

Original Article

Clinical trial of 20% *Mat lippia* (bucan) topical ointment for cutaneous leishmaniasis; a preliminary trial

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Abstract *Background* Cutaneous leishmaniasis is endemic in many parts of Pakistan. The mainstay of treatment is systemic pentavalent antimonials. However, many indigenous plants are also used for its treatment.

Objective To test the hypothesis that *Mat lippia* (Bucan), a local plant, may be topically effective in the treatment of cutaneous leishmaniasis.

Patients and methods The study comprised of two parts. Part 1: An alcoholic extract from the leaves of the plant was obtained and then 20% ointment in petroleum jelly was made. In part 2, eighty patients of cutaneous leishmaniasis were treated with this ointment applied thrice daily for six weeks. Patients were followed up initially twice a week and then at weekly intervals for six weeks.

Results 60% showed excellent response and 20% exhibited fair improvement.

Conclusion 20% *Mat lippia* ointment seems to be effective in the treatment of leishmaniasis. However, further comparative studies are warranted to confirm these findings.

Key words

Mat lippia ointment, leishmaniasis.

Introduction

Leishmaniasis is a chronic infestation of skin, mucosa or viscera caused by several species of intracellular protozoan of the

genus *Leishmania*.¹ Phlebotomine sandflies (vector) transmit *Leishmania* from infected animal to humans or from person to person.² In cutaneous leishmaniasis, the amastigote multiply in dermal macrophages near sandfly bite typically on the exposed body surfaces, such as forearms, limbs, cheeks or ears. Lesions may be nodal or ulcerative. Nodules may be single or multiple, whereas

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Figure 1 Plant *Mat lippia* (*Bucan*).

ulcers are of relatively less destructive dry type to more destructive wet type.³

In Pakistan, the cutaneous leishmaniasis is most prevalent in the northern mountainous areas. A total of 11,000 cases were registered during 2001-2002 during the biggest outbreak in districts Larkana and Dadu of Sindh province.^{4,5} Continuous influx of Afghan refugees to parts of NWFP and Balochistan and endemicity of the disease in certain parts of Afghanistan, and perhaps the occurrence of droughts in the region, have contributed to the spread of leishmaniasis in both Afghan refugee camps of NWFP and Balochistan and host communities.^{5,6}

Being a disease of tropical areas where the majority of population belongs to poor socioeconomic stratum it cannot afford quite expensive recommended drugs e.g. injection meglumine antimoniate and amphotericin B etc. Systemic therapy is associated with numerous side effects and is expensive as compared to local applications.⁷

The local traditional use of some plants and herbs for the treatment of infected sores and ulcers has been notified by various authors.^{7,8} During a recent out-break of disease in Larkana region, many affected individuals claimed to be cured by local application of leaves of plant *Mat lippia* (*Phyla nodiflora*, matchweed, locally called as '*Bucan*').^{8,9,10} The plant is a natural grower in the affected region and traditionally used for treatment of infected sores and ulcer in rural population.⁷

A preliminary study was devised to confirm or refute this claim.

Materials and methods

This observational preliminary study was carried out in the District Leishmaniasis Cell at Leprosy Unit, Chandka Medical College Hospital, Larkana. A total number of 80 patients, native of Larkana region, having cutaneous leishmaniasis were included in the study. The diagnosis was made clinically and confirmed by the presence of Leishman-

Donovan bodies in the smears stained by Leishman-Giemsa stain.

Preparation of topical ointment

20% topical ointment with the ethanolic extract of leaves of *Lippia nodiflora* was prepared as under.¹¹⁻¹⁴

1. *Leaves of plant L. nodiflora* were collected from rural areas of Taluka Warh, District Shahdadt of Larkana region in the month of June (temp: 40-45°C). These were kept under shade for 25 days at room temperature.

2. *Extraction* Dried leaves were reduced to coarse powder by using an electric blender. 50 gram of this powdered material was kept for maceration in conical flask containing 250 ml of ethyl alcohol for 72 hours. The extract was filtered through Whatman No.1 filter under vacuum. Filtrate was evaporated using rotary evaporator under vacuum at 40°C, and by this 50 gm of leaves coarse powder yielded 3.3 gm of dried powder extract. Using this procedure repeatedly the required amount of dried powder extract was obtained.

3. *20% Mat lippia topical ointment.* It was prepared by complete homogenous mixing of 20 gm dried powder extract with 80 gm of petroleum jelly.

Patients recruitment and follow-up

80 patients having cutaneous leishmaniasis sores and willing to apply the *Mat lippia* ointment were included in the study. 37 (46.3%) were males and 43 (53.7%) were females. The age and sex wise distribution of these patients is shown in **Table 1**.

All the patients were instructed to use 20% *Mat lippia* ointment on sores and ulcers three times a day after cleaning the lesions with soap and water. They were also followed up regularly, initially on every third day and then after every week up to six weeks. All the subjects were instructed to carry out their daily activity during the period of treatment without any hindrance.

