

In Vivo, Antifungal Property of Aqueous Extracts of *Nephrolepis Cordifolia* on the Plant *Solanum Lycopersicum*.

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ABSTRACT

Plants are an important source of medicine, food, and nutrition's. Pteridophytes, which is commonly known as ferns contains leaflets, stem and rhizome does not produce fruits and seed but reproduce by spores, the spores are consists of sours. Its vascular plants grow in damp, shady areas. The present study is aimed at investigating the antifungal properties of three selected solutions. The aerial parts of the selected ferns *N. cordifolia*, were used in different solutions of 50%, 70% and 90% these were more effective than the controls tested. Present study suggests that the pteridophytes *N. cordifolia* could be good source of antimicrobials and antifungals. The above findings advocate further investigations of the extracts from various parts the species of *Nephrolepis* to identify the active constituents.

Keywords:- Pteridophytes, Fern, Antifungal, Alternative medicine, *Nephrolepis cordifolia*, Bioactive molecules, Pathogenic bacteria.

INTRODUCTION

Angiosperms are an immense source of therapeutics; however lower plants, they getting more attention in recent times for the search of new and active biomolecules. Medicinal value of lower plants has been known from several years antifungal activity of ferns are remarkable as compared to the higher plants because of defensive biochemical compounds[1].

The present study has been undertaken to assess the antifungal properties and therapeutic values of *Nephrolepis cordifolia* on the host plant *Solanum lycopersicum*.

The *N. cordifolia* belong to the family Davalliaceae. Are epiphytes and grows as terrestrial, spore producing vascular plant on sandy soil. It's a pan tropical species from tropical to temperate areas [2]. Aqueous extract of *N. Cordifolia* have been earlier reported to have antimicrobial

activity [3].

The fronds are the leaves of the fern. There is usually a stalk with a flat blade called the lamina, divided into segments. The frond may be simple and undivided or it may be divided into a number of divisions which is called pinnae [4]. New fronds are produced from the rhizome at the base. They are tightly coiled into a spiral called a fiddlehead [5] and these slowly uncoil as they mature. Fronds functions for photosynthesis and reproduction [6].

PREPARATION OF PLANT EXTRACTS

The extracts were prepared from the fronds of *N. Cordifolia* this species which ordered from online fern distributors. The fronds were dried in shade, powdered and prepared aqueous solutions. Plants extract weighted and dilutes with 50%, 70% & 90% of water in this order. Plant extracts are filtered through Whatman no 1 filter paper [7].all the extracts were kept in

airtight containers in the dark at room temperature [8].

PHYTOCHEMICALS OF FERN

Flavonoids using shinoda's test [9], Tannins through Ferric chloride test [10], alkaloids using Dragendroff's test [11].

The phytochemical tests indicated the presence of all the metabolites such as flavonoids, tannins, alkaloids, reducing sugar; terpenoides and steroids present [12].

ANTIFUNGAL ACTIVITY

$$\text{Antifungal activity (\%)} = \left[\frac{C-(T-B)}{C} \right] \times 100$$

Where C is absorbance reading of the negative control, T is the absorbance reading of the treatment, B is absorbance reading of the blank [14,15,16].

Adiantum species has been reported to contain significant antimicrobial properties [17]. Ferns are used for food, including the fiddleheads of bracken, not known to be poisonous to humans [18]. It

In the particular manner spray of the aqueous extracts on the three plant of *Solanum lycopersicum*. Note the date and time while on the field.

After 30 days of the observation, check the antifungal activity of *Nephrolepis* solutions. *N. cordifolia* was shown to exhibit anti-microbial property also [13]. Antifungal activity of extracts was recorded as percentage inhibition of fungal growth, calculated from the absorbance readings of the control and treatment using the following equation.

is the rich source of alkaloids, flavonoids, saponins and coumarins. The main constitute is lygodinolide of the plant, is used in wound healing [19, 20].

Plant can be killed with herbicide a product that contains the active ingredient glyphosate. Different products may vary in conc. So follows the instruction before use [21, 22, 23].

Table 1:-Shows antifungal activity of *N. Cordifolia* on *Solanum* plant

p-extract	24hrsday1	48hrsday2	week 1	week 2	week 4	week5	Average
p-1 control no treatment	0%	0%	0%	0%	0%	0%	0%
p-2 50%	10%	15%	15%	20%	20%	25%	17%
p-3 70%	50%	50%	53%	55%	60%	62%	55%
p-4 90%	60%	70%	70%	75%	80%	83%	73%

In the Table 1 results of the antifungal activity is shown in percentage and the highest antifungal activity is found in 90% of solution.

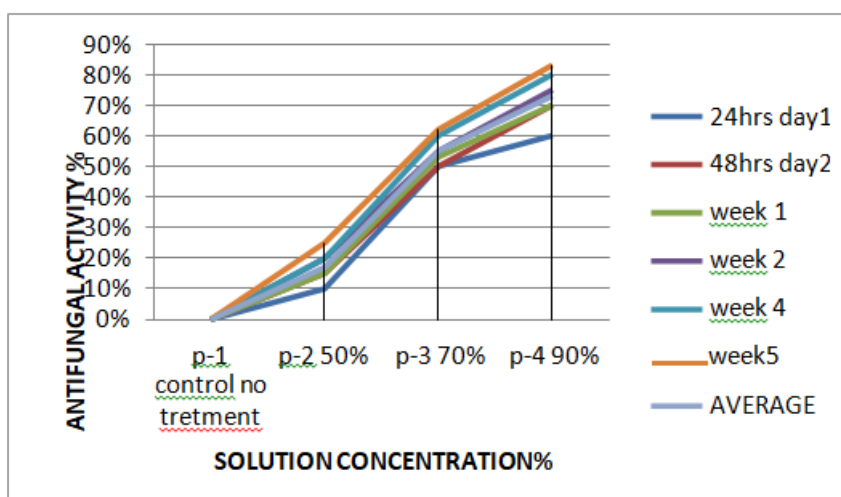


Fig.1:-Antifungal activity of different concentration

In given Figure 1 comparison of the different concentrations with results. Highest results found in 90% conc. Treatment, in vivo almost plant shows recovery from fungal disease.

CONCLUSION

In this in vivo treatment 30 days of treatments shows the positive results into antifungal activity on the root and leaves of *Solanum lycopersicum*. It's a very slow process. Also the residues of *Nephrolepis* leaves are used as manure.

This water extracts of all the 3 solutions of pteridophytes exhibited some degree of inhibitions against the fungi tested. The present studies confirms the earlier findings that pteridophytes are antifungal properties and other low plants should be screened for generating biologically active compounds. The above findings also advocate further investigations of the extracts from various parts of *Nephrolepis* and to the identification of the active constituents.

FUTURE DIRECTION

Ferns are not only economically important but have a considerable importance in medicine, food, many ferns are grown in horticulture as landscape plants. Ferns are

used for timbers, fertilizers, it contains phosphorus, and a mineral needed for healthy bones. Also ability to fix nitrogen from the air into compounds [24, 25].

- Conservation of ferns is done by many methods and also we need many more.
- Ferns spore storage in conventional freezers.
- By in situ and ex situ fern culture they are conserved and their biodiversity too.
- Transplanting of ferns to safe regions.
- Spread knowledge to people.
- Enhance the culture of ferns. In fertilizer, medicine, nurseries.
- Enhance the use of Plant terrarium.

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