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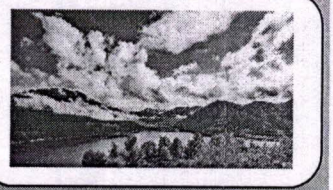

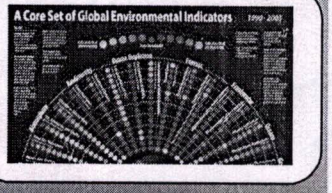

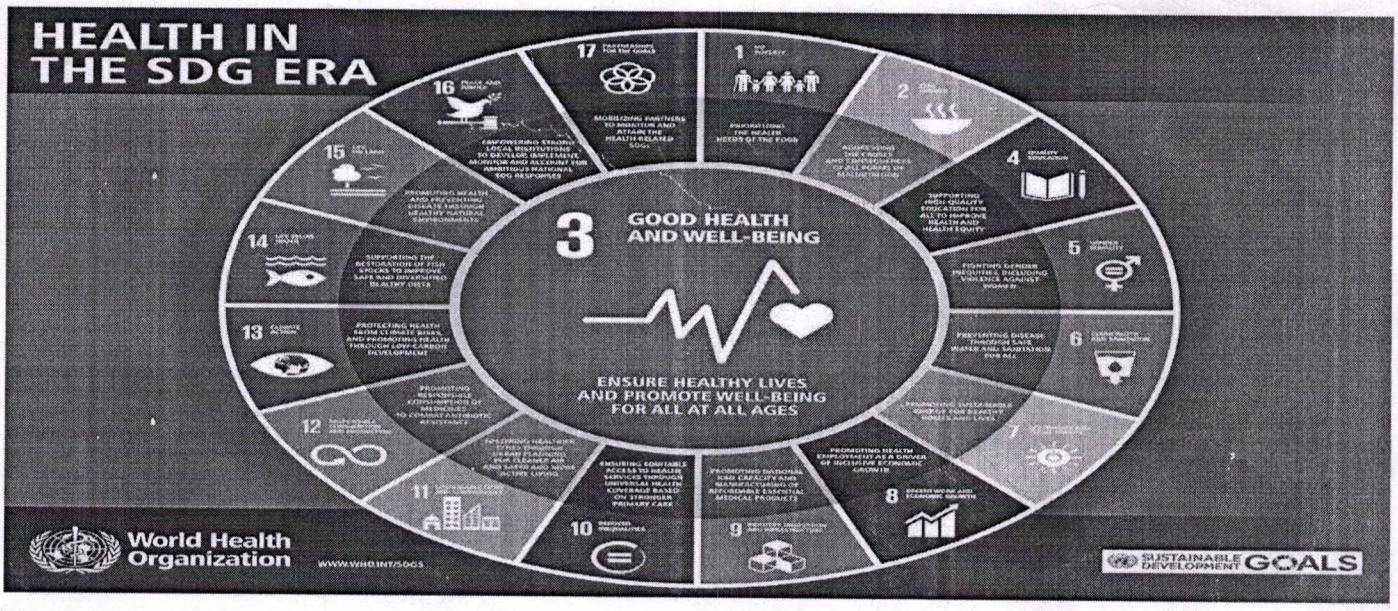

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On

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CONTENTS

Studies on growth of *Macrophomina phaseolina* fungal pathogen with effect of methanolic leaves extract of *Datura metel L.*

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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 Datura metel methanolic leaf extract*** *against growth of Macrophomina phaseolina was studied by using Methanol as 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,* ***Datura metel L.*** *Methanol, etc*

Introduction:

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 fungal pathogen** *Macrophomina phaseolina* (Tassi) Goid was isolated **from the** *Rauwolfia serpentina* **roots collected from medicinal plant garden, M. A. University, Parbhani and Medicinal plant garden,** M. P. K. V., Rahuri **showing typical root rot symptoms i.e. black conductive tissue. The infected roots were sterilized with 0.5% sodium hypochlorite solution. The sterilized root were used for isolation of fungal pathogen i.e.** ***Macrophomina phaseolina*** The Locally available Datura plant leaves were used **for preparation of** Methanolic leaf extract. The Methanolic leaf extract was used to study their efficacy against *Macrophomina phaseolina* by poisoned food technique in vitro as used by Shiva et.al, (2008) and Francis Borgio, et.al, (2008) to know their inhibitory effect on the growth of *Macrophomina phaseolina*..The different concentrations used were as 1.00, 2.00, 3.00, 4.00, 5.00, 6.00, 7.00, 8.00, 9.00 and 10.00 percent. The methanol extract was tested against growth of *Macrophomina phaseolina* for 7 days incubation at room temperature and results are expressed as percent inhibition.

