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Management Of The Post- Harvest Fungi By Fruit Extracts Of *Wrightia Tinctoria*

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Abstract: Bio-pesticides and their use in the management of plant diseases has become recent trend in agriculture to be given alternate traditional plant disease management which is termed as Biological control. Management of various pathogenic micro-organisms by using the different extracts of Botanicals has been attempted and the results are found effective. Botanicals highly potential, economical, safe, bio-degradable and eco-friendly for management of fungi. The concentration of the extracts, such as 0.0625, 0.125, 0.25, 0.5, 1.0 and 2.0 mg/ well of the methanol, petroleum ether and ethyl acetate fruit extract of *W.tintcoria* were utilized to evaluate the minimum inhibitory concentration (MIC) against four pathogenic fungi. The results are very much positive to maximum inhibition of tested fungi. The MIC value is varied according the fungi for that standard drug were used as Amphotericin. Fruit extract of *W.tincoria* have been attempted against the species of *Neurospora*, *Aspergillus*, *Fusarium* and *Cladosporium* for determine minimum inhibitory concentration by using different solvents system has benefited for management of tested fungi.

Key words; Post harvest Pathogens, *Wrightia tinctoria*.

Introduction

Fungicides are widely used for management of pathogens. In this scenario increasing demand to develop, eco-friendly, bio-based, bio-control agents. It need to be focused for systemic management of fungi significantly and thereby improving the health of food grains. The Botanical constitute a promising alternative to hazards fungicides in the field of integrated disease management. In vitro activity of different concentration of Botanicals were screened for their antifungal ability against species of *Fusarium*, *Aspegillus*, *Cladosporium* and the results were observed complete inhibition in mycelia growth of the tested fungi which were isolated from common food grains. Isolation of fungal pathogens as per (ISTA 1966), Neergard 1977, Agarwal 1981, and identification was made with the help of different keys and as per literature by Dodge 1928, Wollen et al. 1935, Bessey 1950, Joseph Gilman 1960, Ramnath et al. 1970, Booth 1971, Gerlach et al. 1982, Dube 1990, Mukadam 1997, Keith et al. 2002 and Mukdam et al. 2006.

Materials and Methods

Antifungal activity: The agar diffusion method was used to evaluate the antifungal activity. Fungi which were cultured overnight at 28 °C for 72 hrs. In potato dextrose broth (PDB) used as inoculum. A final inoculum, using 100 ml suspension containing 10⁴ spore/ml of fungus spread on potato dextrose agar (PDA) medium, respectively.

Wells of 6 mm diameter were prepared in the solid agar and Amphotericin 25, 50, 100, 400, 800 mg/well was used as positive controls. The test samples (0.0625, 0.125, 0.25, 0.5, 1.0, 2.0 mg/well) were applied and plates were at 28° C for 72 hours for fungal incubation for a visible growth. The antifungal activity has been expressed as diameter in mm of inhibition zone and measured by using standard scale. Triplicate set were taken for each test.

Determination of Minimum Inhibitory Concentration (MIC)

Minimum inhibitory concentration (MIC) values were studied against fungi, which were determined as sensitive to the extracts in agar diffusion assay. Agar wells 6 mm diameter were filled with solution containing 0.0625, 0.125, 0.25, 0.5, 1.0, 2.0 mg/well of test extract. Minimum inhibitory concentration was defined as the lowest concentration of extracts that inhibited visible fungal growth on agar.

Results and Discussion: In order to investigate the antifungal activity of fruit extracts of *Wrightia tinctoria* R.Br which were utilized against four pathogenic fungi for their management. The fungi such as *Neurospora crassa*, *cladosporium oxysporum*, *Aspergillus flavus* and *Aspergillus niger* were employed. Antifungal activity and MIC values (mg/well) of fruit extract of *W. tinctoria* R. Br. against different pathogenic fungi which were isolated from common food grain.

