



# Evaluation of Antifungal Efficacy of Leaf extract of *Jatropha curcus* against *Taphrina maculans* causing leaf blotch of Turmeric.

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## Abstract

The wild plants possess antifungal property due to presence of certain phytochemicals such as alkaloids, tannins, coumarins, quinines, phenolic compounds and Phytoalexins. Taking this into consideration, in the present study the leaf extract of *Jatropha curcus* using different concentrations from 1.00 to 4.00 were tested *In Vitro* by following poisoned food technique against *Taphrina maculans* causing leaf blotch of Turmeric. The used concentrations of leaf extract of *Jatropha curcus* were as 0.0 (Control), 1.0, 1.5, 2.0, 2.5, 3.0, 3.5 and 4.0. The Leaf extract of *Jatropha curcus* at 3.5 concentration was found to be superior in reducing the mycelial growth of *Taphrina maculans*.

## Keywords:-

*Jatropha curcus*, *Taphrina maculans*, Turmeric, Phytochemicals.

## Introduction: -

Turmeric is one of the most important spice crop grown in many parts of the world. It is the ancient and sacred spice of India. It is also known as Indian saffron. It is an important Commercial crop grown in India and used in diversified forms as a condiment, flavouring and colouring agent and as a principal ingredient in Indian culinary as curry powder. It is also had some religious significance in Vedic culture of India.

Turmeric has been also used as a foodstuff, cosmetic and medicine. It is used as a colouring agent in cheese and other foods (Govindrajan 1980; Ammon and Wahl 1991). Turmeric is also used in manufactured food products such as canned beverages, dairy products, ice creams, baked products, cakes, biscuits and sweets. It is also used as an herbal medicine for rheumatoid arthritis, skin cancer, conjunctivitis, small pox, wound healing, liver ailments and urinary tract infections (Dixit, Jain and Joshi 1988).

Turmeric is a rhizomatous, herbaceous, perennial plant belonging to the family Zingiberaceae. Among all of the world's turmeric production, India is having major Share in turmeric production. Indian turmeric is considered to be the best because of its high curcumin content.

The common varieties of turmeric grown in India are Salem, Erode, Tekurpeta, Rajapuri, Lokhand, Waigaon, Allepy, Armour and chintamani (Indiresh et al., 1990). The yellow - orange colour of turmeric is due to presence of Curcumin which is a part of the essential component of this plant (Ammon et al., 1992). Such an economically valuable crop gets affected by the fungus *Taphrina maculans* causing disease leaf blotch of turmeric reducing both it's quality and quantity. The leaf extract of *Jatropha curcus* is having antifungal activity due to presence of certain phytochemicals. Taking in account the medicinal importance of *Jatropha curcus* leaf extract, the present work has been planned to control the disease of turmeric.

## Materials and methods:

By using poisoned food technique (Biswas et al., 1995), the effect of *Jatropha curcus* on the fungus *Taphrina maculans* was studied *In Vitro*.

For this the fresh and healthy leaves of *Jatropha curcus* free from any deformalities were collected from the nearby fields of Latur district and washed thoroughly 2-3 times with tap water. Then the leaves are dried in shed and crushed with the help of mortal and pestle by adding 10% Alcohol. The extract was filtered by muslin cloth. The leaf extract was added in 100 ml of 10% alcohol. The required concentration of Leaf extract was obtained by adding 1.0 1.5 2.0 2.5 and 3.0, 3.5 and 4.0 in 100 ml of warm media. The media was poured in sterilized petriplates. Then these plates were inoculated by 5 mm disc of *Taphrina maculans* in the centre of Czapek dox agar medium and the linear growth of fungus was measured in mm (Biswas et al.,1995).

