

Antifungal Efficacy of a Medicinal Plant *Withaniasomnifera* to Control the Seed Borne Fungi *Fusarium Moniliforme* scheldon

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ABSTRACT: The medicinal plant *Withaniasomnifera* (L.)Dunal ,commonly known as Ashwagandha ,is an important medicinal plant that has been also referred as Indian ginseng. Due to presence of many bioactive compounds, the plant extract possess the antifungal property against various pathogens.In the present study attempt has been made to study the fungitoxic effect of leaf extract of *Withaniasomnifera* (L.) Dunal against seed-borne fungus *Fusarium moniliformescheldon*.The effect of *Withaniasomnifera* was studied by Agar plate method *InVitro*.The study reveals that as the concentration of leaf extract of *Withaniasomnifera* increases,linear growth of pathogen decreases.The leaf extract also reduces percentage of seed mycoflora and increases seed germination percentage. The maximum inhibition of fungus *Fusarium moniliforme* was observed in 4.0 % leaf extract of *Withaniasomnifera* (L.) Dunal.

KEYWORDS: Leaf-extract, seedsamples, agar media.

I. INTRODUCTION

In Agriculture seeds plays vital role for the production of healthy crops.About 90% of the crops all over the world are produced by using seeds.The seeds are also found to be responsible for disease transmission because they carry number of pathogens,which get associated either in the field or in the post harvest storage conditions.The seed borne pathogens cause several types of abnormalities in the seed (Neergard 1977).

Pulse seeds or legumes constitute an important source of proteins in the Indian diet.The major legumes cultivated in India include groundnuts,gram,pigeonpea,green gram and black gram.It is found that the seeds of these legumes are associated with many fungi in field and storage.The associated seed-borne fungus adversely affect the health of the seeds(Muley,1990).This fungus have been found to cause qualitative and quantitative changes in chemical composition in seeds.Such seeds are unsuitable for human and animal consumptions.These pathogenic fungi degrade the chemicals present in the seeds by producing certain enzymes and toxins.

Now a daysa broad range of fungicides are effectively used for plant disease control. But fungicides pose a high risk to human health leading to many diseases(Agarwal,2007).Therefore ,the present study was undertaken to study the fungitoxic effect of *Withaniasomnifera* (L.)Dunal against seed borne fungus *Fusariummoniliformescheldon*.

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II. MATERIALS AND METHODS

- 1) Collection of seed samples: The different seed samples were collected from Agriculture Reserch Centre Latur.The seed samples collected were of Bengal gram,Green gram and Black gram.
- 2) Assessment of seed mycoflora:The seed-borne fungi of pulse seeds were detected by Agar plate method as recommended by ISTA (1966).

