



EARLY BLIGHT OF POTATO CONTROL BY BOTANICAL PROTECTANT**S. M. S. Khandare**Department of Botany, D.S.M.College Jintur, Dist. Parbhani 431509
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ABSTRACT :

The leaf extracts of plant at different concentrations were tested for their antifungal properties against, Early Blight of Potato caused by *Alternaria solani* under laboratory conditions. The percentage of *A. indica* and *E. citriodora* in water were tested against *Alternaria solani*. The significant inhibition at 5.0 to 5.5 and 4.0 to 5.0 percent concentrations recorded respectively by poisoned food technique. Potato plant growing in the world the plant is also cultivated in the marathwada region of the India. It is the popular vegetables. The tuber, leaf are infected from fungus.

Keywords: Leaf extracts, *Alternaria solani*, Early Blight of Potato

INTRODUCTION

Potato (*Solanum tuberosum*) belongs to the family of Solanaceae the tuber is used for vegetables and obtaining starch the plant is cultivated in India and part of India such as Gujarat, Rajasthan, Kerala and Maharashtra. This plant contains minerals, vitamin (Bhattacharjee 2000). During cultivation it was found that tubers and leaf were attacked by fungi causing Early blight, damping off, root rot and leaf spot (Godauskas et.al., 1977, walker et.at., 1982, Robinsons 1998 Agrwal 1993, burnett 1970, Ganguli and pandorta). Therefore present investigation has been carried out in relation to efficacy of leaf extracts against pathogen of Potato for bio pesticide *Azardirachta indica* and *Eucalyptus citriodora* are used against *Alternaria solani*.

MATERIALS AND METHOD:-

For evaluation of efficacy of plant extract such as *Azardirachta indica* and *Eucalyptus citriodora* were used. Medium aged leaves of *Azardirachta indica* and *Eucalyptus citriodora* were used for preparing mother extract (M.E.).The extracts were prepared by using sterile distilled water (Sarvmangala et.al., 1993, Sriwastava, Biharilal, 1997 and Kurchave et.al., 1997). Twenty five g.m of fresh leaves of each plants were washed well and grounded in 100 ml distilled water. The macerate was filtered through double layered cheese cloth and centrifused at 3500 rpm for 20 minutes. The supernatant was filtered through filter paper. This extracts were used as M.E. From Mother Extracts the different dilutions prepared were 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0 and 5.5 % (Amresh 1993, Anatra 1996 and Biswas 1995).

The pathogen used for screening antifungal activity was *Alternaria solani*.The culture was maintained on potato Dextrose agar medium and used for the bioassay; poisoned food technique was adopted for the screening. Plant extract of each concentration was measured 10 ml and mixed with 10 ml molten sterile czepak's Dox Agar medium, without plant extract served as control. A 4 m.m disc was cut from 10 days old culture of pathogen placed in center of each plate for each treatment three replicates were taken. After 10 days incubation diameter of fungal growth was measured and percent control efficacy was determined.

RESULT AND DISCUSSION:-

The result obtained for antifungal activity of different concentration of extract of *Azadirachta indica* and *Eucalyptus citriodora*. Standard reveals that at concentration 5.5 and 5.0% of plant extract exhibited significant activity of *Alternaria solani* (Table-1&2) respectively. Significant inhibition of *Alternaria solani* at 5.0 % concentration but complete inhibition recorded at 5.5 % concentration. It is clear from the observation that as the concentration increases PCE also increases, from the table 1 it is clear that at 0.5% concentration 12.05% PCE observed on 10th day and from table 2 the minimum PCE was recorded (6.25) on 10th day at 0.5% concentration and other concentration shows intermediate PCE. The 100% PCE recorded at 5.00% concentration of plant extract.

PCE recorded from 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0 and 5.5%, (table 1&2) The leaf extract of *Azadirachta indica* and *Eucalyptus citriodora* are useful for the control of *Alternaria solani*, complete inhibition recorded at 5.5&5.0% concentration respectively.

Mishra and Tewari (1992). used extract of *Euphorbia hirta* and *Glossocardia bosvellea* for the antifungal activity.

