Ilam University of Medical Sciences

Plant Biotechnology Persa

Online ISSN: 2676-7414

Homepage: https://pbp.medilam.ac.ir

Review of Medicinal Plants Effective in Skin Wound Healing in Western Iran Based on Ethnobotanical Evidence

Ali Ranjbari [1], MohamadReza Nazer[2]✉

[1] Department of General Surgery, School of Medicine, Urmia University of Medical Sciences, Urmia, Iran
[2] Department of Infectious Diseases and Tropical Medicine, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

Article Info

Article type:
Review Article

Article History:
Received: 07 March 2024
Revised: 07 March 2024
Accepted: 23 April 2024
Published Online: 01 July 2024

✉ ***Correspondence to:***
MohamadReza Nazer

Email:
nazer@med.mui.ac.ir

A B S T R A C T

Objective: The skin acts as a barrier between the human body and the external environment, protecting the body from chemical and physical factors. Despite significant advances in wound treatment, wound healing remains a major challenge. This study reviews medicinal plants documented in ethnobotanical knowledge from western Iran that are used for skin wound healing.

Methods: The review study employed keywords related to medicinal plants, wound healing, skin wounds, and the regions of Western Azerbaijan, Eastern Azerbaijan, Kurdistan, Kermanshah, Ilam, Khuzestan, and ethnobotany to search for relevant articles. Databases reviewed included Google Scholar, SID, MagaIran, PubMed, and Scopus. Ethnobotanical articles pertinent to the review were utilized.

Results: The findings indicate that medicinal plants such as Sisymbrium sophia L., Fumaria officinalis L., Plantago major L., Alcea sp., Urtica sp., Astragalus gossypinus Fischer., Mperata cylindrica (L.), Polygonum aviculare L., Sanguisorba minor Scop., Alcea angulata, Aristolochia olivieri, Calendula persica, Citrullus colocynthis, Fumaria parviflora, Nerium oleander, Scrophularia striata, Allium schoenoprasum, Ixiolirion tataricum, Thymus kotchyanous, Adonis aestivalis, Cardaria draba, Althaea officinalis, Beta vulgaris, Carthamus tinctorius L., Chrysanthemum coronarium, Helianthus annuus L., Matricaria recutita L., and Vicia sativa are among the medicinal plants effective in wound healing in these regions.

Conclusion: Medicinal plants, rich in antioxidant compounds and secondary metabolites like tannins, anthocyanins, and flavonoids, offer a promising and often benign alternative to synthetic drugs for wound management. Given their historical use in wound healing, these botanicals warrant further investigation to elucidate their underlying mechanisms of action and to develop novel therapeutic interventions.

Keywords: Skin, wound healing, medicinal plants, treatment, Iran

➢ **How to cite this paper**
Ranjbari A, Nazer MR. Review of Medicinal Plants Effective in Skin Wound Healing in Western Iran Based on Ethnobotanical Evidence. Plant Biotechnology Persa 2024. 2024; 6(1): 88-92.

Introduction

Wound healing is a dynamic process involving intricate cellular interactions to restore damaged tissue. The initial inflammatory phase is characterized by cellular activation and the synthesis of essential repair proteins [1]. Subsequent phases encompass angiogenesis, tissue regeneration, and eventual scar formation [1]. The complexity of these processes, influenced by individual physiological variations, often necessitates specialized care to optimize wound healing outcomes [2].

Traditional medicine, ethnopharmacology, and ethnobotany offer a rich tapestry of knowledge regarding wound healing [3]. Leveraging centuries of empirical observation, these disciplines have identified various medicinal plants with anti-inflammatory and antimicrobial properties [4]. Topical applications of plant-based ointments and

[Downloaded from pbp.medilam.ac.ir on 2026-11-25]

[DOI: 10.61186/pbp.6.1.88]

© The Author(s)

DOI: 10.61186/pbp.6.1.88
Publisher: Ilam University of Medical Sciences

extracts have been traditionally used to promote wound healing and prevent infection [5]. Given their historical efficacy and favorable safety profiles, medicinal plants represent a valuable resource for contemporary wound care strategies [6].

