

BIOEFFICACY OF PLANT EXTRACTS ON GROWTH OF BOTRYTIS CINEREA CAUSING LEAF BLIGHT OF ROSE

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ABSTRACT

25 % Alcoholic leaf extract of *Melia azedarach* L., *Clerodendrum inerme* L., *Hyptis suaveolens*, *Tagetes erecta* L. and *Swietenia macrophylla* King were found to be effective in controlling the growth of sensitive and resistant isolates of *Botrytis cinerea* causing leaf blight of rose. While aqueous leaf extract of *Hyptis suaveolens* and *Tagetes erecta* inhibited growth of both sensitive and resistant isolates of *Botrytis cinerea* at 50 %.

INTRODUCTION

Rose (*Rosa floribunda*) is one of the most important medicinal and economically important plant cultivated in India. Such economically important plant attacked by many fungal diseases like black spot, leaf spot, powdery mildew and leaf blight.

Among these the leaf blight diseases caused by *Botrytis cinerea* is most common. This disease is managed by using various fungicides. Effective and efficient management of plant diseases is generally achieved by the use of synthetic pesticides. Continuous and indiscriminate use of fungicides created serious threats to human health and environment. Due to increased awareness about the risk involved in the use of fungicides, the use of plant extracts in the management of plant diseases is gaining importance. Number of workers reported the antifungal properties of the plants (Khan and Kumar, 1990; Bansal and Gupta, 2000; Kamalakannan *et al.*, 2001; Dhavale *et al.*, 2008). The main objective of this study was to evaluate the bio efficacy of locally available aqueous and alcoholic plant extracts against the growth of *Botrytis cinerea* causing leaf blight of rose.

MATERIALS AND METHODS

Fresh leaves of *Hyptis suaveolens*, *Clerodendrum inerme*, *Tagetes erecta* and *Swietenia macrophylla* were collected from Shivaji University campus washed and oven dried. The dried leaves were pulverised to powder. Leaf extracts of each plant species were prepared with 95% ethanol (1:5 w/v). The toxicity of the extract was determined against Carbendazim sensitive and resistant isolates of *Botrytis cinerea* by food poisoning technique Mishra and Tiwari, (1992) at four different

concentrations. Total ten isolates were obtained from different district of Maharashtra. From these sensitive and resistant isolates obtained. Test fungus was multiplied on Czapek Dox Agar Medium. Petri plates containing Czapek Dox Agar, supplemented with plant extracts at four concentrations with three replicates were inoculated with 8 mm disc of fungal culture taken from actively growing mycelium of *Botrytis cinerea* and the plates were kept upside down. The plates were incubated in BOD incubator at 28°C, plates without plant extracts was served as control. The growth was determined at regular intervals. The similar experiment was also undertaken using aqueous extracts.

For *in vivo* studies rose plants were grown in earthen pots till these of 6-8 months. These plants were treated with various concentrations of alcoholic and aqueous leaf extracts. Mycelial suspension of *Botrytis cinerea* was inoculated on leaves after 24 h. Inoculated plants were then covered with sterile polythene bags the lesion were measured after 9 days. The percentage of infection was determined at regular intervals by using 0 to 4 scales.

RESULTS AND DISCUSSION

Alcoholic leaf extract of all five plant species used against sensitive and resistant isolates of *Botrytis cinerea* showed 100% percentage control efficacy (PCE) at 25% concentration. Aqueous of leaf extracts of *Hyptis suaveolens* and *Tagetes erecta* completely inhibited the growth of *Botrytis cinerea* at 50 % (Table 1). This agrees with the findings of Waghmare *et al.* (2010a) they have reported the effect alcoholic and aqueous leaf extracts of different plants on growth of *Alternaria alternata*. Similarly Jagtap and Kamble, (2010) reported the aqueous and alcoholic leaf extracts of different plants on the