Shirskar and Kadam (1992). Studied control of groundnut diseases by neem extract. Agrawal 1993 also mention that some fungi found in association of seed of cassia. Amresh Y. S and Nargund tested the plant extract for control fungal mycoflora. Biswas and their coworker also observe that plant extract useful to control fungal diseases.

Abhay Kumar et.al., 1997 confirmed in vitro fungicidal properties in aqueous leaf extract of *Calatrops procera*, *Azadirachta indica*, *Lantana camera* and *Oscimum basilicum* against *Curvularia* and *Alternata*. The investigation done by various scientists on the control of important medicinal plant diseases support to the present investigation.

Table1: Effect of *Azadirachta indica* on *Alternaria solani*

Concentration (%)	Percent control efficacy (PCE)									
	Incubation period (Days)									
	1	2	3	4	5	6	7	8	9	10
0.5	95.00	85.50	75.00	68.75	56.25	47.50	31.25	15.00	13.75	12.05
1.0	96.25	88.75	81.25	70.00	66.25	56.25	37.50	18.75	17.50	16.25
1.5	96.87	90.00	82.50	75.00	63.75	63.75	50.00	85.00	21.25	20.00
2.0	98.12	91.25	83.75	80.00	68.75	66.25	56.25	33.75	32.50	31.25
2.5	98.75	92.50	85.00	85.00	75.00	72.50	62.50	52.25	51.25	50.00
3.0	98.75	95.00	86.25	87.50	81.25	78.75	68.75	58.75	57.50	56.25
3.5	98.75	96.25	87.50	90.00	85.00	87.50	75.00	65.00	63.75	62.05
4.0	98.75	96.87	92.50	92.50	90.00	90.00	81.25	77.50	76.25	75.00
4.5	98.75	97.50	96.25	95.00	93.75	92.50	91.25	90.00	88.75	87.05
5.0	100	100	100	100	98.75	97.50	96.25	95.00	93.75	92.05
5.5	100	100	100	100	100	100	100	100	100	100
S.E. ±	0.32	0.85	1.47	2.21	3.23	3.87	5.03	6.84	6.84	6.54
C.D.P = 0.01	1.58	4.20	7.27	10.93	15.98	19.15	24.89	33.85	33.85	32.37
C.D.P = 0.05	1.07	2.84	4.92	7.40	11.03	12.97	16.85	22.92	22.92	21.91

Table 2: Effect of *Eucalyptus citriodora* on *Alternaria solani*

Concentration (%)	Percent control efficacy (PCE)									
	Incubation period (Days)									
	1	2	3	4	5	6	7	8	9	10
0.5	97.50	96.25	90.00	77.50	65.50	45.00	37.50	10.00	7.50	6.25
1.0	97.50	96.25	96.25	92.25	93.75	92.50	91.25	10.00	8.75	11.25
1.5	97.50	93.75	75.00	60.00	52.50	47.50	38.75	30.00	25.00	21.25
2.0	97.50	93.75	80.00	76.25	70.00	62.50	56.25	53.75	46.25	43.75
2.5	97.50	92.50	87.65	86.25	83.75	77.50	52.50	68.75	58.75	56.25
3.0	97.50	93.75	91.25	88.75	87.50	86.25	83.75	81.25	77.50	75.00
3.5	100	98.75	97.05	95.00	93.75	92.50	93.75	90.00	91.95	87.00
4.0	100	100	100	97.50	96.25	95.00	93.75	92.50	88.75	90.00
4.5	100	100	100	96.25	95.00	93.75	92.50	92.50	91.25	92.05
5.0	100	100	100	100	100	100	100	100	100	100
S.E. \pm	0.18	1.44	1.94	2.73	3.43	4.52	4.85	5.08	6.91	7.01
C.D.P = 0.01	0.89	7.12	9.60	13.51	16.97	22.37	24.00	25.14	34.20	34.69
C.D.P = 0.05	0.60	4.82	6.50	9.15	11.49	15.14	16.25	17.02	23.15	23.49

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