



Percentage to Control Fungal Diseases of Brinjal by using Different Leaf Extract

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Abstract:

Now a days we know that due to the environmental condition atmosphere is not favorable for any crops, so that for healthy and more production we are spraying different fungicides, insecticides and etc. Spraying things are not good for human beings for that we are using different leaf extracts, this method is very easy and economically beneficially to producer. The Brinjal consist of different fungal diseases to control we are using different leaf extracts which affects to the plant's growth and yield to a best of genetic potential. In present study, the pathogenic fungus was isolated from infected plant parts and identified based on morphological and cultural characters as *Fusarium Solani* f.sp, *melongenae*. Hossain KS and Bashar MA (2011). The different plant extracts viz, *Azardichata Indica*, *Argemone Mexicana*, *Datura stramonium*, *Ipomoea fistulosa* were tested to control brinjal pathogen. Different concentrations 5, 10, 15 and 20% of plant extracts was used in the study. Alemu Nega (2014). Among the different extracts 20% of *Azardiachta Indica* was found most effective followed by *Argemone Mexicana*, *Datura stramonium*, *Ipomoea fistulosa*.

Keywords :- pathogen, fungal diseases, leaf extract, fungicides etc.

Introduction:

Brinjal or eggplant (*Solanum melongenid* L.) is an important crop of sub-tropics and tropics. The name brinjal is popular in Indian subcontinents and is derived from Arabic and Sanskrit whereas the name eggplant has been derived from the shape of the fruit of some varieties, which are white and resemble in shape to chicken eggs. It is also called aborigine (French word) in Europe. Jagannathan R. and Narasimhan (1988). The eggplant is native of India. Brinjal is grown as an important vegetable crop in all over world. It is grown in India over an area of 0.4 million hectares with an annual production of 7.8 million tonnes Hossain KS and Bashar MA (2011). Among the different diseases that attack brinjal crop, wilt has become a major disease-causing significant reduction in yield. The wilt of brinjal is characterized by yellowing of foliage drooping of apical shoot to ultimate death of whole plant. The pathogen is a soil inhabiting fungus and forms in the senescing tissues of the diseased plant and may survive in the soil for many years. There are many methods which are presently being used to control various plant pathogens including wilt pathogen such as physical, chemical, biological, cultural etc.

Effective and efficient management of crop disease is generally achieved by the use of synthetic pesticides [2] . due to increased awareness about the risks involved in use of pesticides, much attention is being focused on the alternative methods of pathogen control. The spiraling up cost chemical fungicides particularly in those countries where pesticide is imported. pollution to soil, water, air by the accumulation of obnoxious chemicals residues due to continuous use of fungicides and development of resistance races to these chemicals



are therefore now facing the scientist to look for methods which are ecologically, friendly, safe and specific for pathogens. The recurrent and indiscriminate use of fungicides have posed a serious threat to human health and to the existing human eco geographical conditions as some of them have already been proved to be either mutagenic, carcinogenic or teratogenic. Keeping in view the drawback of chemical management of plant disease, the use of plant extracts in the management of plant disease is gaining importance.

Materials and Methods:

Roots and plant parts were collected from infected brinjal parts showing characteristic symptoms of pathogens from the field. Plant parts were sampled from the late winter -early autumn. The plant parts were then examined under microscope to confirm the presence of respective pathogen *Fusarium solani f. sp. Melongenae* and the infected plant parts were cut into pieces (2-3 mm), surface sterilized with 0.1% mercuric chloride solution for 30 seconds. The isolation was made from root as well as from the foliar parts of wilted Brinjal plants. The plant parts were washed three times with sterilized distilled water and then were transferred aseptically on Potato Dextrose Agar (PDA) media. After the development of the fungal colonies stock cultures were prepared using PDA in test tubes and stored in refrigerator at 4°C. Brinjal pathogen was isolated from infected brinjal plants and was identified.

