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Original Article

Effect of Methanolic leaf extracts of Azadiracta indica A. Juss on growth of Macrophomina Phaseolina Fungus by using different concentrations

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Abstract

Macrophomina phaseolina (Tassi) Goid is a soil borne fungus causes root rot diseases to Sarpagandha (Rauwolfia serpentina). The fungus infects the root and lower stem of over 500 plant species and is widely distributed in the United States (Wyllie, 1988). The efficacy of Azadiracta indica A. Juss Methanolic leaf extract against growth of Macrophomina phaseolina was studied by using Methanol as a solvent at different concentrations i.e., 1.00, 2.00, 3.00, 4.00, 5.00, 6.00, 7.00, 8.00, 9.00 and 10.00 % for their antifungal efficacy.

Key words *- Macrophomina phaseolina, Sarpagandha, Azadiracta indica, Methanol, etc*

Materials and Methods

Preparation of Methanolic plant part extract:

Healthy leaves of *Azadiracta indica* A. Juss was taken, washed thoroughly with fresh water and finally rinsed with sterile distilled water and dried. Fifty grams dried leaves of *Azadiracta indica* A. Juss were cut into small pieces and grinded in a grinder to make fine powder and then extracted in 50 ml Methanol. Extracts thus obtained were filtered through double layered muslin cloth in 150 ml flasks and plugged. The extracts then autoclaved at pressure 15 lbs for 20 minutes. Potato Dextrose Agar (PDA) medium was prepared and sterilized at 15 lbs pressure for 20 minutes. The sterilized extract was considered as standard plant extract and used for the testing their antifungal activity.

The different concentrations were prepared i.e. 1.00, 2.00, 3.00, 4.00, 5.00, 6.00, 7.00, 8.00, 9.00 and 10.00 percent. The 10 ml sterilized PDA media pour in the 10 different sterilized petriplates along with 10 ml ***Azadiracta indica*** methanolic leaf extract of different concentrations were individually added in and allow solidifying. After solidification a 5 mm disc of actively growing 7 days old pure culture of *Macrophomina phaseolina* was inoculated aseptically in the centre of plate**.** Three repetitions were made for each treatment. Medium without phytoextracts served as control. The fungal growth in diameter were observed and recorded and percent growth inhibition was also calculated as per the procedure given by Syeda Fakehha et.al. (2012).

Experimental results and discussion:

The effect of *Azadiracta indica* A. Juss against *Macrophomina phaseolina* with Methanol as solvent was tested at different concentrations i.e., 1.00, 2.00, 3.00, 4.00, 5.00, 6.00, 7.00, 8.00, 9.00 and 10.00 % for their antifungal property with the help of poisoned food technique as given in table 1.

Azadiracta indica efficacy at 1 % conc. shows 15.23 to 64.68 %, at 2% conc. gives 17.65 to 66.35 %, at 3 % conc. shows 19.00 to 69.00 %, at 4 % conc. gives 21.78 to 72.80 % , at 5 % conc. gives 23.89 to 75.90 %, at 6% conc. shows 25.78 to 78.00, at 7% conc. gives 27.87 to 81.56 , at 8 % concentration gives 29.81 to 86.75, at 9% conc. shows 29.97 to 88.45and at 10 % conc. gives 30.58 to 92.25 inhibition of the growth of the pathogen with methanol solvent viz. recorded at 1 to 7 days of incubation period. The efficacy of *Azadiracta indica*, at 10 % conc. gives maximum inhibition of pathogen growth with increase in incubation period.

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Table1: Effect of methanol leaves extract of *Azadiracta indica* A. Juss on growth of *Macrophomina phaseolina.*

Incubation Period (Days)	Control (Methanol)	Percent inhibition									
		Concentration (%)									
		1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
1	7.15 (4.64)	15.23 (8.75)	17.65 (10.16)	19.00 (10.95)	21.78 (12.57)	23.89 (13.82)	25.78 (14.93)	27.87 (16.18)	29.81 (17.37)	29.97 (17.43)	30.58 (17.80)
2	9.25(5.30)	24.24 (14.02)	26.38 (15.29)	29.00 (16.85)	31.78 (18.52)	33.56 (19.60)	35.78 (20.96)	38.90 (22.89)	42.48 (25.130	45.55 (27.09)	48.42 (28.95)
3	12.10(6.94)	42.55 (25.39)	44.10 (26.16)	45.90 (27.32)	47.12 (28.11)	49.23 (29.48)	51.57 (31.04)	53.16 (32.11)	55.15 (33.46)	57.36 (34.99)	59.22 (36.31)
4	15.35 (8.82)	48.61 (29.08)	50.89 (30.58)	52.80 (31.86)	54.00 (32.68)	56.37 (34.52)	58.90 (36.08)	61.25 (37.76)	62.27 (38.51)	67.17 (42.19)	69.65 (44.14)
5	18.44 (10.62)	55.00 (33.36)	57.00 (34.74)	59.90 (36.79)	61.36 38.12)	63.89 (40.01)	65.88 (41.48)	69.25 (43.87)	70.26 (44.63)	71.10 (45.31)	75.00 (48.57)
6	21.56 (12.45)	62.75 (39.14)	65.17 (40.93)	67.78 (43.03)	69.90 (44.75)	72.76 (46.68)	74.16 (47.86)	76.90 (50.90)	78.42 (52.22)	82.86 (56.91)	87.52 (61.84)
7	22.75 (13.14)	64.68 (40.62)	66.35 (41.83)	69.00 (44.36)	72.80 (46.71)	75.90 (49.37)	78.00 (51.82)	81.56 (55.69)	86.75 (62.32)	88.45 (64.04)	92.25 (66.32)
S.E ±	0.42	2.43	2.44	2.65	2.49	2.33	2.71	3.20	3.51	3.84	3.38
C.D at 5%	1.30	7.49	7.53	8.17	7.68	7.18	8.36	9.85	10.80	11.81	10.41

Figures in parenthesis are ARCSIN transformed value.

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