

ISSN : 2395-3160 (Print)

Volume 5 (2) I

Special Issue

July 2019

**Biannual International Peer Reviewed Journal**  
UGC - CARE Listed Journal in Group D

# **Journal of Global Resources**



ISSN: 2395-3160 (Print)

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Volume 5 (02) I

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**Biannual International Refereed/Peer Reviewed Journal  
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# **JOURNAL OF GLOBAL RESOURCES**



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Environmental & Scientific Research

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## BIOLOGICAL CONTROLS OF FUNGI ON ONION (*ALLIUM CEPA* L.)

Subhash B. Pawar, Prasant P. Pangrikar<sup>1</sup> and Ashok M. Chavan<sup>2</sup>

Sant Ramdas Arts, Comms and Science College Ghansawangi, Dist. Jalna – 431209

<sup>1</sup>R.B Attal College, Georai. Dist. Beed

<sup>2</sup>Dr. Babasaheb Ambedkar Marathwada University Aurangabad- 431004

### ABSTRACT

The present study deals with biological management of some fungi. Fungi were isolated from different varieties of onions by agar plate method. 6 species of fungi were selected to study their Biological management. Different Leaf extract of *Jatropha gossyfolia* was proved to be fungitoxic for the mycelia growth of all the selected fungi. *Alternaria porri*, *Botrytis squamosa* and *Fusarium oxysporum* showed lowest growth in presence of *Azadirachta indica* and *Pongamia pennata* leaf extract. Leaf extract of *Calotropis procera* was also proved to be fungitoxic for *Aspergillus Niger*, *Colletotrichum circinans* and *Penicillium digitatum*. On the other hand, leaf extract of *Lantana camera* stimulated the fungal growth of *Fusarium oxysporum* and *Penicillium digitatum*.

**Key words:** Biological management, leaf extract, onions fungi.

### Introduction:-

Onion (*Allium cepa* L.) belongs to family Alliaceae is one of the important commercial vegetable crops grown throughout the world including India. It is used as row vegetable and in spices, also called as “Queen of kitchen. Onion bulb contains antiinflammatory, anticholesterol, anticancer and antioxidant compound quercetin (Augusti, 1996). Whatever the colour of the bulb, the taste does not depend on the color. Onions are pungent in nature. It contributes significantly to the human diet having a good source of minerals, vitamins, polyphenols and number of phytonutrients. These phytonutrients such as flavonoids and Phenolic present in onion have been found to act as antioxidants to lower blood pressure and prevent some kinds of cancer (Yang *et al.*, 2004; Slime Stad *et al.*, 2007). It also possesses a high content of flavonoid and sulphur compounds, both of which have a high level of antioxidant activity (Griffiths *et al.*, 2002). Fungal and bacterial infection may take place during the growing season, during harvest time, handling and storage, during transport and marketing or even after purchase by the consumer (Dennis, 1983). Previous studies of Mba and Akueshi (2001) indicated that pathogenic infections affect the overall level of nutritional component in a plant. The research of Nwaukwu *et al.*, (2012) emphasized the role pathogenic fungi affect the nutritional composition of the edible fruit. Considering this fact present work has been carried out to study the biological management of fungi on onion. The increasing awareness of fungicide-related hazards has emphasized the need to use biological methods as an alternative disease control method pathogen *Alternaria porri* in Green house conditions after 48 hours. Roopa and Suvarna (2014) point out antifungal activity of some medicinal plant extract against pathogenic fungi. They reported that, *Aspergillus sp.*, *Botrytis sp.*, *Erwinia sp.* and *Penicillium sp.* at 50% onion leaf extract showed minimum growth. In their study discussed the antifungal activity of plant leaves extract against *Fusarium oxysporum*. And also Gaikwad *et al.*, (2014) using medicinal plant leaf extract by food poisoning technique. They further reported that, *Alternaria porri* at 10% concentration of *Lowsonia alba*, *Stemphyllium vesicarium* at 10% concentration of *Parthenium hysteropharus* showed minimum growth of *Alternaria porri*. In the same year, Agale *et al.*, (2014) reported 10% concentration of Cinnamon and *Jatropha* inhibited mycelium growth of *Alternaria porri*. Pathogen *Alternaria porri* in Green house conditions after 48 hours.

