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Case Report

Use of Topical Herbal Remedy for treatment of Drug-Resistant Cutaneous Leishmaniasis: A Case Report

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Abstract

Background: Cutaneous leishmaniasis is a parasitic infectious disease characterized by skin lesions and scarring. Although standard treatments are available, some patients experience treatment failure or exhibit inadequate therapeutic responses, highlighting the need for alternative or adjunctive therapies.

Case Report: This report describes the case of a 33-year-old woman with treatment-resistant cutaneous leishmaniasis who failed to respond to conventional therapies. The patient voluntarily opted to use the herbal topical product derived from *Commiphora myrrha* resin. The product was applied topically to the lesion twice daily. After six weeks of consistent application, the lesion healed completely without recurrence.

Conclusion: This case highlights the therapeutic potential of *C. myrrha* resin, which is known for its antiparasitic properties, as a primary treatment option for *Leishmania major*-induced cutaneous leishmaniasis and as an adjuvant therapy for *L. tropica* infections. Further research is warranted to validate its efficacy and explore its mechanisms of action in larger clinical studies.

Keywords: Leishmaniasis, Herbal medicine, Myrrh resin, Persian medicine

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Introduction

Cutaneous leishmaniasis is a vector-borne infectious disease caused by protozoan parasites of the genus *Leishmania* (1). Small rodents and other mammals serve as reservoirs for *Leishmania major*, playing a critical role in disease transmission through sand fly vectors. Humans, as incidental hosts, become infected following the bite of an infected sand fly. The parasite, in its metacyclic promastigote form, enters the skin and transforms into the amastigote form (Leishman-Donovan body) within macrophages, where it replicates. After an incubation period ranging from several weeks to months, the infection manifests as skin lesions and ulcers. These lesions can persist for over a year, are often difficult to treat, and frequently result in disfiguring hypotrophic scars (1).

The first-line treatment for cutaneous leishmaniasis involves pentavalent antimonial compounds, such as Glucantime®, administered via intralesional or, in some cases, intramuscular injections (2). Treatment typically lasts 8–12 weeks, during which patients receive weekly intralesional Glucantime® injections combined with biweekly cryotherapy. Despite this regimen, treatment failure and non-response remain significant challenges (2).

Case Report

A 33-year-old woman was referred to a leishmaniasis treatment center for a non-healing ulcer on her right arm that had persisted for two months. A stained smear of the lesion confirmed the presence of *Leishmania* parasites, leading to a diagnosis of cutaneous leishmaniasis. Initial treatment consisted of weekly intralesional injections of Glucantime® combined with biweekly cryotherapy for 12 weeks. However, the lesion showed no reduction in size or induration, prompting discontinuation of this regimen.

Three weeks later, the patient began systemic Glucantime® therapy, receiving weekly intramuscular injections for 21 days. Despite this intervention, no significant improvement was observed. The case was reported as a treatment failure to the Center for Communicable Diseases Control (CDC) of the Ministry of Health. A subsequent trial of topical Amphotericin B (Ampholish ointment) resulted in localized itching and inflammation, leading to its discontinuation.

