



Effect of *Annona squamosa* Leaf Extract on Root Rot Disease of Mango *Mangifera indica* L Caused by *Rhizoctonia solani* in Marathwada Region.

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Abstract

In the Marathwada Region mango (*Mangifera indica* L.) is grown under a variety of soil. The various varieties of grown viz Keshar, Langada, Payari, Dashari almost all varieties of mango *Mangifera indica* L. was suffered from root rot disease and caused by *Rhizoctonia solani*. The pathogen isolated on potato dextrose agar media [PDA]. The 10% concentration of leaf extract of *Pongamia pinnata* Linn., *Jatropha curcas* L, tested against the *Rhizoctonia solani* showed inhibits the growth, the maximum inhibitory observed *Annona squamosa* L effect of leaf extract.

Keywords – Mango root, *Rhizoctonia solani*, *Annona squamosa* L, PDA.

Introduction

Mango is the national fruit of India, known as the 'King of Fruits' and possesses the botanical name *Mangifera indica*. It is one of the most important and popular Asian fruits. Cultivation of Mangoes is deeply embedded in Indian history. Mangoes are mentioned in early Arian literature. Mangoes thrive in tropical regions, and are cultivated throughout India and even in home yards, along field boundaries and roadside avenues. They, later spread to the rest of Asia by themselves and with the help of humans. They have been cultivated, praised and revered since ancient times. Usually all the quantity of food grown in a region cannot be consumed by the people there as there is usually excessive production. And the farmers usually transport the mangoes to other regions where there is need of mangoes or not availability of that particular variety. If the farmers don't do that the excess of production will rot and become waste. So the farmers can preserve the mangoes in the form of jam, squashes and as pickles.

Root rot infection occurs below the ground level to irregular water soaked patches. These patches are enlarged and ultimately girdle the entire base of the stem. On the account of rooting, infected tissues become soft, dark brown to black in color.

Most of the mango diseases in Marathwada region of Maharashtra are

caused by fungi. However, bacterial and viral diseases have also been reported. Not all the mango diseases are equally serious in all varieties

The root rot of Mango caused by *Rhizoctonia solani* in control unless systemic control is used. Once established in older tree, it becomes difficult to eradicate with only option to uproot the plant.

Material and Methods

Infected roots of mango were collected in sterilized polythene bags separately in sterilized apparatus from the various mango yards of Marathwada region during 2021-22. Sample were sealed separate polythene bags and stored in the freeze at 10 °C. The infected roots are rinsed in distilled water and form 1000ml^l to 10ml solution.

The 250 gm peeled potatoes were made into thin chips and boiled in 500ml water and extracted. In this extract the weighed quantity of 20 gm dextrose was added.

The 20 gm agar was melted in the other 500ml water and mixed potato dextrose solution and sterilized adjust pH 6 to 6.5.

For the present investigation potato dextrose agar media (PDA,) were prepared and sterilized in autoclave at 15lbs for 15 minutes and were used for isolation *Rhizoctonia solani*

Experimental Result

Antifungal activity of extract of various parts such as, leaf, bark and seeds of

Annona squamosa L, *Pongamia pinnata* Linn. & *Jatropha curcas* L were tested against fungal pathogen *Rhizoctonia solani* by zone of inhibition method.

The results obtained against various dilutions of aqueous extract and Carbendazim used as standard antifungal agents for comparison and as control, are presented in table.

It is evident from the results presented in Table that extracts of exhibited antifungal activity.

It was found that the *Annona squamosa* L 15% aqueous extract were more inhibitory to pathogenic fungi and with increase in dilution, zone of inhibition of fungi was decreased.

Seed extract showed maximum inhibition followed by root and bark extract and it was least in leaf extract. The seed extract was more effective in both the test organisms compared to control.

Result & Discussion

- Mango fruit is one of the most important fruit crop in Marathwada region of Maharashtra. It makes financial backbone of the farmers.
- The leaves, bark, root and seed extracts of tested against the *Jatropha curcas* L *Annona squamosa* L
- fungal pathogens and *Rhizoctonia solani*. The seed extracts of *Jatropha curcas* L *Annona squamosa* L
- *Pongamia pinnata* Linn. more effective for inhibition of growth pathogens. The leaves, bark, root and seed extracts of *Jatropha curcas* L *Annona squamosa* L
- inhibits the growth of *Rhizoctonia solani*. to Compare *Jatropha curcas* L, *Annona squamosa* L & *Pongamia pinnata* Linn against the pathogen *Rhizoctonia solani*, is *Annona squamosa* L more effective.

Table: Effect of *Annona squamosa* L extracts on growth of the pathogen

Sr. No.	Plant parts	Zone of inhibition (mm) <i>Rhizoctonia solani</i>											
		<i>Pongamia pinnata</i> Linn				<i>Jatropha curcas</i> L				<i>Annona squamosa</i> L			
	control	15%	10%	5%	C	15%	10%	5%	C	15%	10%	5%	C
1	Leaves	16	12	11	10	18	16	12	10	20	18	14	10
	Bark	18	14	12	10	20	18	14	10	22	20	17	10
	Root	18	16	14	10	19	20	16	10	24	22	19	10
	Seeds	20	20	16	10	22	24	18	10	28	26	20	10

C – Carbendazim

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