

## Short Communication

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Antifungal Activity in *Salvia santolinifolia* BoissSHAHNAZ AHMED, ZULEKHA KAPADIA, MAHBOOB A. KALHORO  
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Crude alcoholic extract of *Salvia santolinifolia* showed antifungal activity against *Allescheria boydii*, *Curvularia lutana*, *Fusarium moniliformia*, *Trichophyton gallinae*, *Trichophyton rubrum* and *Trichophyton simii* which are well known for causing infection of skin hair and nails while it failed to exhibit any activity against *Drechslera rostrata*, *Epidermophyton floccosum*, *Trichophyton longifusis* and *Trichophyton tonsuram*. The activity was found to be comparable to clotrimazol U.S.P. (Canestin, a well known antifungal agent).

Plants are an important source of world pharmaceuticals [1,2] and folk-lore medicine is frequently being used to initiate research in this area [3-14]. The present work is an attempt to establish the antifungal activity of *Salvia santolinifolia* Boiss., a new species of Labiatae family [15,16] comprising of 300 genera [17] and over 3300 species of which 24 species are found in Pakistan [15].

The reported utility of this plant as an antibacterial agent [18] prompted us to evaluate its antifungal activity *in vitro* on its crude extract against ten fungi maintained on Sabourand's Dextrose Agar.

*S. santolinifolia* was collected from the north hilly areas of Karachi and identified by Dr. Qaiser, Botany Department, Karachi University. Plants were washed and dried in air at room temperature and chopped into small bits. One kg. of the crushed plant was extracted with 95% ethyl alcohol for five days with continuous agitation. Solvent was recovered and the remaining solution was concentrated under reduced pressure at room temperature. A semi-solid golden brown substance was obtained. 100 mg of plant extract was dissolved in 1.0 ml (1:1 solution (v/v) of ethanol and water).

Holes of 6 mm diameter were made in the centre of the petri dishes by means of a sterile cork borer. The holes were then filled with 25 and 50 mg in 0.25 ml. volume of the test solution. Simultaneously a standard using 25 mg "Canestin" in 0.25 ml. solution (Clotrimazole, U.S.P.) was run to compare the antifungal activity of the extract to Canestin. Another set or controls using 0.25 ml of the vehicle i.e. 95% ethanol and water (1:1 v/v) was also run concurrently.

All the plates were run in triplicates and incubated at 28° for 96 hrs. The zones of inhibition produced by plant extract, Clotrimazole and the vehicle (Ethylalcohol and water 1:1 v/v) were measured and recorded accordingly [19].

Alcoholic extract of *S. santolinifolia* tested against ten species of fungi (Table 1), well known for causing infection in man and animals by invading the superficial keratinized area of the body i.e. skin, hairs and nails showed that the extract was quite effective on these dermatophytes. It showed selective fungistatic or antifungal action on some of the species of these

TABLE 1. ANTIFUNGAL ACTIVITY OF THE ALCOHOLIC EXTRACT OF *S. SANTOLINIFOLIA*.

S. No.	Name of fungi	Zone of inhibition in mm				Canestin 25 mg		1:1 v/v ethanol & water
		25 mg		50 mg		Mean reading	S.D. +	
		Mean reading	S.D. +	Mean reading	S.D. +	Mean reading	S.D. +	
1.	<i>Allescheria boydii</i>	47.00	0.70	57.22	0.82	30.44	0.51	-
2.	<i>Curvularia lutana</i>	41.22	0.65	48.88	0.53	31.11	0.77	-
3.	<i>Drechslera rostrata</i>	-	-	-	-	28.11	0.77	-
4.	<i>Epidermophyton floccosum</i>	-	-	-	-	16.77	0.83	-
5.	<i>Fusarium moniliforme</i>	42.88	0.77	54.77	0.96	22.11	0.78	-
6.	<i>Trichophyton longifusis</i>	-	-	-	-	33.55	0.83	-
7.	<i>Trichophyton gallinae</i>	23.44	0.87	36.44	1.00	25.55	0.86	-
8.	<i>Trichophyton rubrum</i>	42.77	0.86	53.00	0.86	35.00	1.00	-
9.	<i>Trichophyton simii</i>	29.00	0.81	37.77	0.83	23.66	1.14	-
10.	<i>Trichophyton tonsuram</i>	-	-	-	-	24.44	1.01	-

50-59 mm = A\*; 40-49 mm = A; 30-39 mm = B; 20-29 mm = C; 10-19 mm = D; 0-9 mm = E; S.D.=Standard deviation, = - No zone of inhibition.

Note: Above abbreviations are used in SULTS.

dermatophytes. It exerted a maximum inhibiting effect on *Allescheria boydii*, *Fusarium moniliforme* and *Trichophyton rubrum*, but failed to inhibit the growth of *Drechslera rostrata*, *Epidermophyton floccesum*, *Trichophyton longifusus* and *Trichophyton tonsuram*. The extract was also active against *Curvularia lutana*, *Trichophyton gallinae* and *Trichophyton simii*. The antifungal activity seems to be proportional to the concentration of the drug, because 50 mg of the crude extract was more effective than 25 mg. It was observed that the plant extract had no effect on *Aspergillus* species. On the contrary *Aspergillus* species grew on the surface of *S. santolinifolia* solution. It was interesting to note that ethyl alcohol and water in equal proportion had no effect on any of the test fungi. In comparing *S. santolinifolia* crude extract with Clotrimazole, a well known antimycotic agent, *S. santolinifolia* appears to be equally as effective in controlling six of the ten fungi which were tested.

Investigations are in progress to isolate the active principle from *S. santolinifolia* Boiss, and to assess its dermatophytic activity both *in vitro* and *in vivo*. The study on *S. santolinifolia* indicates that the plant has antifungal activity (Table 1) and the activity is dose dependent.

**Key words:** Antifungal activity, *Salvia santolinifolia* Boiss.

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