Following these unsuccessful treatments, the patient

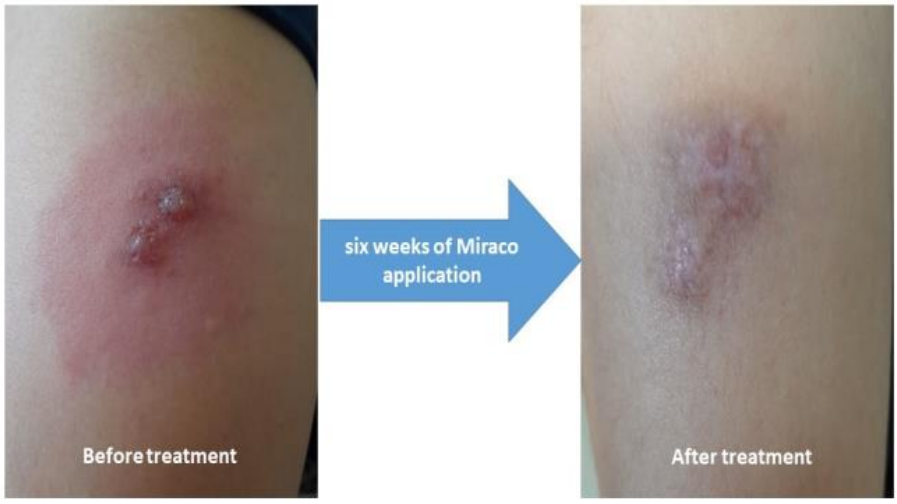

Figure 1. The lesion's appearance at baseline and six weeks post-treatment

voluntarily opted to use Miraco cream, the herbal product containing a 20% hydroalcoholic extract of *Commiphora myrrha* resin in a standard cream base. This product had been developed for another clinical trial that was registered by the Iranian Registry of Clinical Trials (IRCT) with registration reference: IRCT20230903059337N1. The cream was applied topically to the lesion twice daily. The patient was visited every week and examined for the treatment process and adverse effects. The lesion's appearance at baseline and six weeks post-treatment is shown in Figure 1.

After six weeks of applying Miraco cream, the lesion healed completely without any hypertrophic or hypotrophic scarring, marking the successful conclusion of the treatment. A six-month follow-up confirmed no recurrence of the disease (Figure 2).

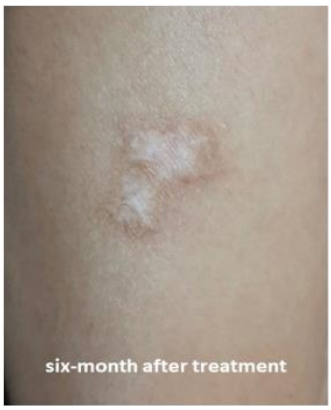

Figure 2. The lesion's appearance after six-month follow-up

Discussion

Historical finding shows that cutaneous leishmaniasis has been recognized for centuries. Abu Bakr Al-Razi (865–925 AD) referred to it as *Balkhiyah* in *Al-Mansuri fi Al-Tibb* (3). Abu Bakr Rabee Ibn Ahmad Akhvini Bukhari (death: 983 AD) described it as *Balkhi sores* in *Hedayat al-Mutaallemin fi Tibb* (4), and Avicenna (980–1037 AD) also mentioned *Balkhiyah ulcers* in the *Canon of Medicine* (5). Traditional treatments often involved topical applications to remove necrotic tissue, such as alum, rust (*zangar*), and white lead, combined with wound-healing agents like *Dracaena cinnabari* (*khonesyavoshan*) and honey (6,7).

Resins have long been valued in traditional medicine and are among the most significant natural products for medical applications. *Commiphora myrrha* (myrrh) resin, in particular, has been widely used for wound healing, embalming, and various therapeutic purposes since ancient times (8). In *Makhzan-Al-Advieh*, a traditional pharmacy book written by Aghilli Khorasani (1769 CE), *More-maki* (*Commiphora myrrha*) is described as a treatment for wounds and ulcers (9). Myrrh resin consists of 3%–4% impurities, 7%–17% volatile oils, 25%–40% alcohol-soluble resins, and 57%–61% water-soluble gum. The alcohol-soluble resin contains compounds such as amphoteric acid, camphoric acid, and camphorin, while the water-soluble gum includes mucilage, galactose, glucuronic acid, arabinose, and xylose (10). Over 100 active compounds, particularly sesquiterpenes, have been identified in the volatile oil fraction, demonstrating antimicrobial, antiparasitic, antiviral, and antioxidant properties (10,11). Studies have confirmed the antioxidant properties of *C. myrrha* (12,13), and its antiparasitic effects against *Schistosoma* and *Fasciola* parasites have led to its use in Egypt for decades as the basis of the drug *Mirazid* (14). The safety of myrrh components has been well-documented in studies (10,14). Additionally, research combining myrrh extract with silver nanoparticles has further validated its efficacy against *Leishmania* in vitro and in animal models (15).