Antifungal activity and MIC values mg/well of fruit extracts of *W. tinctoria* R. Br. against *A. flavus*
The fruit extracts of *Wrightia tinctoria* R.Br were used against *Aspergillus flavus* for their growth management. The methanol, petroleum ether and ethyl acetate extracts with their concentrations 0.0625 to 2 mg/well were used for the observation and calculation of antifungal activity and MIC. The results are very beneficial to the control of tested fungi which were summarized in the table 1. As per the results the

maximum inhibition zone was observed in presence of petroleum ether and ethyl acetate extracts of *Wrightiatinctoria R.Br* at the concentration of 2 mg/well. The minimum inhibitory concentration (MIC) was determined against *Aspergillusflavus* in presence of all the tested extracts of fruit of *Wrightiatinctoria R.Br* and minimum inhibition was found in ethyl acetate extracts at the concentration of 0.25mg/well.

Table No.1. Antifungal activity and MIC values mg/well of fruit extracts of *W. tinctoria R. Br.* against *A. flavus*

Sl. No.	Compounds Name	Concentration of Compound						MIC mg
		0.0625 mg	0.125 mg	0.25 mg	0.5 mg	1 mg	2 mg	
1	Methanol extract of <i>Wrightiatinctoria R.Br</i>	0	0	0	0	0.1	0.3	1
2	Petroleum ether extract of <i>Wrightiatinctoria R.Br</i>	0	0	0	0	0.1	0.6	1
3	Ethyl acetate extract of <i>Wrightiatinctoria R.Br</i>	0	0	0.1	0.3	0.5	0.6	0.25
4	Standard drug (Amphotericin)	25 µg	50 µg	100 µg	200 µg	400 µg	800 µg	MIC µg
5	Readings	0	0	0	0	0.7	1	400

Antifungal activity and MIC values mg/well of fruit extracts of *W. tinctoria R. Br.* against *Cladosporiumoxysporum*

The fruit extracts *Wrightiatinctoria R.Br* were used against *Cladosporiumoxysporum* for inhibition of their growth. The methanol, petroleum ether and ethyl acetate extracts with their concentrations 0.0625 to 2mg/well were employed for the determination and observation of antifungal and MIC

The results, the maximum zone of inhibition was exhibit in the presence of methanol extracts followed by ethyl acetate and petroleum ether fruit extracts of *W. tinctoria R. Br.* at the concentration of 2 mf/well. Table No.2, data of the results given in table No.2. The MIC was recorded against *C. oxysporium* in the presence of the fruit of *W. tinctoria R. Br.* and minimum inhibition was found in methanol and ethyl acetate extracts at the concentration of 1 mg/well

Table No.2: Antifungal activity and MIC values mg/well of fruit extracts of *W. tinctoria R. Br.* against *Cladosporium Oxysporum*

Sr. NO	Compounds Name	Concentration of compound						MIC mg
		0.0625mg	0.125mg	0.25mg	0.5mg	1 mg	2 mg	
1	Methanol extract of <i>W. tinctoria R. Br.</i>	0	0	0	0	0.3	0.5	1
2	Petroleum ether extract of <i>W. tinctoria R. Br.</i>	0	0	0	0	0	0.3	2
3	Ethyl acetate extract of <i>W. tinctoria R. Br.</i>	0	0	0	0	0.1	0.4	1
4	Standard drug Amphotericin)	25 µg	50 µg	100 µg	200 µg	400 µg	800 µg	MIC µg
5	Readings	0	0.2	0.7	0.9	1.3	1.5	50

Antifungal activity and MIC values (mg/well) of fruit extracts of *Wrightiatinctoria R.Br* against *Neurosporacrassa*

The different concentration of fruit extracts of *Wrightiatinctoria R.Br* were used against *Neurosporacrassa* for determination of their inhibition of growth. The methanol, petroleum ether and ethyl acetate extract with their concentrations 0.0625 to 2 mg/well were used for the observation and determination of antifungal and (MIC)

The results were summarized in the table 3. The results the maximum inhibition zone was exhibited in presence of ethyl acetate fruit extract of *Wrightiatinctoria R.Br* followed by petroleum ether extracts at the concentration of 2 mg/well. It is interesting to note that the, methanol extracts did not shown any zone of inhibition up to 2 mg/well concentration. The (MIC) was recorded against *Neurosporacrassa* in presence of all the tested extracts of fruit of *Wrightiatinctoria R.Br* and minimum inhibition was found only in ethyl acetate extracts at the concentration of 1mg/well.