STUDIES OF SKIN CURE MEDICINAL PLANT *SALVADORA OLEOIDES*. DECNE OF KOHISTAN REGION, SINDH, PAKISTAN

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Abstract

In Indo-Pak most of the diseases including skin diseases and jaundice are commonly treated by herbal treatment using the wild plants and their extracts. The present study was conduced to analyze the content of the medicinal plant Salvadora oleoides mostly for the treatment of different skin diseases in the region of Sindh province Pakistan. The main objectives of this research were to delineate in depth antimicrobial activity of medicinal plant oleoides found in kohistan region Sindh Pakistan and to explore the essential / non essential elements occurring in oleoides which play major role to inhibiting fungi causing skin diseases. Kohistan region of District Dadu, Sindh Pakistan, was selected for collection of the wild medicinal plant because of it is the best region where the numbers of medicinal plants are growing.

It is concluded that all crude extracts of oleoides were found to be effective against tested fungi causing skin diseases. However, ethanol and aqueous extracts appeared to be most effective antifungal agents as compared to methanol, chloroform and ethyl acetate extract. More over in present study some basic elements, Al, Ca, Cu, Fe, Mg, Mn, P, S and Zn have been determined from oleoides. The plant contains considerable amount of elements which have therapeutic effects in skin diseases.

Introduction

Kohistan region cover an area of about 7000 square k.m. Occupies south comer of Pakistan in the Province of Sindh. It is situated between 67°.5 to 68°.25 east latitude and 25°.5 to 26°.5 South to North longitude. Kohistan region is covered with calcareous rocks of Khirthar ranges of tertiary period, sedimentary hill and patches of agricultural land. It is the best region where the numbers of medicinal plants are growing. Panhwar (1964) The climatic condition of Kohistan Region is different from other regions in its South and North. The Southern region is pleasant due

to sea breeze whereas northern region is extremely hot belt. The months of May, June & July are the hottest. The mean minimum and maximum temperatures during this period are about 20^0C and 50^0 C respectively. December-January and February are the coldest months and minimum and maximum temperature during this period is about 7^0 C to 15^0 C respectively. The annual rainfall of Kohistan region is 139.00 millimeters. (Metrology Department, Hyderabad) skin diseases are one of the main problems of world which is usually caused by fungi. It is estimated that approximately fifty six percent of lower income world population use herbal medicine and supplementation for their primary health care Plant, *et.al.* (2000). Skin disease diarrhea, diabetes, malaria, respiratory infection, fungal and bacterial infection are the common health problem in rural countries. In under developing countries numerous medicinal plants are used traditionally which are remedial against these disease Pinn (2000).

S. oleoides commonly know as Khabar, Jar is a traditional medicinal plant and its produce are utilized in many part of Pakistan for the treatment of various fungal skin diseases like Tinea capitis, Tinea pedis, Tinea manum, and Tinea corporis etc.The leaves of the plant are Purgative and are used as cure for cough. The oil form seed is applied an painful rheumatism and after child birth. Kirtikar & Basu (1935)

Metals and its elements as well as their compounds have been used since ancient times for therapeutic as well as cosmetic effects on skin. Aluminum acetate solution, copper sulphate and lotion of zinc solution is used for skin disinfectant, cleansing agents, antiseptic, soothing and cooling effective. Calcium, magnesium manganese are used in the formation of the collagen and connective tissue. Phosphorus and Sulpher are used for the treatment of scabies and leprosy. Soderberge *et.al.* (1982) under wood (1981) Skin disease is one of the main problem of Sindh Pakistan which is usually caused by fungi. The present paper describes the antifungal potential of different solvent extract and elemental study *S. oleoides* against fungi causing skin diseases.

Materials and Methods

Plant Material

Leaves *and* shoots of *S. oleoides* were collected from different area of Kohistan region Sindh Pakistan and reference sample were identified with Flora of Pakistan Nasir & Ali (1990). The collected plant material were washed with distilled water and placed in shade at room temperature for two weeks. One kg of dried plant material was dip in 5 litter of ethanol solvent in bottle for 20 days for cold percolation. The extract was filtered and concentrated under reduced pressure below 40^0C using rotary evaporator. The residue completely was dried as the syrupy liquid form. From the residue five different extracts such as ethanol ethyl acetate, chloroform, methanol and aqueous extract were prepared using separating funnel. The extracts were left at room temperature. The solvent were completely evaporated so that organic compounds remain in the dry form. These extracts so obtained were mixed with the sterilize water (1 g: 5 ml) and each extracts sample was applied for antifungal activity.