Conclusion

The documented antiparasitic properties of Commiphora myrrha resin (14), and its demonstrated efficacy in experimental studies against Leishmania parasites (15), and the findings of this case report suggest that this

herbal remedy could serve as an adjunctive therapy for cutaneous leishmaniasis. However, further clinical trials are necessary to establish its efficacy, safety, and potential role in managing this challenging disease.

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Competing Interests
The authors declare that they have no conflict of interest.

Ethical Approval
This study was approved by the Ethics Committee of the Kerman University of Medical Sciences.(Ethical code: IR.KMU.REC. 1402.141).

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References
1. Nadim A, Mohebali M, Khamesipour A. Leishmania Parasite and Leishmaniases. Tehran: Tehran University of Medical Sciences; 2021.
2. Shirzadi MR. Surveillance Guideline for Cutaneous Leishmaniasis in Iran. Tehran: Razenahan; 2012.
3. Zakariya Razi M. Al-Mansouri fi al-Tibb. Transl. by Sadighi H. Tehran: Tehran University of Medical Sciences; 2008.
4. Akhawayni R. Hedayat al-Motaallemin fi Tebb. Tehran: Choogan; 2018.
5. Ibn Sina. Avicenna The Canon. Tehran: Soroush; 2010.
6. Jorjani SE. Zakhireye Kharazmshahi. Tehran: Safirardehal; 2019.
7. Khan MA. Eksir-e-Azam. Tehran: Alma'ee; 2014.
8. El Ashry ES, Rashed N, Salama OM, Saleh A. Components, therapeutic value and uses of myrrh. Pharmazie. 2003;58(3):163-8.
9. Aghili Khorasani M. Makhzan al-Advieh [The Storehouse of Medicaments]. Tehran: Choogan; 2017.
10. Batiha GE, Wasef L, Teibo JO, Shaheen HM, Zakariya AM, Akinfe OA, et al. *Commiphora* myrrh: a phytochemical and pharmacological update. Naunyn Schmiedebergs Arch Pharmacol. 2023;396(3):405-20. doi: 10.1007/s00210-022-02325-0.
11. Madia VN, De Angelis M, De Vita D, Messore A, De Leo A, Ialongo D, et al. Investigation of *Commiphora myrrha* (Nees) Engl. oil and its main components for antiviral activity. Pharmaceuticals (Basel). 2021;14(3):243. doi: 10.3390/ph14030243.
12. Assimopoulou AN, Zlatanos SN, Papageorgiou VP. Antioxidant activity of natural resins and bioactive triterpenes in oil substrates. Food Chem. 2005;92(4):721-7. doi: 10.1016/j.foodchem.2004.08.033.
13. Mohamed AA, Ali SI, El-Baz FK, Hegazy AK, Kord MA. Chemical composition of essential oil and in vitro antioxidant and antimicrobial activities of crude extracts of *Commiphora myrrha* resin. Ind Crops Prod. 2014;57:10-6. doi: 10.1016/j.indcrop.2014.03.017.
14. Abdul-Ghani RA, Loutfy N, Hassan A. Myrrh and trematodoses in Egypt: an overview of safety, efficacy and effectiveness profiles. Parasitol Int. 2009;58(3):210-4. doi: 10.1016/j.parint.2009.04.006.
15. Awad MA, Al Olayan EM, Siddiqui MI, Merghani NM, Alsaif SS, Aloufi AS. Antileishmanial effect of silver nanoparticles: green synthesis, characterization, in vivo and in vitro assessment. Biomed Pharmacother. 2021;137:111294. doi: 10.1016/j.biopha.2021.111294.