### Materials and methods:-

#### Antifungal activity of botanicals

Fungitoxicity of plant extracts was studied by the poisoned food technique described by Nene and Thapliyal (1993). Glucose nitrate medium was prepared in flasks and sterilized. To this medium was added the requisite quantity of the plant extracts. Plant extracts was prepared by collecting fresh leaves of different plants, washed thoroughly with distilled water and grinded in distilled water. The plant extracts was thoroughly mixed by stirring. The medium was then autoclaved at 15lbs pressure for 20 minutes. After cooling the medium, fungi were inoculated in aseptic condition and incubated for 6 days at room temperature, suitable checks were kept where the fungi grown under the same condition on glucose nitrate without plant extract. Mycelial growth of the fungi compared with check, was taken as a measure of the fungal toxicity.

### Experimental results:-

#### Effect of leaf extract (10%) on control of onion fungi

Medicinal plant leaf extracts were tested for the management of fungal diseases of onion and results are noted.

Leaf extract of *Jatropha gossyfolia* was proved to be inhibitory for the mycelial growth of all the selected fungi. *Alternaria porri*, *Botrytis squamosa* and *Fusarium oxysporum* showed minimum growth in presence of *Azadirachta indica* and *Pongamia pennata* leaf extract. Leaf extract of *Calotropis procera* was also proved to be fungitoxic for *Aspergillus niger*, *Colletotrichum circinans* and *Penicillium digitatum*. It is interesting to note that, leaf extract of *Lantana camera* stimulated the fungal growth of *Fusarium oxysporum* and *Penicillium digitatum*.

### DISCUSSION

As far as Biological management of fungi is concerned, *Jatropha gossyfolia* leaf extract was found to be fungitoxic for all the selected fungi. *Alternaria porri*, *Botrytis squamosa* and *Fusarium oxysporum* showed minimum growth in presence of *Azadirachta indica* and *Pongamia pennata* leaf extract. Leaf extract of *Calotropis procera* was also proved to be fungitoxic for *Aspergillus niger*, *Colletotrichum circinans* and *Penicillium digitatum*. Several workers have tested a large number of plants belonging to angiosperm and gymnosperms for their fungitoxic properties. Mostly the aqueous extract of plants has been used to evaluate their fungitoxic properties (Thapliyal *et al.*, 2000 and Algesaboopathi and balu, 2002). From these results it can be concluded that, in comparison to synthetic compound, the pesticidal compounds of plant origin are more effective and have little or no side effects on human beings as suggested by Kumar *et al.*, (1995). Similar results were point out by Pawar and Chavan, and also Singh and Prasada (1993). They found that leaf extract of *Azadirachta indica* and *Ocimum sanctum* inhibited the growth of *Fusarium oxysporum*. Similarly, Manoharachary and Gourinath (1991) found that aqueous leaf extract of *Eucalyptus lonceolatus* inhibited growth of *Curvularia lunata*, *Cylindrocarpon lichenicola* and *Fusarium solani*. Nwachukwu and Umechuruba (2001) reported that the leaf extracts of basil (*Ocimum bacillium*) bitter leaf (*Vernoniaamygdalina*), lemon grass (*Cymbopogen citrates*), neem (*Azadirachta indica*) and paw-paw (*Carica papaya*) gave significant reduction of mycelial dry weight of *A. niger* and *A. flavus*.