Plants used in the present study are *Azardiachta indica* which belongs to the family *Meliaceae* commonly known as “neem”. The plant is found throughout India and its derivatives are of great use in agriculture, public health, medicines, cosmetics and many more. The leaves, bark, seed and flowers are bitter, astringent, acrid, depurative, refrigerant, demulcent, insecticidal, expectorant liver tonic, etc. An important of application of neem products in agriculture is their ability to nitrogen release from the nitrogenous fertilizers.

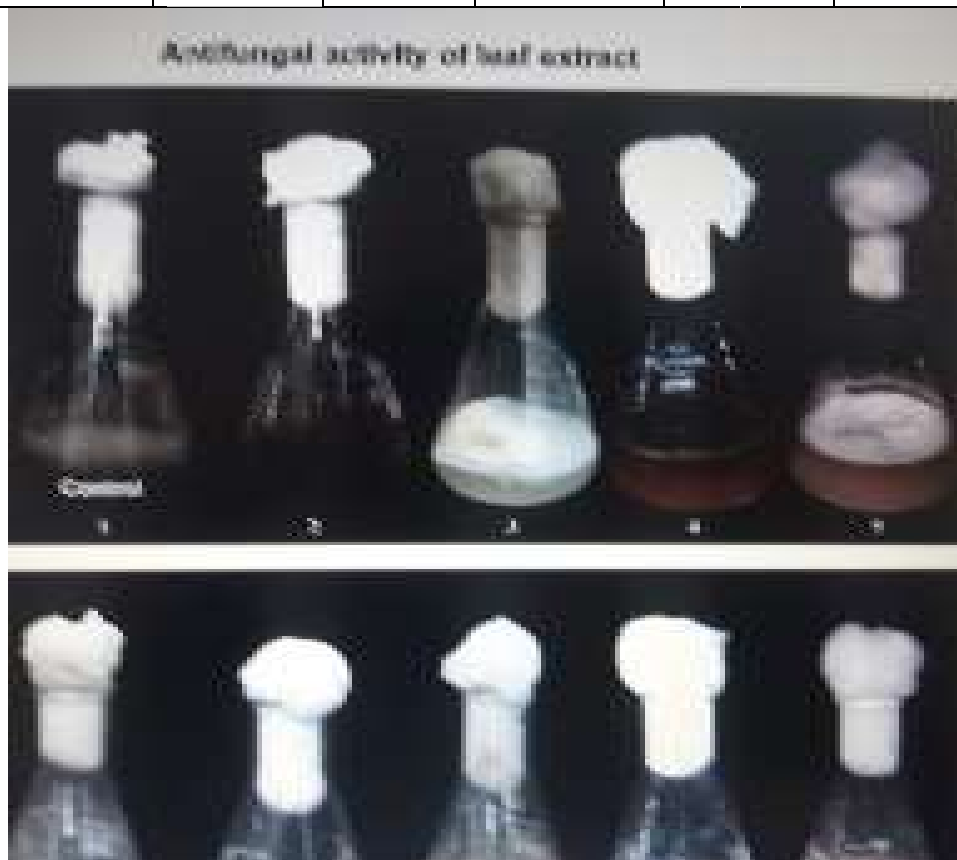
Ocimum sanctum, commonly known as “tulsi” belongs to the family *Lamiaceae* found throughout India. The plant is much erect, branched, softly pubescent under shrub, 30-60 cm high with red or purple sub-quadrangular branches, leaves simple, opposite, elliptic, whole plants is used as medicine for various diseases. *Tulsi* leaves contain a bright yellow volatile oil which is reported to possess antibacterial properties and acts as insecticide.

Datura stramonium plant is said to have been used as a narcotic as early as A.D. 37. It is one of the favourite source of “knockout drops”. It contains on alkaloid scopolamine which is said to produce hallucinatory effects. The smoking of the narcotic produces hallucinatory effects. The smoking of the narcotic produces pronounced diversions in ideas, emotions and even perception. The leaves and tops of *stramonium* are mixed with lobelia herb, lobelia inflate, often called Indian tobacco, to make asthma powders, commonly used to seek relief from asthma cigarettes made of this mixture are smoked.