Materials and Methods:

Preparation of Methanolic plant part extract:

Healthy fresh Datura plant leaves was taken, washed thoroughly with fresh water and finally rinsed with sterile distilled water and dried Fifty grams dried leaves of Datura (***Datura metel L)*** 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 extracts of different concentrations were individually added in 10 ml melted, cooled and sterilized PDA at the time of pouring in the petriplates 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).

Table -1: Effect of methanol leaves extract of *Dhatura metal L.* on growth of *M. 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)	08.97 (5.14)	09.22 (5.28)	12.52 (7.19)	14.00 (8.04)	17.25 (9.93)	21.87 (12.63)	25.80 (14.95)	29.81 (17.34)	29.97 (17.43)	30.58 (17.80)
2	9.25 (5.30)	12.90 (7.41)	13.37 (7.68)	15.90 (9.14)	19.73 (11.37)	24.89 (14.41)	29.36 (17.07)	36.27 (21.26)	45.48 (27.05)	45.55 (27.09)	46.42 (27.65)
3	12.10 (6.94)	14.22 (8.17)	17.00 (9.78)	21.28 (12.28)	27.38 (15.88)	34.63 (20.25)	37.17 (21.81)	46.45 (27.67)	51.15 (30.76)	55.36 (33.61)	57.22 (34.90)
4	15.35 (8.82)	14.95 (8.40)	19.17 (11.05)	24.57 (14.22)	31.78 (18.52)	38.89 (22.96)	48.14 (28.77)	55.90 (33.98)	62.27 (38.78)	67.17 (42.19)	69.65 (44.14)
5	18.44	16.77	20.93	26.69	33.84	42.86	56.28	64.00	70.26	71.10	75.00

	(10.62)	(9.65)	(12.08)	(15.54)	(19.86)	(25.37)	(34.24)	(40.04)	(44.63)	(45.31)	(49.19)
6	21.56 (12.45)	18.48 (10.64)	21.17 (12.22)	27.52 (15.97)	35.90 (21.03)	46.93 (27.98)	63.24 (39.51)	71.46 (45.97)	78.42 (52.43)	82.86 (57.17)	87.52 (63.13)
7	22.75 (13.14)	21.50 (12.42)	22.10 (12.76)	29.90 (17.39)	38.72 (22.77)	49.00 (29.49)	69.00 (44.03)	77.89 (51.15)	86.75 (60.17)	88.45 (63.93)	92.25 (67.32)
S.E ±	0.42	0.51	0.51	1.30	1.33	2.13	2.511	2.52	2.76	3.90	3.64
C.D at 5%	1.30	1.59	1.59	4.00	4.11	6.57	7.72	7.73	8.50	12.01	11.22

Figures in parenthesis are ARCSIN transformed value.

Experimental results and discussion:

The effect of *Datura metel L.* leaves extract 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 standard poisoned food technique. ***Datura metel*** efficacy of methanolic leaf extract from 1 to 7 days incubation period was recorded at different concentration. At 1 % concentration shows **08.97** to **21.50** %, at 2% concentration gives **09.22** to **22.10** %, at 3 % concentration shows **12.52** to **29.90** %, at 4 % concentration gives **14.00** to **38.72** % , at 5 % concentration gives **17.25** to **49.00** %, **at 6%** concentration shows **22.45 to 59.14**, at 7% concentration gives **26.27 to 72.00,** at 8 % concentration gives **29.81 to 86.75**, at 9% concentration shows **29.97** to **88.45** and at 10 % concentration gives **30.58 to 92.25** inhibition of the growth *Macrophomina phaseolina*. The efficacy of ***Datura metel methanolic leaf extract*** at 10 % concentration gives maximum inhibition of *Macrophomina phaseolina* growth with increase in incubation period as mentione**d in table-1.**

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