Table 1: Effect of plant leaf extracts on linear growth (mm) of *Botrytis cinerea* causing leaf blight of rose

S. No.	Name of the Plant	Concentration in Percentage	Days			
			1	2	3	4
1	<i>Melia azedarach</i> L.	25 Alcoholic	0.0	0.0	0.0	0.0
		25 Aqueous	16.33	33.66	41.66	53.66
		50 Alcoholic	0.0	0.0	0.0	0.0
		50 Aqueous	14.33	32.33	39.66	50.66
		75 Alcoholic	0.0	0.0	0.0	0.0
		75 Aqueous	13.33	30.33	35.33	47.66
		100 Alcoholic	0.0	0.0	0.0	0.0
		100 Aqueous	12.33	28.66	34.33	45.66
		Control	20.33	41.33	61.66	80.00
		2	<i>Clerodendrum inerme</i> L.	25 Alcoholic	0.0	0.0
25 Aqueous	17.33			35.66	45.33	56.33
50 Alcoholic	0.0			0.0	0.0	0.0
50 Aqueous	16.33			33.66	43.33	53.66
75 Alcoholic	0.0			0.0	0.0	0.0
75 Aqueous	15.66			31.66	41.33	50.66
100 Alcoholic	0.0			0.0	0.0	0.0
100 Aqueous	14.33			28.66	39.66	48.33
Control	20.33			41.33	61.66	80.00
3	<i>Hyptis suaveolens</i> L.Poit			25 Alcoholic	0.0	0.0
		25 Aqueous	14.66	21.33	30.66	42.66
		50 Alcoholic	0.0	0.0	0.0	0.0
		50 Aqueous	0.0	0.0	0.0	0.0
		75 Alcoholic	0.0	0.0	0.0	0.0
		75 Aqueous	0.0	0.0	0.0	0.0
		100 Alcoholic	0.0	0.0	0.0	0.0
		100 Aqueous	0.0	0.0	0.0	0.0
		Control	20.33	41.33	61.66	80.00
		4	<i>Tagetes erecta</i> L.	25 Alcoholic	0.0	0.0
25 Aqueous	14.33			27.66	37.33	42.33
50 Alcoholic	0.0			0.0	0.0	0.0
50 Aqueous	0.0			0.0	0.0	0.0
75 Alcoholic	0.0			0.0	0.0	0.0
75 Aqueous	0.0			0.0	0.0	0.0
100 Alcoholic	0.0			0.0	0.0	0.0
100 Aqueous	0.0			0.0	0.0	0.0
Control	20.33			41.33	61.66	80.00
5	<i>Swietenia macrophylla</i> . King			25 Alcoholic	0.0	0.0
		25 Aqueous	15.33	28.66	37.00	42.00
		50 Alcoholic	0.0	0.0	0.0	0.0
		50 Aqueous	14.00	22.33	30.00	38.00
		75 Alcoholic	0.0	0.0	0.0	0.0
		75 Aqueous	12.33	20.66	25.33	34.00
		100 Alcoholic	0.0	0.0	0.0	0.0
		100 Aqueous	10.00	17.00	20.00	30.00
		Control	20.33	41.33	61.66	80.00

growth of *sclerotium rolfsii* causing rhizome rot of turmeric. Shivpuri et al., (1997) observed that ethanol plant extract were more toxic to *Alternaria brassicola*. Dubey (1998) found that root extracts of *Moringa oelifera* inhibited the growth of *Thanatopous cucumeris*. Bhale et al. (2005) reported that *Semicarpous anacarddium*, and *Comiphera stocksiana* leaf extracts inhibited growth and spore germination in *Fusarium*. Gachande (2009) studied the efficacy of plant extracts on *Alternaria soplani*. Bhowmick and Choudhary (1982) reported antifungal activity of leaf extracts on *Alternaria alternata*. Similarly Waghmare et al. (2010b) found the Bio Pesticidal effects on seed borne pathogen.

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