Collection of Dermatophytes

The dermatophytic fungi namely: *Aspergillus niger, Aspergillus flavus, Paecilomyces varioti, Microsporeum gypseum, Tricophytron rubrum* were scraped from the different body parts at skin out patient departments of Liaquat University Hospital Jamshoro and Hyderabad.

Preparation of fungal culture

Sabourad glucose-agar media: Following composition was used for this purpose. Pepton 10g, glucose 20g, Agar 20, g, distil water 1000 ml with 5.4 pH. All the contents were mixed and dissolved in distilled water. The solutions were autoclaved at 120^0 c, 15 Lb/sq inch pressure for 20 minutes.

Treatment of different solvent extract layer

The human skin pathogens were treated with different extracts and result were taken after 72 hours at 30^0c. The percentage of mycelia inhibition was calculated as follows: Usmanghani & Shameel (1986), Ali Shtayeh & Suheil (1999)

% Mycillial inhibition = [(dc-d1)/dc] x100
Dc=colony diameter in control, d1 colony dia meter in treatment

Methodology for elements determination

A suitable dissolution method for biological sample to yield homogenous solution is a crucial first step to determine in atomic absorption spectrophotometer and U.V. techniques. The decomposition of organic matter must be completed to avoid interference by organic residue. Sample digested with nitric acid: 30% hydrogen peroxide determination of mineral elements. Appropriate working standard solution of aluminum (Al), calcium (Ca), copper (Cu), iron (Fe), magnesium (Mg), manganese (Mn), phosphorus (P), Sulpher (S), zinc (Zn) were prepared from stock standard solution (1000 ppm), in 2N Nitric acid. Calibration curves were drawn for each element using atomic absorption spectrophotometer Hitachi model 180-50 and UV-Spectrophotometer. The calibration curves obtained for concentration VS. Absorbance data were statistically analyzed using fitting of state line by least square method. A blank reading was also taken and necessary correction was made during the calculation of percentage concentration of various elements. The efficiency of extraction method was checked by standard addition method. The sample was spiked with known standards and digested with nitric acid and hydrogen peroxide mixture. The matrix of standard and sample solution was same. The percentage recovery test for different elements by digestion method adopted was 98.5-99% in range.

Results

All the crude extracts had significance antifungal activities against most of the fungi, but the activity of inhibition varied for the fungi with respect to the type of plant extract (Table-I).

Ethanol Extract: The maximum inhibition activity was observed against T.rurbum *P. varioti*, *A. niger* 100%, 96.37% and 87.5% while moderate inhibition activity against *A. flavus* 77.15% and minimum inhibition activity against *M. gypseum* 73.74% was recorded.

Ethyl acetate Extract: The maximum inhibition activity was observed against *P.varioti* 74.55% while moderate inhibition activity against T. Rurbum and *A.flavus* 60% and 57.15% and minimum inhibition activity against *M.gypseum A.niger* 50% each was measured.

Chloroform extract: The maximum inhibition activity was observed against *P.varioti* 72.73% while moderate inhibition activity *M.gypseum* and *A.flavus* 66.67% and 57.15% respectively and minimum inhibition activity against *A.niger* and *T.rubrum* 50% and 48% was noticed.

Methanol Extract: The maximum inhibition activity was observed against *P.varioti* and *M.gypseum* 72.73% and 66.67% respectively while moderate inhibition activity against *T.Rubrum* and *A.niger* 60% and 50% respectively and minimum inhibition activity against *A.flavus* 48.58% was determine.

Aqueous Extract: The maximum inhibition activity was observed against *A.niger* and *T.rubrum* 92.5% and 92% respectively while moderate inhibition activity against *P.varioti* and *M.gypseum* 81.82% and 66.67% respectively and minimum inhibition activity against *A.flavus* 57.15% was recorded.

