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EFFECT OF PANCHAGAVYA ON SOIL BORN PLANT PATHOGEN FUSARIUM OXYSPORUM

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Abstract: To study in vitro effect of Panchagavya on soil born plant pathogen *Fusarium Oxysporum*. Panchagavya is the formulation of five Cow products such as Cow urine, Dung, Curd, Ghee and Milk. The formulation of Panchagavya was prepared by the method of Pathak et al., (2007). The formulation was incubated at room temperature for 10 days and further used in vitro antifungal activity against test pathogen *Fusarium Oxysporum*. Firstly isolated and cultivated pure culture of *Fusarium Oxysporum* in the plates. Then transfer of graded doses of Panchagavya 2, 4, 6, 8 and 10 percentage w/v was added in to the potato dextrose agar plates and transfer of point inoculation of pure culture *Fusarium oxysporum* in to the plates observe the results after 7 days. The antifungal activity was studied adopting the food poisoned technique method using *Fusarium Oxysporum* as a test pathogen. It was observed Panchagavya were able to suppress the growth of *Fusarium Oxysporum*. However, in the plate without Panchagavya (control). There was significant development in the growth of *Fusarium Oxysporum*, on the basis of plate observation followed by incubation among all the replicates the superior antifungal activity of Panchagavya was recorded in the plate of 4 percentage w/v Panchagavya. Followed 2, 6, 8, and 10 percentage w/v Panchagavya treatment as compare to control. The result on the present study indicated the antifungal activity of Panchagavya against test plant pathogen *Fusarium Oxysporum*. The result obtain in percentage study suggested as a distinct practical possibility that judicious utilization of Panchagavya would help in plant protection which may minimized the use of Chemical Fertilizer in agro practices and may prevent the biomagnification hazards and Panchagavya is a natural and ecofriendly product it helps in plant protection against soil born pathogens.

Keyword: Panchagavya, *Fusarium Oxysporum*. Soil born pathogen,

INTRODUCTION:

Agriculture has been the basic Sources of subsistence for man over thousands of years. It Provides a live hood for more than half of the world population even though but plant diseased are creating the major constraints to profitable agricultural and pose real economic threats to Productivity by conventional and organic farming system. The plant disease management is complicated due to the presence of multiple types of plants pathogens. (Maheswari et al., 2007)

Around the world over thirty thousand Plant disease have been reported. These have been periodic out breaks of certain plant disease causing severe plant losses occasionally leading to Famine, misery and human suffering late blight of potato in Europe, coffee rust in shrilanka and Helminthosporium leaf spot of rice in India have had their long lasting effect on world history and economy. (Kapoor et al., 2004).

Some of the importance soil borne disease viz. Root rot of Mungbean due to the *Macrophemena Phaseoling* infection, Powdery mildew of Mustard due to *Alternaria* blight and white root rot of chickpea-*Rhizoctonia*, wilt and root rot are importance disease of chickpea causing losses of *Fusarium oxysporum* species. (Mukhopadhyay, 1994).

Fungal Pathogen are responsible for severe damage

of many economically important plant. Species *Fusarium oxysporum schlecht* is a very dangerous plant pathogen and the forma specials *lycopersici* occurs throughout most tomato-growing world wide causing a vascular wilt that can severely affect the crop. (M. Moretti et al. 2008).

This soil borne fungus infected plant through roots and colonized xylem vessels of stems. Potato plants infected by *Fusarium oxysporum f.sp. taberosi* showed a characteristic discoloration in their vascular tissue due to obstruction of the water and nutrient conducting tissue of the plant resulting in stunting, chlorosis, unilateral wilt, and eventual plant death. (Kucharek et al., 2000).

Hence the farmers and researchers in disease management have shifted to words biological control agent are noted to be effective, self. Perpetuating safe and expensive and ecofriendly.

Panchagavya is one such formulation mentioned in Ayurveda, which is prepared with five component derived obtain from cow viz. Milk, curd, Ghee, Urine and Dung. (R. Mathivanan et al., 2006). The excellent Promotion by Panchagavya in Plant growth response from soying to harvest have been frequently reported (Selveraj et al., 2003). However, work on use of Panchagavya in plant disease control could not be traced.

