



Screening Of Some Medicinal Plants For Antifungal Activity From Udgir, India

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Abstract :

In this study an attempt was made to evaluate antifungal assay of crude extract of some medicinal plants which are 0490 very common in our area. The extract tested possess various degree of anitifungal activity. Medicinal plants exhibit antifungal activity since they contain innumerable biological active (compound) chemical constituents. Plants selected for antifungal assays are commonly present. These plants include *Lantana indica*, *Ailanthus excelsa*, *Annona squamosa*. The collected plants were indentified with the help of flora of Madras Presidency. Plants collected were used for the evaluation of antifungal properties. The plants were shade dried and then powdered and crude extract, alcoholic extract were prepared. Seed Mycoflora of Groundnut, Jawar and Tur were isolated by blotter paper method. The fungi associated with seed are *Aspergillus*, *Fusarium*, *Rhizopus*, *Pencillium*, *Altaria*, *Cladosporium*, *Curvularia*, *Cephalosporium* etc. The seeds are treated with these plant extracts fo 5, 10 & 15 min., the seeds treated the *Lantana indica* inhibit the growth of many dominant fungi like *Fusarium*, *Alternaria*, *Cladosporium*, *Curvularia* etc. From this study it is noted that the plant extracts are used as antifungal agents and these plants extracts are not hazardous like Pesticides.

Introduction :

The increased use of pesticides in the field of Agri- culture had become major source of environmental pollution affecting the ecosystems. Consumption of organo mercurial fungicides which are primarily used for seed treatment is gradually increasing.

A wide variety of fungicides used for seed treat- ment are being produced in India, These include organo mercurial, Sulphur, Thiram, Mancozeb, Carbendazim etc.

These fungicides applied to crop (seed) are long lived and residues persists in to solve this problem seed treatment by plant extract is a cheap. Though numerous reports have appeared on an- tifungal activity of plants and their secondary me- tabolites. Scientific evaluation of the antifungal ac- tivity of plants still remains an area of intensive in- vestigation, hence a preliminary screening of three locally available plants was undertaken for their antifungal acitivity.

The results are average of three independent ex- periments. The plant selected for antifungal activity are very commonly present in our area *Lantana in- dica* Roxb. *Ailanthus excelsa*. Roxb. (verbenaceae) (Simarubaceae) *Annona Squamosa*. Linn. (Annonaceae) Plant extract for the control of seed borne diseases is a method devoid of any health hazard problem. Hill bunt of wheat (*Tilletia foetida*) was effectively controlled by seed treatment with plant extracts of *Datura Stramarium*. *Thuja* sp. and *Eucalyptus* sp. Singh et al., (1979) Dixit et al. (1983) have listed a number of oils isolated from plants like *Cedrus deodara* and *Aegle marmelos* which

exhibit fungicidal properties against seed borne Pathogens. Crude extracts of *Amaranthus spinosus*, *Nerium indicum* and *Solanum nigrum* reduce Uredospore germination of *Puccinia helianthi* (Wadhvani et al., 1986)

Materials and Methods

Preparation of Plant Extracts :-

Preliminary screening of three locally available plants was undertaken for their antifungal activity.

Plants selected are

1. *Lantana indica* Roxb. (Verbenaceae)
2. *Ailanthus excelsa* Roxb. (Simarubaceae)
3. *Annona Squamosa* Linn.. (Annonaceae)

For the preparation of crude extract, the leaves of the plant were dried into hot air oven and plant leaves were crushed into fine powder. 50 gm. of the dry plant material homogenized and made into a paste with sterile distilled water.

For the preparation of acetone extract 50 g of dry plant material was ground to fine powder and mixed with 25 ml acetone. The suspension was allowed to sediment over night at room temperature. These extracts was used for testing antifungal activity.