## **Result and Discussion :-**

**Table No.1: Effect of *Jatropha curcus* on mycelial growth of *Taphrina maculans* Butler**

Conc. (%)	Linear growth (mm)							
	Incubation period (Days)							
	1	2	3	4	5	6	7	8
1.0	12.00	16.00	21.00	26.00	31.00	38.00	49.00	58.00
1.5	12.33	15.00	18.00	23.00	28.00	34.00	43.66	47.00
2.0	11.00	13.33	14.00	20.00	24.00	28.00	32.00	40.00
2.5	0.00	0.00	9.00	11.00	15.00	20.00	24.00	27.00
3.0	0.00	0.00	0.00	0.00	9.00	11.00	14.00	19.66
3.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00
4.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Control	19.00	18.22	23.00	29.00	33.00	39.95	51.00	75.00
S.E.±	2.339	3.005	3.515	4.321	5.101	6.470	8.103	90.072
C.D.at P=0.01	12.095	14.834	17.846	21.542	25.168	32.441	40.228	44.921
C.D.at P=0.05	8.135	10.143	12.095	14.515	17.102	22.035	27.246	30.365

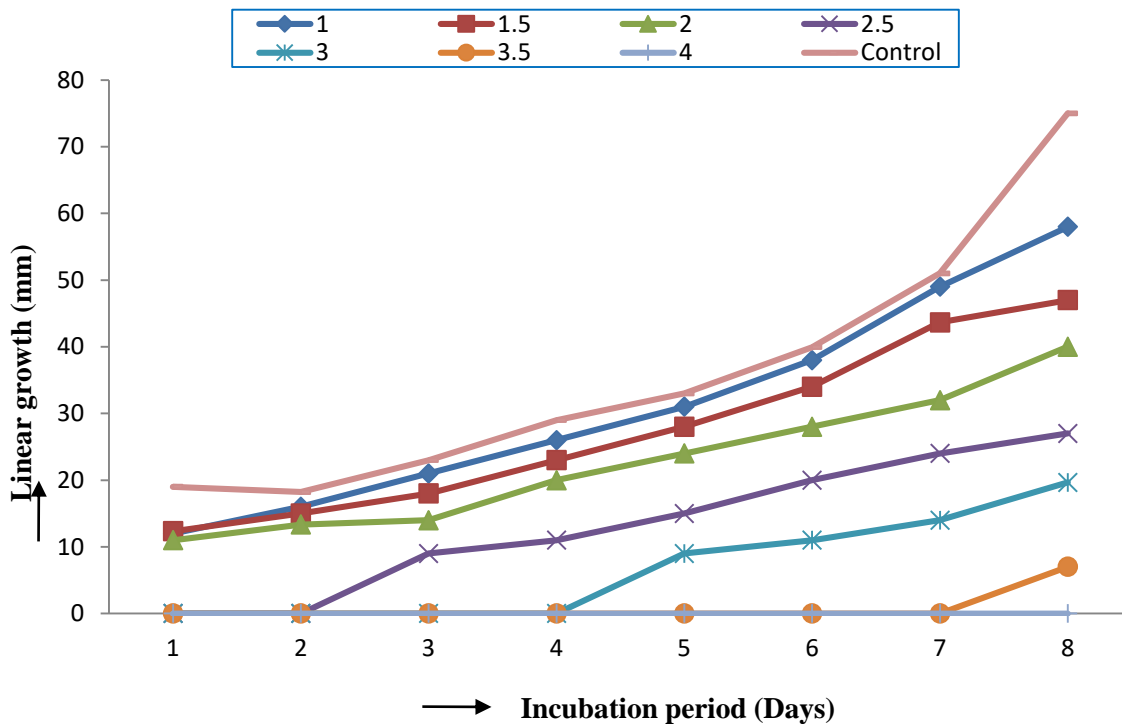


Fig.1: Effect of *Jatropha curcus* on mycelial growth of *Taphrina maculans* Butler

## Conclusion:

The effect of leaf extract of *Jatropha curcus* on linear growth of *Taphrina maculans* was observed. It was found that as the concentration of *Jatropha curcus* leaf extract increases, linear growth of *Taphrina maculans* decreases. It was found that maximum inhibition of fungus at 3.5% concentrations having mycelial growth 7.00 mm as compared to control which was 75.00 mm. At 1.0% concentration the mycelial growth on 8th day was 58.00 mm, at 2.0% 47.00 mm and at 3.0% 19.66 mm. There was complete inhibition of fungus at 4.0% concentration.

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