Hence, taking the positive use of Panchagavya in to

consideration specially for plant disease management the work "In vitro effect of panchagavya on soil born plant pathogen Fusarium Oxysporum".

MATERIAL AND METHODS:

In order to know the utility of panchagavya in agriculture with special interest of plant disease management present work has been undertaken to study the "In vitro effect of panchagavya on soil born plant pathogen Fusarium Oxysporum".

A) In vitro experimentations:-

- 1) Isolation and cultivation of test fungal species of soil borne plant pathogen Fusarium oxysporum.
- i) Rhizospheric soil sample was collected from different region of Washim District.
- ii) The pure culture of Fusarium oxysporum was enriched in 7 days by adopting standard method in selective fusarium Agar media (Deshmukh. A.M, 1997).

Composition of Fusarium Agar Media

1) Potassium dihydrogen phosphate	1 gm.
2) Potassium nitrate	1 gm.
3) Magnesium Sulphate	0.5 gm.
4) Potassium chloride	0.5 gm.
5) Starch powder	0.2 gm.
6) Glucose	0.2 gm.
7) Sucrose	0.2 gm.
8) Distill water	1000 ml.
9) Agar	2 gm.

Use: Strips of cellulose lens paper is added (Deshmukh. A.M, 1997)

- iii) The enriched culture of Fusarium oxysporum at oxysporium stage was inoculated aseptically in sterilized potato dextrose Agar by spread plate technique and incubated at room temperature for 7 days.

Composition of Potato dextrose Agar

1) Potato (Peeled)	2 gm.
2) Dextrose	2 gm.
3) Agar	1.5 gm.
4) Distilled water	100 ml.

(Deshmukh. A.M, 1997)

The growth of Fusarium oxysporum was further observed for the presence of fusarium mycellium and further maintain at Refrigeration Temperature of to further use.

B) Formulation of Panchagavya:-

The formulation of Panchagavya was prepared by the method of Pathak et al., (2007) in an earthen container by fertilizing cow dung 91.42, urine 2.28, curd 0.57, Ghee 1.14 and Milk 4.5 percentage W/W respectively. The formulation was then incubated at room temperature for 10 day and further used for in vitro antifungal activity against test plant pathogen fusarium oxysporum.

C) Preparation of plates for testing

- i) Graded doses of the panchagavya 2, 4, 6, 8 and 10 percentage w/v was added in 10 ml. of potato dextrose Agar plates.
- ii) The plate without Panchagavya was maintained as control.
- iii) Thus prepared contents were poured in to petri plates.
- iv) The petri plates were inoculated by test pathogen Fusarium oxysporum adopting point inoculation method and further incubated at room temperature for 7 days.
- v) Mycellial diameter was measured after Antifungal incubation.
- vi) The effect of Panchagavya was tested as per procedure of poisoned food technique. (Gomathi, et al., 2000)

RESULT AND DISCUSSION

The studies of effect of Panchagavya on soil borne plant pathogen and the experiment was conducted in one phases. The in vitro experimentation was conducted to study the Antifungal activity of Panchagavya against test pathogen Fusarium oxysporum. The observation obtained in the present study with its discussion on the light of literature has been presented as follows:-

A) Studies on in vitro antifungal activity of Panchagavya against Test-Pathogen.

The antifungal activity was studied adopting the poisoned food technique method using Fusarium oxysporum as test pathogen. The effect of Panchagavya with different graded doses 2, 4, 6,8 and 10 percentage w/v respectively were separately tested against test fungi. The observation recorded is presented in table 1. It was observed Panchagavya were able to suppress the growth of Fusarium oxysporum. However, in the plate without Panchagavya (Control). There was significant development in the growth of Fusarium oxysporum, on the basis of plate observation followed by incubation among all the replicates the superior antifungal activity of Panchagavya was recorded in the plate of 4 percentage Panchagavya. Followed by 2,,6,8 and 10 percentage w/v Panchagavya treatment as compare to control.

The result on the present study indicated the antifungal activity of against test pathogens.