Effectiveness of topical ointment

Before the application of 20% *Mat lippia* ointment the lesions were examined and photographed. Lesions were examined for size, shape, margins, induration, oozing or

Table 1 Demographic summary of patients

<i>Age (years)</i>	<i>Male n (%)</i>	<i>Female n (%)</i>	<i>Total n (%)</i>
0-5	6 (7.5)	-	6 (7.5)
6-10	10 (12.5)	6 (7.5)	16 (20)
11-20	6 (7.5)	21 (26.3)	27 (33.7)
21-29	6 (7.5)	3 (3.7)	9 (11.25)
30-39	-	3 (3.75)	3 (3.75)
40-49	6 (7.5)	10 (12.5)	16 (20)
50-59	3 (3.75)	-	3 (3.7)
Total	37 (46.3)	43 (53.7)	80 (100)

Table 2 Efficacy of 20% *Mat lippia* ointment in cutaneous leishmaniasis (n=80)

Response	n (%)
Excellent	48 (60)
Fair	16 (20)
Good	10 (12.5)
Nil	6 (7.5)

discharge. Similar examination was carried out at each follow up visit after the application of 20% *Mat lippia* ointment thrice a day. The observations were recorded and compared carefully with that of first and last examination.

Finally the effect of 20% *Mat lippia* ointment was graded into four categories on the basis of healing response in lesions as follows:

1. No response = no healing, no decrease in the size and induration of the lesion.
2. Fair response = 50% healing with decrease in size and induration.
3. Good response = 80%-90% healing with marked decreases in size and induration.
4. Excellent response = more than 90% and complete healing and no induration.

Results

Out of 80 patients, excellent response was observed in 48 (60%) patients (**Table 2**).

Discussion

Mat lippia (*Phyla nodiflora*) belongs to family *Verbenacea* and in local Sindhi language it is popularly known as "Bucan".¹⁵⁻¹⁹ The plant is widely distributed in Sindh Province but grows throughout plains of Pakistan along bunds of irrigation

canals and river banks. Alcoholic extract of *Mat lippia* has anti-inflammatory and antibacterial activity.¹⁷ Leaves of the plant are used to treat various medical problems in rural population especially for healing of wounds, sores and ulcers.¹⁵ In our study no side effects were noted. Further comparative studies are recommended to evaluate the efficacy of this cheap treatment for cutaneous leishmaniasis.

References

1. *The Leishmaniasis. Report of a WHO Expert Committee.* Technical Report Series No. 701. Geneva: WHO; 1984. p. 1-140.
2. *Control of the Leishmaniasis. Report of a WHO Expert Committee.* Technical Report Series No. 793. Geneva: WHO; 1990. p. 1-158.
3. Bosan AH, Amanullah M, Dil AS. The efficacy of intralesional treatment of cutaneous leishmaniasis with glucantime. *Pak J Med Res* 2002; **41**: 54-7.
4. Pathan GM, Soomro FR. Cutaneous leishmaniasis in a village of mountainous belt of Larkana District. *J Pak Assoc Dermatol* 2001; **11**: 16-9.
5. Soomro FR, Pathan GM, Soomro RA. The patterns of cutaneous leishmaniasis and differential diagnosis of misdiagnosed cases in Larkana Region. *J Pak Assoc Dermatol* 2002; **12**: 77- 82.
6. Soomro FR, Pathan GM, Bhutto AM *et al.* *A preliminary survey on cutaneous leishmaniasis at village Gaibi Dero Larkana District, Sindh, Pakistan. Studies on New and Old World leishmaniasis and their transmission, with particular reference to Ecuador, Argentina and Pakistan.* Research Report Series No. 7. Kochi: Kochi Medical School; 2004.
7. Khan IK, Khan MA. Managing cutaneous leishmaniasis from Peru to Pakistan. *J Pak Assoc Dermatol* 2000; **10**: 5-15.
8. Ravishankar, B, Makwana HJ, Nair RB, Vijayan NP. Pharmacological Studies on *Lippia nodiflora* mich. Part A-Petroleum, ether and chloroform extracts. *J Res Auryveda Sinddha* 1980; **10**: 141-52.

9. Ajmal M, Bhutto AH. Antimicrobial activity of non-alkaloidal constituents of *Lippia nodiflora* (Thesis). Karachi: Institute of Pharmacy: University of Sindh; 2002.
10. Akhter FM. *Chemical and biological investigation of medicinal herbs*. Karachi: Department of Pharmacognosy, Faculty of Pharmacy, University of Karachi; 1993.
11. Elakouich SD, Steven KL. Volatile constitute of *Lippia-nodiflora*. *J Nat Products* 1985; **58**: 504-6.
12. Joshi. BC, Parishad V. Chemical examination of *Lippia nodiflora*. *J Sci Industr Res* 1959; **18**: 527-37.
13. Monforte, MT, Ragus S, Trovato A, Foresteieri AM. Antiinflammatory, analgesic and antipyretic activity in rodents of plant extracts used in African Medicine. *Photother Res* 1996; **10**: 100-6.
14. Cheesbrogh M, ed. *Medical Laboratory Manual for Tropical Countries, 2nd edn.* Butterworth: Cambridge Tropical Health Technology; 1987.
15. Saeed HM, ed. 1970 *Hamdard Pharmacopoea of Eastern Medicine, 2nd impression*. Karachi: Hamdard Foundation; 1970.
16. Dynmack W, ed. *Pharmacographia India*. Karachi: Hamdard Foundation; 1972. 57-58.
17. Bhandari MM. *Flora of the Indian Desert*. Jodhupur: Scientific Publishers; 1978.
18. Zargaria A. *Medicinal Plants, 5th edition*. Tehran: Department of Pharmacognosy, College of Pharmacy Tehran University of Medical Sciences; 1992. Iran 889.
19. Ashraf TA, Mohammad L, Salama F, Osman M. Phenolic compounds from *Lippia nodiflora*. *Mansoura J Pharma Sci* 1995; **11**: 256-65.