



## ANTIFUNGAL EFFICACY EVALUATION OF LEAF EXTRACT OF *AZADIRACHTA INDICA* JUSS. AGAINST *TAPHRINA MACULANS* CAUSING LEAF BLOTCH OF TURMERIC.

**Manisha K. Gurme** Department Of Botany, Dayanand Science College, Latur. 413512

**ABSTRACT** An attempt has to be made to know the antifungal efficacy evaluation of leaf extract of *Azadirachta indica* against *T.maculans* *in Vitro* using different concentrations by poisoned food technique. Plant extracts are having potential to control pathogens due to presence of certain alkaloids, tannins, quinines, phenolic compounds and phytoalexins (Datar, 1999). Variable concentrations of *Azadirachta indica* leaf extract show variable effect on the linear growth of *Taphrina maculans*. As the concentration of leaf extract of *Azadirachta indica* increases, the linear growth of *T.maculans* gets decreased.

**KEYWORDS :** *Azadirachta Indica*, turmeric Leaf Blotch, *taphrina Maculans*.

### INTRODUCTION:

Turmeric (*Curcuma longa* L.), commonly known as 'Indian saffron' is an important commercial spice crop belonging to family Zingiberaceae. It is a rhizomatous plant and distributed throughout tropical and subtropical regions of the world. It is used in diversified forms as a condiment, flavouring and colouring agent and as a principal ingredient in Indian culinary as curry powder. It is commonly grown in the states of Andhra Pradesh, Tamilnadu, Kerala, Karnataka, Bihar, Orissa and Maharashtra. The different varieties of turmeric cultivated in India are Erode, Tekurpeta, Rajapuri, Salem, Lokhandi, Waigaon, Chinamani, Duggirala, Allepy, Armour etc. (Indiresht *et al.*, 1990). There is variation in morphology, rhizome and quality in different varieties of turmeric (Philip, 1978).

Apart from its uses as a spice, it is used in a traditional medicine in Asian countries such as India, Bangladesh and Pakistan. It is having anticancer, antiviral, anti-inflammatory, anti-ulcer, anti-diabetic and antioxidant properties (Hamid *et al.*, 2014). The turmeric rhizome contains turmeron, Zingeberene and oleoresin. The yellow-orange colour of turmeric is due to presence of Curcumin which is a part of Oleoresin and it is having anti-oxidant properties (Ghosh *et al.*, 1982). Such a commercially valuable crop gets affected by *Taphrina maculans* fungi causing leaf blotch of turmeric reducing its productivity and quality.

The leaf extract of *Azadirachta indica* is having antifungal effect due to presence of certain phytochemicals. Taking in consideration the medicinal importance of *Azadirachta indica* leaf extract, the present work has been planned to control the fungus.

### MATERIALS AND METHODS:

The effect of *Azadirachta indica* Juss. on *Taphrina maculans* was studied by using poisoned food technique (Biswas *et al.*, 1995) *in Vitro*. The fresh and healthy leaves free from pathogen of *Azadirachta indica* were collected from nearby fields of Latur region of Marathwada and washed with tap water repeatedly 2-3 times. Then the leaves are dried in shed and crushed with the help of mortar and pestle by using 10% alcohol. The extract was filtered by using muslin cloth. The leaf extract was added in 100ml of 10% alcohol. The required concentration of leaf extract was obtained by adding 1.0, 1.5, 2.0, 2.5 and 3.0 in 100ml of warm media. The media was poured in sterilized petriplates. Then these plates were inoculated by 5mm 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).

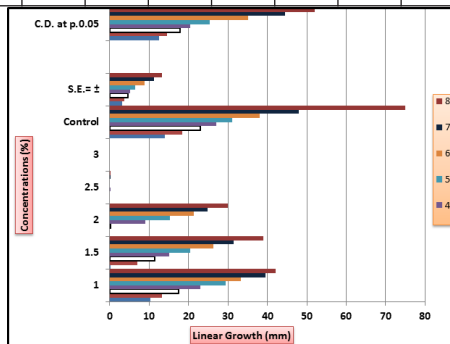
### RESULTS AND DISCUSSIONS:

The antifungal efficacy of *Azadirachta indica* Juss. on linear growth of *Taphrina maculans* was observed. Studies showed that with the increasing concentration of *Azadirachta indica* Juss. leaf extract, there is decrease in linear growth of *Taphrina maculans*. In control plate, the growth was 75mm on 8<sup>th</sup> day of incubation. The linear growth of fungus was 42.01mm at 1.0 concentration, 39.00mm at 1.5%, 30.00mm at 2.0%, 0.09 mm at 2.5% and at 3.00% concentration the linear growth of fungus was inhibited completely. This observation also concluded that the leaf extract of *Azadirachta indica* is a alternative to chemical fungicide and it controls disease severity caused by the fungus *T.maculans*.

### OBSERVATION TABLE:

**Table No.1: Efficacy of leaf extract of *Azadirachta indica* on linear growth of *Taphrina maculans***

Conc. %	Linear Growth (mm)							
	Incubation Period (Days)							
	1	2	3	4	5	6	7	8
1.0	10.3	13.2	17.42	23.00	29.47	33.2	39.5	42.01
1.5	0.04	7.00	11.42	15.01	20.4	26.3	31.41	39.00
2.0	0.00	.000	0.03	9.00	15.31	21.4	24.82	30.00
2.5	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.09
3.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Control	14.00	18.33	23.00	27.00	31.00	38.00	48.00	75.00
S.E. = ±	3.18	3.71	4.54	5.15	6.45	8.92	11.31	13.25
C.D. at p.0.05	12.50	14.59	17.86	20.36	25.37	35.07	44.48	52.09



### REFERENCES

- Datar V.V. (1999). Bioefficacy of plant extracts against Macrophomina phaseolina – the incitant of Charcoal rot of Sorghum. J. Mycol. pl. patho. 29(2):251-253.
- K.M.Indiresht, B.C.Uthaiiah, P.Sridhara, Herle and Balakrishna Rao (1990). Morphological rhizome and yield characters of different varieties of turmeric in coastal Karnataka. J. Agri.Sci.Mysore (24): 484-490.
- J.Philip (1978). Morphological studies and quality characters of turmeric. Ph. D. thesis, Kerala Agri.Uni.Trichur.
- N.Hamid, S.Najmeh,R.Mortaza and R.Samira (2014). Turmeric: A spice with multifunctional medicinal properties.J. Herbmec Pharmacology. (3): 5-6.
- S.P.Ghosh and Sheo Govind (1982). Yields and quality of turmeric in North-eastern hills. Indian J. Horti.39: 70-86.
- Viswas Shubruta, N.K. Das, S.M.H. Guadri and B.C. Surchandra (1995). Evaluating Different plant extract against the major diseases of Mulberry. J. Ind. Phyttopath. 48 (3): 342-344.