Ethnobotany explores the intricate relationship between humans and plants, encompassing diverse applications such as medicine, food, and cultural practices [7]. By documenting and analyzing indigenous knowledge, ethnobotany offers invaluable insights into the therapeutic potential of plants [7]. This discipline plays a pivotal role in preserving and transmitting traditional wisdom, facilitating the discovery of novel bioactive compounds, and fostering a deeper understanding of the complex interactions between humans and the natural world [8]. The aim of this study is to review medicinal plants documented in the ethnobotanical knowledge of western Iran that are used for skin wound healing.

Materials and methods

A comprehensive literature search was conducted using the keywords "medicinal plants," "wound healing," "skin wounds," "West Azerbaijan," "East Azerbaijan," "Kurdistan," "Kermanshah," "Ilam," "Khuzestan," and "ethnobotany" within the Google Scholar, SID, Magiran, PubMed, and Scopus databases. Relevant ethnobotanical studies were included in the review process.

Results

According to the results, it was determined that medicinal plants such as Kakhshir, Shah Tereh, Barhang, Khatmi, Gosneh, Gon Panbeh-I, Gandomak, Afl-e Haft Band, Toot-e Robahi, Zaravand, Hamishah Bahar-e Irani, Hendavaneh-e Abu Jahl, Kharzahr, Gol-e Mimooni-Sazoui, Piazcheh Kohi, Khiarak, Cheshm-e Khorus-e Tabestan, Azmak, Choghondar, Golrang, Davoodi, Aftabgardaan, and Avishan are recognized as wound-healing medicinal plants in these regions. Further details regarding local names, plant families, used parts, and the regions where these plants are utilized as wound-healing medicinal plants are provided in Table 1.

Table 1. Indigenous Medicinal Plants of Iran Effective for Skin Wound Healing According to Ethnobotanical Records

Scientific name	*Local name*	*Herbal name*	*Plant Parts Used*	*Region*
Sisymbrium sophia L	*Khakeshir*	*Brassicaceae*	*Seed*	*Meshkinshahr, Ardabil [9]*
Fumaria officinalis L.	*Shahtareh*	*Papaveraceae*	*Aerial parts*	*Meshkinshahr, Ardabil [9]*
Plantago major L.	*Barhang*	*Plantaginaceae*	*Seed, Leaf*	*Meshkinshahr, Ardabil [9]*
Alcea sp.	*Khatmi*	*Malvaceae*	*Flower*	*Urmia, West Azerbaijan [10]*
Urtica sp.	*Gazaneh*	*Urticaceae*	*Aerial parts*	*Urmia, West Azerbaijan [10]*
Astragalus gossypinus Fischer.	*Gavan panbei*	*Fabaceae*	*Root*	*Behbahan, Khuzestan [11]*
Fumaria officinalis	*Shahtareh*	*Papavaraceae*	*Aerial parts*	*Behbahan, Khuzestan [11]*
Mperata cylindrica (L.)	*Gandomak*	*Poaceae*	*Root*	*Behbahan, Khuzestan [11]*
Polygonum aviculare L.	*Alafe haftband*	*Polygonaceae*	*Aerial parts*	*Behbahan, Khuzestan [11]*
Sanguisorba minor Scop.	*Tout robahi*	*Rosaceae*	*Aerial parts*	*Behbahan, Khuzestan [11]*
Alcea angulata	*Khatmi*	*Malvaceae*	*Root*	*Dehloran and Abdanan, Ilam [12]*
Aristolochia olivieri Collegno in Boiss.	*Zaravand*	*Aristolochiaceae*	*Flower, Leaf*	*Dehloran and Abdanan, Ilam [12]*
Calendula persica C. A. Mey.	*Hamisheh baharirani*	*Asteraceae*	*Flower*	*Dehloran and Abdanan, Ilam [12]*
Citrullus colocynthis (L.) Schrad.	*Hendavaneh Aboujahl*	*Cucurbitaceae*	*Fruit*	*Dehloran and Abdanan, Ilam [12]*