Table 2. Mycoflora on Treated seeds

Sr. No.	Plant (leaves Extract)	Time in mm	Groundnut	Jawar	Tur
1.	Lantana indica	05	Aspergillus, Curvularia, Drechslera, Fusarium	Aspergillus, Cladosporium, Fusarium, Cephalosporium	Aspergillus, Fusarium, Alternaria
		10	Aspergillus	Aspergillus, Cladosporium	--
2.	Ailanthus excelsa	05	Aspergillus, Penicillium, Rhizopus, Fusarium	Fusarium, Alternaria, Aspergillus	Aspergillus, Fusarium, Penicillium, Rhizopus
		10	Aspergillus, Rhizopus	Aspergillus, Alternaria	Fusarium, Rhizopus
		15	Aspergillus	Aspergillus	Fusarium
3.	Annona Squamosa	05	Aspergillus, Penicillium, Drechslera, Fusarium	Aspergillus, Cladosporium, Alternaria	Aspergillus, Fusarium, Rhizopus
		10	Aspergillus, Drechslera, Fusarium	Aspergillus, Alternaria	Aspergillus, Fusarium
		15	Aspergillus, Fusarium	Aspergillus, Alternaria	Aspergillus

Table 3. Mycoflora of Ground nut, Jawar and Tur o Untreated seeds

Sr. No.	Seed	Mycoflora isolated (Name of Fungus)
1.	Groundnut (<i>Arachis hypogena</i>)	Aspergillus niger, A. flavus, Rhizopus, Penicillium, Alternaria, Rhizoctonia, Curvularia, Fusarium
2.	Jawar (<i>Sorghum Vulgare</i>)	Aspergillus niger, A. flavus, Curvularia, Drechslera, Fusarium
3.	Tur (<i>Cajanus Cajan</i>)	Aspergillus, Fusarium, Penicillium, Cladosporium, Cephalosporium, Rhizoctonia

Seed selection and study of Mycoflora

Seeds of Groundnut, Jawar and Tur are collected from different localities of Udgir are and also from some Farmers. The surface Mycoflora of seeds was studied by using Agar plate and Blotter paper method. The agar media used is Potato Dextrose Agar (PDA).

The number of seeds per plate are 10. The plates were incubated at $28 \pm 2^\circ \text{C}$ for 5 - 8 days and observation of Fungal colonies identified upto genera.

Seed Treatment

To determine the effect of different plant extract in controlling seed borne Fungi seed samples were dressed separately with three plant extracts by soaking seeds in it for 5, 10 and 15 min and incubated in PDA and blotter paper for 4-6 days. Untreated and Acetone treated seeds were used as control and didn't show any activity.

Results

The Mycoflora of untreated seeds of Groundnut, Jawar and Tur were. *Aspergillus*, *Penicillium*, *Alternaria*, *Drechslera*, *Fusarium*, *Rhizoctonia*, *Rhizopus*, *Curvularia*, *Cladosporium* etc. The seed germination percentage ranged from 80 to 100% and there is no effect of plant extract on germination percentage of seeds. The result on plant extract treatment showed that in case of *Lantana indica* considerably reduced the Mycoflora. It is also clear from the result that the treatment with the plant extract does not exert any effect on germination of seed. Mycoflora of Groundnut, Jawar and Tur seeds was completely checked with the treatment of *Lantana indica* crude extract for 15 min. The other two plant extracts from *Ailanthus excelsa* and *Annona Squamosa* also reduced the mycoflora.

Discussion

From the data obtained it may be concluded that Mycoflora associated with seeds can be effectively controlled by using plant extracts. The plants used in treatment are very common and have no adverse effect on seed germination.

Lantana indica, *Ailanthus excelsa* showed the antifungal activity so the extracts of these plants can be applied (as a seed treatment) to treat seeds before sowing. Seed treatment with plant extract has no adverse effect on seed as well as does not create any problem of pollution. Fungicides are expensive, dangerous and not degraded in soil as compared with these plant extracts. The plant extracts were more active than acetone extract. The fact that the crude extract is more active than the acetone extract implies that the antifungal action may be due to the synergistic action of the different chemical constituents. Further studies on the plants which showed potent antifungal activity are in progress.

References

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