The extract is prepared from roots and leaves, which are used as antifungal. Fresh leaves were washed through under tap water followed by sterilized water the leaves air , dried and were grinded with the help of pestle and mortar by taking (1:1 w/v) one gram of extract was added in 1ml distilled water separately for each plant extract and filtered through Muslin Cloth and 100% plant extract solution was prepared . The extracts were poured in the flasks plugged with cotton and heated at 100°C for 10 minutes to avoid contamination Karade V. M. and D. M. Sawant. (1999). The plants extract Osuji, J.O. and Eunice, O.N. (2008). Different concentration (5,10,15,20%) of plant extracts was incorporated to potato dextrose medium agar for inoculation of the test pathogen in sterilized petridishes. The isolated pathogen was grown on potato dextrose agar medium was placed at the center of petridishes containing different concentration of the poisoned medium and incubated at 27±2 °C for 6 days . Sharma R. R., Singh D. and Singh R. (2009). Radial growth (cm) of fungus was measured after inoculation till 6 days at an interval of 24 hrs.

Percentage of different leaf extract against fungi

Plant extracts	<i>Alternaria alternate</i>	<i>Aspergillus Niger</i>	<i>Curvularia lunata</i>	<i>Phomopsis vexans</i>	<i>Fusarium solani</i>
<i>Azadirachta indica</i>	62.15	74.25	64.20	49.30	55.57
<i>Argemone mexicana</i>	55.30	45.50	54.23	61.90	64.20
<i>Annona squamosa</i>	57.20	63.20	60.30	65.27	50.30
<i>Datura stramonium</i>	28.20	30.52	55.40	22.15	23.15
<i>Calatropis procera</i>	30.42	26.40	48.50	27.30	44.20
<i>Ipomoea fistulosa</i>	52.63	55.63	37.80	73.29	72.63
<i>Ipomoea fistulosa</i>	52.63	55.63	37.80	73.29	72.63
<i>Jatropha curcas</i>	36.15	46.15	30.12	46.20	35.12
<i>Lantana camara</i>	45.30	56.27	47.52	45.30	60.12
<i>Parthenium hysterophrus</i>	50.26	40.26	59.33	52.92	50.26
<i>Ocimum santum</i>	60.00	73.20	25.15	16.20	60.00
<i>Nerium indicum</i>	32.15	29.15	42.50	40.15	20.30





Result and Discussion

During the study of present investigation, the different plants have its own importance in the point view of antimicrobial compounds. For this investigation 11 plant extracts were taken to check the antifungal activity against the major Brinjal pathogenic fungi.

It is clear from the table that the highest disease efficacy was seen from *Datura* against the *Phomopsis vexans*. The lowest efficacy was seen in *Argemone mexicana* against the *Fusarium solani*. *Annona squamosa* shows the less efficacy against all selected five fungi. *Azadirachta indica* shows more powerful against the *Curvularia lunata*. *Ipomoea fistulosa* shows the lowest activity.

It is clear from the table different medicinal plants were selected for study during the investigation highest percent of a disease control efficacy (DCE) was observed in *Annona squamosa* leaf extract against the *Phomopsis vexans* i.e. (75.27 %). The *Argemone mexicana* shows 64.20 % against the *Fusarium solani*. The *Azadirachta indica* showing 64.20 % efficacy against the *Curvularia lunata* and 62.15 % against the *Alternaria alternata*. Varshney vibha (2001). Among these 11 medicinal plants *Azadirachta indica* showing highest 74.25 % efficacy against the *Aspergillus niger*. The *Ipomoea fistulosa* also showing the notable efficiency against the *Phomopsis vexans* 73.29 % and 72.63 % against the *Fusarium solani*. *Parthenium hysterophorus* shows disease control efficacy against the *Curvularia lunata*. During the investigation lowest disease control efficacy was observed

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