The antifungal property of Panchagavya is might be due to the of antimicrobial compounds such as antibiotics or cell wall degrading enzyme in Panchagavya and ultimately leads to induce the antifungal antivitamins against test fungi which, indicates the possible utility of Panchagavya in controlling the soil borne plant pathogens.

Table-1: In Vitro Antifungal activity of different concentrations of Panchagavya against *Fusarium oxysporum*

Sr. No.	Treatment of Panchagavya w/v in (%)	Radial mycelial diameter (cm)
1	2	2.4
2	4	1.2
3	6	3.0
4	8	4.0
5	10	4.2
6	Control	6.0

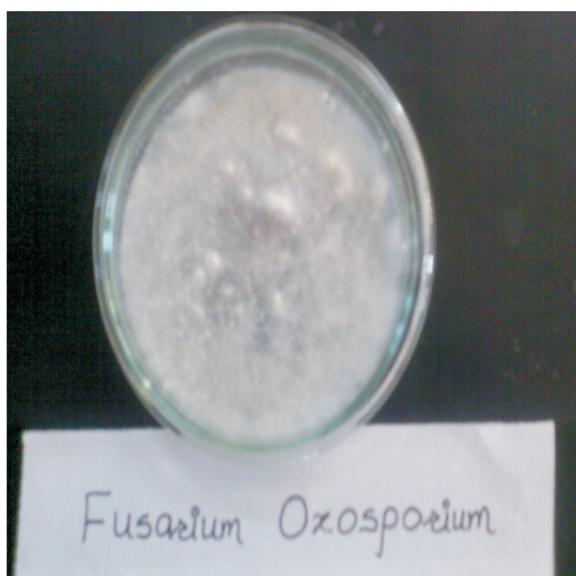
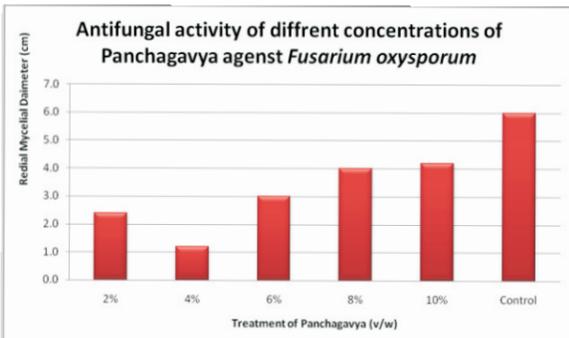


Photo plate 1:- Isolated *Fusarium oxysporum*

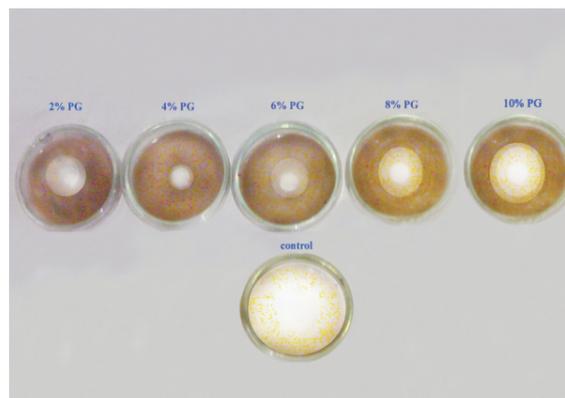


Photo plate . 2 :- In vitro antifungal activity of Panchagavya against *Fusarium oxysporum*

CONCLUSION:-

The present study entitled “In vitro Effect of grades doses of Panchagavya on soil born plant pathogen *Fusarium Oxysporum*.” From the result and discussion certain conclusion are presented as follows :

The graded doses of Panchagavya viz. 2,4,6,8 and 10 percentage w/v shows significant antibiosis against *Fusarium oxysporum*, hence Panchagavya treatment may be beneficial in management of plant diseases.

The result obtain in percentage study suggest as a distinct practical possibility that judicious utilization of Panchagavya would help in plant protection which may minimized the use of chemical fertilizers in agro practices and may prevent the biomagnifications hazards. As Panchagavya is natural and ecofriendly product it helps in plant protection against soil borne pathogen

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