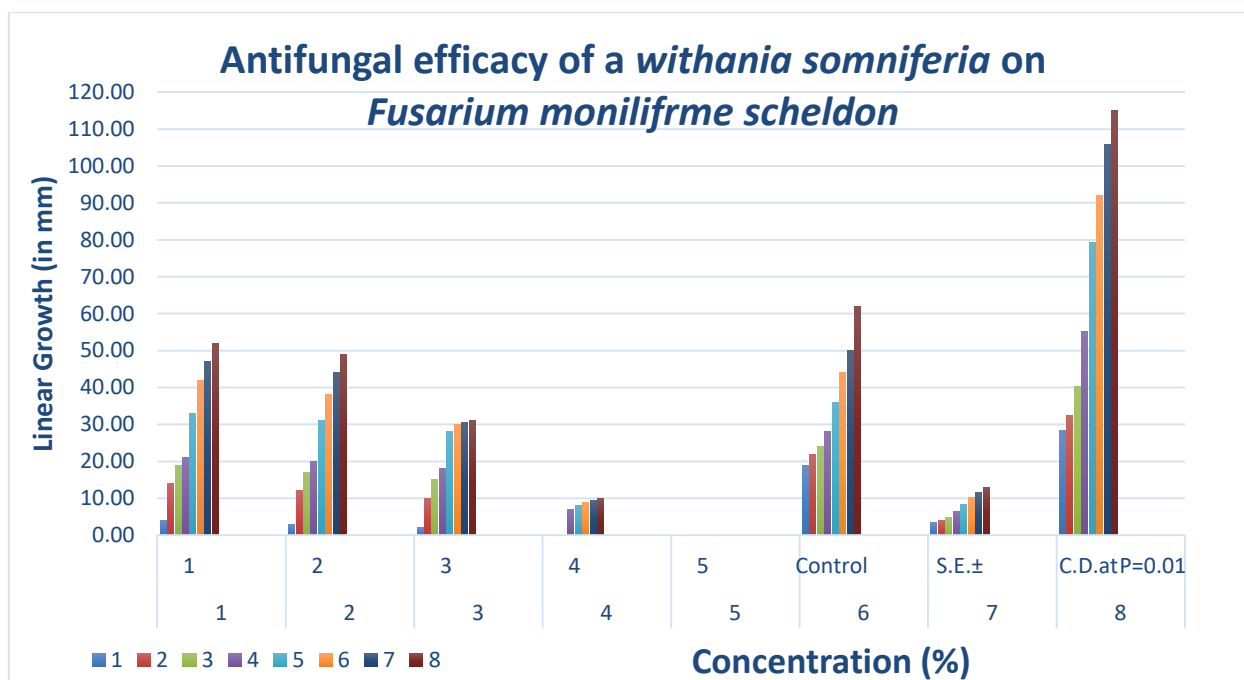
a)Agar plate method:Firstly glucose nitrate agar medium was prepared.Ninepetriplates were taken for each sample of seeds.Then sterilized glucose nitrate agar medium and petriplates using Autoclave. The medium was allowed to solidify for sometime after sterilization.Then after the seeds were treated with 0.1% Hgcl₂ for 2 minutes.Then washed the seeds with sterilized water for removal of excess Hgcl₂.Placed 10 seeds at equal distance in each petriplate.subsequently incubated these petriplates with the help of incubating chamber for 6-8 days.After that bombarded the ultraviolet light for 5-10 minutes each day.Then the plates were examined after 8 days and noted the characteristics fungal colonies associated with each seed.Prepared the slides and examined them under microscope.Recorded the percentage of infection of different fungi.Observed the changes taking place due to infection of seeds.

- 3) Selection of Medicinal plant:

Medicinal plant have been used as a biological control agent to control the plant pathogenic fungi.The leaf extract of medicinal plant *Withaniasomnifera* (L.)Dunal was used to control the growth of *Fusarium moniliformescheldon*.

Observation table:

Sr.No.	Leaf extract Concentration (%)	Linear growth (mm)								
		Incubation period (Days)								
		1	2	3	4	5	6	7	8	
1	1.0	4.00	14.00	19.00	21.00	33.00	42.00	47.00	52.00	
2	2.0	3.00	12.00	17.00	20.00	31.00	38.00	44.00	49.00	
3	3.0	2.00	10.00	15.00	18.00	28.00	30.00	30.50	31.00	
4	4.0	00.00	00.00	0.00	07.00	8.00	9.00	09.50	10.00	
5	5.0	00.00	0.00	00.00	00.00	00.00	00.00	00.00	00.00	
6	Control	19.00	22.00	24.00	28.00	36.00	44.00	50.00	62.00	
7	S.E.±	3.44	4.03	4.92	6.38	8.28	10.22	11.64	13.05	
8	C.D.at P=0.01	28.35	32.33	40.16	55.10	79.25	92.05	105.82	115.09	



III. RESULTS AND DISCUSSIONS

The effect of leaf extract of *Withaniasomnifera* (L.)Dunal was observed. The results are presented in table no.1 and figure no.1. From the result it is clear that as the concentration of *Withaniasomnifera* (L.)Dunal increases, there was gradual decrease in linear growth of *Fusarium moniliformescheldon*. In control, linear growth was 62 mm on 8th day of incubation. The linear growth at 1.0% was 52mm, at 2.0% it was 49mm, at 3.0% it was 31mm and at 4.0% it was 10mm on 8th of incubation. The maximum inhibition was at 4.0% concentration of leaf extract of *W.somnifera*. At 5.0% concentration there was complete inhibition of fungus takes place.

IV. CONCLUSION

The results obtained indicate that the leaf extract of *Withaniasomnifera* (L.)Dunal inhibited the growth of seed borne fungi *Fusarium oxysporumscheldon*.

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