[Downloaded from pbp.medilam.ac.ir on 2026-11-25]

[DOI: 10.61186/pbp.6.1.88]

Fumaria parviflora Lam.	*Shahtareh*	*Fumariaceae*	*Flower, Leaf*	*Dehloran and Abdanan, Ilam [12]*
Nerium oleander L.	*Kharzahreh*	*Apocynaceae*	*Leaf, Flower*	*Dehloran and Abdanan, Ilam [12]*
Scrophularia striata Boiss.	*Gole meimonisazouei*	*Scrophulariaceae*	*Aerial parts*	*Dehloran and Abdanan, Ilam [12]*
Allium schoenoprasum	*Piazche kouhi*	*Alliaceae*	*Leaf*	*Sarein, East Azerbaijan [13]*
Ixiolirion tataricum	*Khiarak*	*Amarilidacaes*	*Flower, Leaf*	*Sarein, East Azerbaijan [13]*
Thymus Kotchyanous	*Avishan kouhi*	*Lamiaceae*	*Leaf, Flower*	*Sarein, East Azerbaijan [13]*
Adonis aestivalis	*Cheshkhorous tabestaneh*	*Ranunculaceae*	*Leaf, Flower*	*Saqqez, Kurdistan [14]*
Cardaria draba	*Azmak*	*Cruciferaceae*	*Aerial parts*	*Saqqez, Kurdistan [14]*
Althaea officinalis	*Gole khatmi*	*Malvaceae*	*Flower*	*Silvanaya Urmia, West Azerbaijan [15]*
Beta vulgaris L.	*Choghondar*	*Amaranthaceae*	*Leaf*	*East of Khuzestan, Khuzestan [16]*
Carthamus tinetorius L	*Golrang*	*Asteraceae*	*Flower*	*East of Khuzestan, Khuzestan [16]*
Chrysanthemum coronarium L	*davoudi*	*Asteraceae*	*Leaf, Flower*	*East of Khuzestan, Khuzestan [16]*
Helianthus annus L	*Aftabgardan*	*Asteraceae*	*Seed, Leaf*	*East of Khuzestan, Khuzestan [16]*
Matricaria recutita L.	*Babouneh*	*Asteraceae*	*Flower*	*East of Khuzestan, Khuzestan [16]*
Vicia sativa	*Mashak*	*Fabaceae*	*Leaf, Flower*	*Ajab Shir, East Azerbaijan [17]*

Based on the results of the table, various regions of Iran have been mentioned for the collection of plants. This geographical distribution helps us assess the frequency of plant species in each region. Accordingly, Ardabil has 3 plants, West Azerbaijan has 2 plants, Khuzestan has 5 plants, Ilam has 7 plants, East Azerbaijan has 3 plants, and Kurdistan has 2 plants.

The percentages for the different plant parts used are as follows:

Flowers: 30.3%; Leaves: 27.3%; Roots: 9.1%; Seeds: 12.1%; Aerial parts: 18.2% and Fruits: 3.0%

Given the data presented, we can conclude that: The regions of Ilam and Khuzestan have the greatest plant diversity in this table. The Asteraceae family has the most species present in different regions of Iran. Flowers and leaves are the most commonly used parts of plants in traditional medicine. This information could serve as a basis for further research on the geographical distribution of medicinal plants and the various plant parts used in different regions of Iran.

Discussion

Traditional medicine and ethnobotany share a common focus on harnessing the therapeutic potential of medicinal plants. Rooted in centuries of empirical knowledge, traditional medicine has extensively utilized botanicals for wound management [18]. These plant-based remedies, characterized by their anti-inflammatory and antimicrobial properties, have historically contributed to wound healing and overall health promotion [18].