Elements: The considerable amount of various elements such as: aluminum (Al), calcium (Ca), copper (Cu), iron (Fe), magnesium (Mg), manganese (Mn), phosphorus (P), Sulpher (S), zinc (Zn) have been determined from the medicinal plant *S. oleoides* (Table 2.) These elements are biologically very much important for the treatment of different skin diseases.

Discussion

In the present study crude extracts of the plant material obtained in polar and less polar organic solvent were tested against fungi causing skin diseases. All the crude extracts had significance antifungal activity on most of the fungi, but ethanol and aqueous extract had maximum inhibition activity, 57.15% - 100% as compared to methanol, ethyl acetate and chloroform extracts have active inhibition activity in the range of 48%-74.5% against test

dermatophytes. Although many workers e.g. Anjum & Khan (2003), Adedotum & Kali, *et.al.* (2002) Sakharkar *et.al.* (1999) Ficker *et.al.* (2003), Natarjan (2003), Usman Ghani & Shameel (1986), Skaikh *et.al* (1990) Bajwa *et.al* (2006) has been screening the antifungal activity of medicinal plants against dermatophytes But in this study first attempt was made to investigate the antifungal activity of medicinal plant *S. oleoides* Colleted From Kohistan Region, Sindh, Pakistan against fungi causing skin diseases such as *Aspergillus flavus, A. niger, M. gypseum, P. varioti, T. rubrum* caused different skin diseases like Tinea. Capitus T. pedis, Tmanum and T.corporis

Further more some basic elements aluminum (Al), calcium (Ca), copper (Cu), iron (Fe), magnesium (Mg), manganese (Mn), phosphorous (P), Sulpher (S) and zinc (Z) have been analyzed in variable range from *S. oleoides.* But the considerable amount of the elements such as calcium (Ca), zinc (Zn) and Sulpher is present in the range of (34410.09-35422.85) (27.94-39.55) and (804.78-859.75) Mg/Kg respectively all these elements play essential role for the treatment of skin disease. Janjua (1990), Saily, *et.al* (1994).

Conclusion

In Pakistan our main population is living in the rural area and they are poor people and not able to purchase costly medicine. Therefore our research report on plant *S. oleoides* will help to people of Pakistan and its surrounding countries to get cheep herbal medicine for the treatment of skin diseases which is safe from side effect. It is concluded that *S. oleoides* selected for this study clearly indicate the variance in inhibiting fungi involved in causing different skin diseases. Therefore this source of our study could be utilized to prepare different herbal dosage, formulation either as creams or paste that could be clinically tested on its efficacy to the patients contain skin diseases particular in the people living in Sindh Pakistan urban and rural population.

Table – 1
Antifungal activity of different solvent extract of *S. oleoides* Decne: against test organisms

Test extract	A. niger	A. flavus	P. varioti	M.gypseum	T.rubrum
Ethanol Control reading at 30°c after 72 hrs (mm)	40	35	55	30	25
Text extract Ethanol Inhibited reading at 30°c after 72 hrs	05	08	02	08	00
(mm)Inhibited (%)	87.50	77.15	96.37	73.34	100
Methanol Inhibited reading at 30°c after 72 hrs (mm)	20	18	15	10	10
Inhibited (%)	50	48.58	72.73	66.67	60
Cloroform Inhibited reading at 30°c after 72 hrs (mm)	20	15	15	10	13
Inhibited (%)	50	57.15	72.73	66.67	48
Ethyl acetate Inhibited reading at 30°c after 72 hrs (mm)	20	15	14	15	10
Inhibited (%)	50	57.15	74.55	50	60
Aqueous Inhibited reading at 30°c after 72 hrs (mm)	03	15	10	10	02
Inhibited (%)	92.50	57.15	81.82	66.67	92

Table – 2
Quantity of Different Elements in *Salvadora Oleoides* Decne

Name of Elements	Symbols	Amount Mg/Kg
Aluminum	Al	3.88-4.90
Calcium	Ca	34310.09-35422.85
Copper	Cu	2.21-2.92
Iron	Fe	81.26-99.37
Magnesium	Mg	2750.63-2867.92
Manganese	Mn	8.10-8.59
Phosphorous	P	76.59-110.64
Sulphur	S	804.78-859.57
Zinc	Zn	27.94-39.55

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