#### EFFECT OF LEAF EXTRACT (10%) ON MANAGEMENT OF ONION FUNGI

Fungi	<i>Lantana camera</i>	<i>Azadirachta Indica</i>	<i>Pongamia pennata</i>	<i>Calotropis procera</i>	<i>Jatropha gossyfolia</i>	<i>Annona reticulata</i>	Glucose nitrate (C)
	<i>Alternaria porri</i>	0.035	0.014	0.012	0.031	0.011	0.027
<i>Aspergillus niger</i>	0.036	0.046	0.028	0.013	0.018	0.033	0.049
<i>Botrytis squamosa</i>	0.040	0.013	0.014	0.034	0.011	0.031	0.050
<i>Colletotrichum circinans</i>	0.031	0.041	0.024	0.011	0.016	0.028	0.044
<i>Fusarium oxysporum</i>	0.051	0.016	0.014	0.032	0.014	0.029	0.048

<b>Penicillium digitatum</b>	0.060	0.048	0.030	<b>0.015</b>	<b>0.020</b>	0.035	<b>0.051</b>

(Fungal Mycelial Dry Weight Mg)

## REFERENCES

1. **Agale R.C., Kadam J.J., Joshi M.S. and Borkar, P.G. (2014).** Symptomology of purple blotch disease of onion and exploration of fungicides, Phytoextract and bio-agent causal fungus *Alternaria porri*. *The Int. Daily J. of Species*. 11(31): 63-69.
2. **Algesabopathi, C. and Balu, S. (2002).** Antifungal activity of some species of *Andrographis wallichex* Nees on *Helminthosporium oryzae* Breda deHann. *J. Economic and Taxonomic Botany*. 24: 705-707.
3. **Augusti, K.. (1996)** Therapeutic values of onion and garlic. *Indian J. of Experimental Biology*. 34:, 634-640.
4. **Gaikawad, K.N., Jadhav, S.U. and Kakulte, V.R. (2014).** Management of Fungal diseases of onion (*Allium cepa* L.) by using plant extract. *Intr. Jr. of life Sci. and Pharma. Res.* :28-30.
5. **Griffiths, G., Trueman, L., Crowther, T., Thomas, B. and Smith, B. (2002).** Onions- a global benefit to health. *Phytother. Res.* 16 (7):603-615.
6. **Kumar, A., Roy, S. K., Saxena, D. C. and Saxena, A. R. (1995).** *In vitro* control of *E. coli* by herbal treatment, *Neo Botanica*. 3: 1-2.
7. **Manoharachary, C. and Gourinath, A. (1991).** Antifungal properties of *Eucalyptus lonceolatus* extracts. *Ind. Bot. Repr.* 10(1+2): 37-39.
8. **Nene, Y. L. and Thapliyal, P.N. (1993).** Fungicides in plant disease control. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi, pp 531
9. **Nwachukwu, E. D. and Umechuruba. (2001).** Antifungal activity of some leaf, extracts on seed-borne fungi of African yam bean seeds, seed germination and seeding Emergence. *Journal of applied Science and Environment Mangement*. 5:29-32.
10. **Nwaukwu, I.A. and Chinyerum, I.N. (2012).** Biochemical changes induced by the effect of six pathogenic fungi on *DialiumGuineense*: Black Velvet Edible Fruit. *Jr. of Pharm. Biol. Sci.* 2 (4):20-24.
11. **Pawar S.B. & Chavan A.M. (2016)** studies on fungal diseases of onion thesis Babasaheb Ambedkar Marathwada University, Aurangabad (M.S). Pp-100
12. **Roopa, V.M. and Suvarna, V.C. (2014).** Biopreservation of Onions Using Plant Extracts and Antagonistic Organisms. *Indian Jr. of Applied Res.* 4 (6):13-16.
13. **Singh, H.N.P. and Prasada, M.M. (1993).** Efficacy of leaf extracts of some medicinal plants against disease development in banana. *Lett. Appl. Microbiol.* 17: 269-271.
14. **Slimes tad, R., Fossen, T., Vagen, I.M. (2007).** Onions: A source of unique dietary flavonoids. *J. Agricult. Food. Chem.*, 55(25): 10067-10080.
15. **Thapliyal, M., Ghosh, M. and Benne, S.S.R. (2000).** Screening of six medicinal plants for their antifungal protein activity. *Asian J. Microbial. Biotechnology. Environmental Sci.* 2: 215-218.
16. **Yang, J., Meyers, K.J., Van Der Heide, J., Liu, R.H. (2004).** Varietal difference in phenolic content and antioxidant and antiproliferative activities of onion. *J. Agric. Food Chem.* 52(22): 6787-6793.