

ANTIFUNGAL SCREENING OF *LOTUS GARCINII* D.C.

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ABSTRACT

Lotus garcinii was subjected to antifungal screening against different strains of fungi and the findings are described in this communication. Antifungal effects of the different extract of the whole plant of *Lotus garcinii* were determined. It was observed that the ethanol, ethylacetate, butanol and aqueous extracts were active against *Aspergillus niger*, *Alternaria Solani*, *Penicillium funiculosium*, *Microsporum canis*, *Pleuroetus oustreatus* and *candida albicans*.

INTRODUCTION

The genus *Lotus* belongs to the family Fabaceae (Leguminosae) and it has 60 – 100 species, wide spread around the Mediterranean and are represented in Pakistan by four species. Their names are *Lotus garcini*, *Lotus schimperi*, *Lotus makranicus* and *Lotus corniculatus*. *Lotus garcinii* is a perennial, woody at the base, many branches, silky pubescent. Leaves are 3 or 5 foliate, leaflets 5-9 mm long 4-5 mm broad, obviate cuneate, obtuse or retuse, grey pubescent on both sides or glabrous above, pilose below. Flowers are solitary axillary, sessile. Fruits 9-12 mm long glabrous or pubescent, linear, straight, 6-seeded. Widely distributed in Pakistan, Iran Oman, Saudi Arabia, Egypt and Islands of Socotra (Nasir and Ali, S.I. 1977). Literature survey indicated that some species of *Lotus* strengthens systolic contraction, exhibit CNS stimulant, hemagglutinating and macrophage activities on experimental animals (Lerman, A., 1933; Leu, R.W. *et al.*, 1985 and Dam, D.T. *et al.*, 1992). The objective of present study is to determine the antifungal effects of *Lotus garcinii*.

ANTIFUNGAL ACTIVITIES

The extracts i.e. ethanol, hexane, ethylacetate and butanol from the whole plant of *Lotus garcinii* prepared by following

scheme 1. The extracts were dissolved in distilled water (5 mg/ml) and the aliquots were used to test antifungal activity.

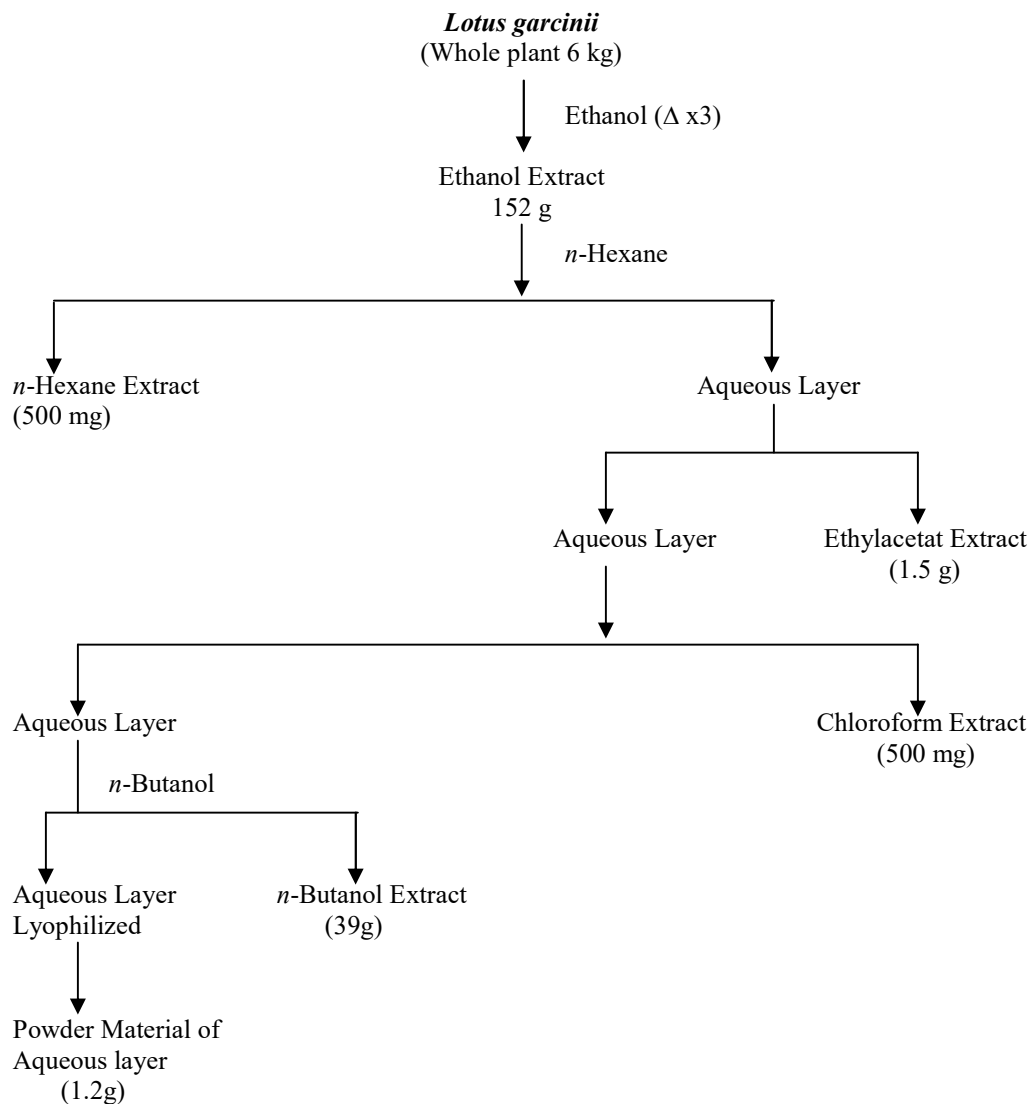
The antifungal activity has been tested against the nine different fungi. Which are following:

- *Aspergillus niger* (ATCC 16019)
- *Alternaria Solani* (ATCC 11078)
- *Penicillium funiculosium* (ATCC 9846)
- *Fusarium Solani* (ATCC 265533)
- *Microsporum canis*
- *Nigrospora oryzae*
- *Curvularia lunta*
- *Pleuroetus oustreatus*
- *Candida albicans*

Penicillin 100 I.U./ml and Streptomycin (1 mg/ml) were used as control for comparison. Test microorganisms were maintained on stock culture saborad dextrose agar (SDA). From stock culture fresh culture was prepared. Inocula were prepared by diluting 24 hours old culture in saline. A dilution of 1:100 was used in all the tests.

MATERIALS

Saborad dextrose agar (Merck), culture plates, sterite cork borer, wireloop, Fungi test culture, Autoclave, Incubator, Penicillin (Merck), Streptomycin (Merck).



Extraction Scheme-1

Antifungal Assay

The tests were run triplicate. Petriplates (10 x10) were prepared with saboraud dextrose agar. Each plate was poured with 0.1 ml of the diluted culture and dried for 30 minutes at 37°C. The wells of 6 mm (approximate diameter) were cut with sterile cork borer in the inoculated agar. The wells were filled with the plant extracts and control solutions for comparison. Plates were incubated at 25°C for

5 days. At the end of incubation period the clear zone of inhibition around the disc was measured in millimeter (mm). The results are given in Table-1.

RESULTS AND DISCUSSION

In this study antifungal screening of the different extract of the whole plant of *Lotus garcinii* has been performed. The literature

Table-1
Antifungal screening of Extracts from whole plants of *Lotus garcinii*

Organisms	Zone of inhibition (in mm.) against						
	Control		Extracts				
	Strepto- mycin	Peni- cillin	Etha- -nol	Hexane	Ethyl- acetate	Butanol	Aqueous
<i>Aspergillus niger</i> (ATCC 16019)	12	15	6	N/A	N/A	N/A	N/A
<i>Alternaria solani</i> (ATTC 11078)	10	15	12	N/A	N/A	N/A	N/A
<i>Penicillium funiculosium</i> (ATCC 9846)	12	18	12	N/A	N/A	N/A	N/A
<i>Fusarium solani</i> (ATCC 26533)	18	10	N/A	N/A	N/A	N/A	N/A
<i>Microsporum canis</i>	20	20	8	6	6	8	10
<i>Nigrospora oryza</i>	15	12	N/A	N/A	N/A	N/A	N/A
<i>Curvularia lunta</i>	12	15	N/A	N/A	N/A	N/A	N/A
<i>Pleuroetus oustreatus</i>	18	12	8	6	8	10	8
<i>Candida albicans</i>	18	10	14	8	8	8	10

N/A = No Activity (No zone inhibition observed)

survey of other members of family Fabaceae shows that they usually possess antifungal activity. This activity is reported from their methanol, ether, chloroform extracts (Ali, M.S. et al., 1999; Dam, D.T. et al., 1992; Rao, J.T., 1976 and Banargee et al., 1976). Some of these have shown very potent antifungal activity (Ray, P.J. et al., 1976).

The extracts of *Lotus garcinii* have shown negative results against *Aspergillus niger*, *Alternaria Solani*, and *Fusarium Solani* and *Nigro Spora oryza*. Whereas ethanol extract has exhibited antifungal activity against *Penicillin funiculosium*, *Microsporm canis*, *Curvularia lunta* and *Pleuroetus oustreatus* (zone of inhibition 10 mm – 22 mm). Hexane

extract did not exhibit positive activity against any of the subjected fungi. Ethylacetate extract has shown activity against *Microsporum canis* (zone of inhibition 16 mm). Butanol extract has shown activity against *Pleuroetus oustreatus* and *Candida albicans* (zone of inhibition range 10mm – 20 mm). Aqueous extract exhibited activity against *Penicillin funiculosium*, *Pleuroetus oustreatus* and *candida albicans* (zone of inhibition range 10mm – 20 mm).

In conclusion it is suggested that ethanolic, ethylacetate, butanol and aqueous extracts were effective against the same fungi. Where as all extracts have shown negative results against the *Aspergillus niger*,

Alternaria solani, *Fusarium solani*,
Nigrospora oryza and *Curvularia lunta*.

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