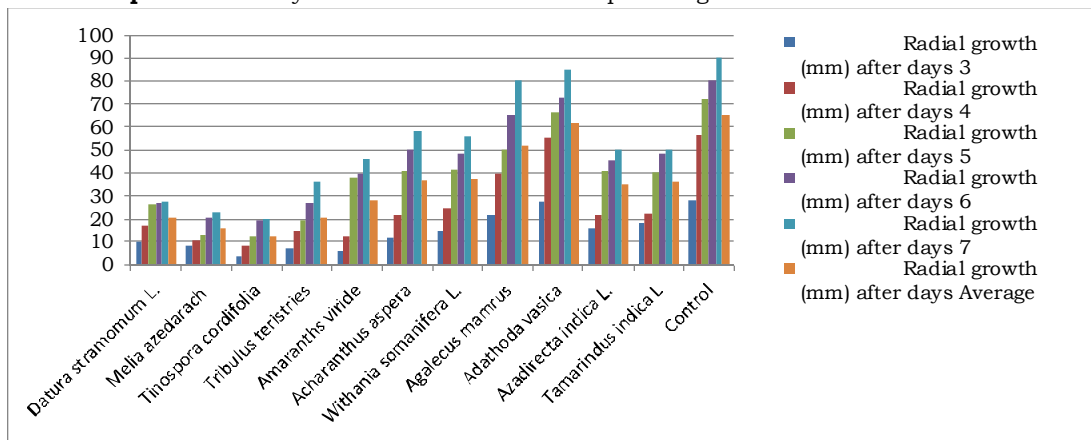


Table 2- Efficiency of leaf extract of medicinal plants against the *Penicillium islandicum*.

Plant extract	Radial growth (mm) after days					Average
	3	4	5	6	7	
Datura stramonium L.	10	17	26	26.6	27	21.00
Melia azedarach	8	10.3	13	21	23	15.6
Tinospora cordifolia	4	8.3	12.6	19	20	12.78
Tribulus terrestris	7	15	19.6	26.6	36	20.84
Amaranthus viride	6.3	12.6	38	40	46	28.58
Achras zapota	12	21.6	41	50	58	36.52
Withania somnifera L.	15	24.6	41.6	48.6	56	37.36
Agave americana	22	40	50	65.3	80	51.46
Adathoda vasica	27	55.6	66.3	72.6	85	61.3
Azadirachta indica L.	16	21.6	40.6	45.6	50	34.76
Tamarindus indica L.	18	22.10	40.15	48.20	50.15	35.72
Control	28	56.3	72.3	80.6	90	65.44

Graph 2- Efficiency of leaf extract of medicinal plants against the *Penicillium islandicum*.



Result and Discussion

In present investigation plant extracts were evaluate under in vitro condition against *Penicillium islandicum* to know the fungi toxic nature of their plant extracts. Though complete inhibition of the pathogen was not observed in any of plant extracts tested, but considerable amount of inhibition was noticed in some of them. Among the 10th plant extracts tested against *Penicillium islandicum* *Tinospora cordifolia* (77.51%) were significantly superior over all other plant extracts. Next best was *Datura stramonium* L. (75.00%), *Agalecus mamrus* (70.64 %), *Tribulus terrestris* (60.30%), *Adathoda vasica* showed less inhibitory effect (6.66%).

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