Ethnobotany systematically explores the intricate relationship between humans and plants, encompassing the documentation and preservation of

[Downloaded from pbp.medilam.ac.ir on 2026-11-25]

[DOI: 10.61186/pbp.6.1.88]

traditional knowledge [19]. By investigating the cultural and medicinal uses of plants, ethnobotany contributes to the discovery and development of novel therapeutic applications [19]. This discipline is particularly valuable for identifying and understanding the wound healing properties of medicinal plants employed in traditional practices [19].

The therapeutic efficacy of medicinal plants in wound healing is attributed to their complex biochemical composition [20]. Bioactive compounds, including flavonoids, saponins, and antioxidants, mediate anti-inflammatory, antimicrobial, and regenerative processes [21]. Some plants aid in tissue repair by stimulating collagen production and other structural proteins [22]. By reducing inflammation, modulating oxidative stress, and stimulating collagen synthesis, these plants contribute to accelerated wound closure and tissue repair [23].

Conclusion

The integration of traditional medicine and ethnobotany offers a promising framework for the development of innovative wound healing strategies. By synergizing historical knowledge with contemporary scientific research, it is possible to optimize therapeutic outcomes. This interdisciplinary approach not only preserves and promotes biodiversity but also contributes to the advancement of public health through the discovery and development of novel therapeutic agents.

Acknowledgments

The authors would like to express their gratitude to the clinical research development unit of Imam Khomeini Hospital, Urmia University of Medical Sciences, for English editing solid tumor research center.

Statements and Declarations

Competing interests:

The authors have no competing interests to declare that are relevant to the content of this article.

Ethics approval:

This study was performed in line with the principles of the Declaration of Helsinki.

Consent to participate:

Informed consent was obtained from all individual participants included in the study.

Author contributions:

AR: Conceptualization, the original draft writing, investigation, writing including reviewing and editing and investigation and formal analysis; MRN: Conceptualization, supervision, and project administration; AR and MRN Conceptualization, the original draft writing, investigation, writing including reviewing and editing.

References

1. Wilkinson HN, Hardman MJ. Wound healing: cellular mechanisms and pathological outcomes. Open Biol. 2020 Sep 30;10(9):200223. doi:10.1098/rsob.200223.
2. Peña OA, Martin P. Cellular and molecular mechanisms of skin wound healing. Nat Rev Mol Cell Biol. 2024 Mar 25;1-8. doi:10.1038/s41573-024-00465-8.
3. Dong R, Guo B. Smart wound dressings for wound healing. Nano Today. 2021 Dec 1;41:101290. doi:10.1016/j.nantod.2021.101290.
4. Azizi M, Abbasi N, Mohamadpour M, Mohamadpour M, Amraei M. Investigating the effect of *Crocus sativus* L. petal hydroalcoholic extract on inflammatory and enzymatic indices resulting from alcohol use in kidney and liver of male rats. J Inflamm Res. 2019;12. doi: 10.2147/JIR.S216125
5. Rahmatian N, Abbasi S, Tavakkoli Yaraki M, Abbasi N. *Echinophora platyloba* extract-mediated green synthesis of silver nanoparticles: fine-tuning the size towards enhanced catalytic and antibacterial properties. J Mol Liq. 2023;391:123456.
6. Aidy A, Karimi E, Ghaneialvar H, Mohammadpour S, Abbasi N. Protective effect of *Nectaroscordum tripedale* extract and its bioactive component tetramethylpyrazine against acetaminophen-induced hepatotoxicity in rats. Adv Tradit Med. 2020;20(3): DOI:10.1007/s13596-020-00431-z
7. Albahri G, Badran A, Hijazi A, Daou A, Baydoun E, Nasser M, Merah O. The therapeutic wound healing bioactivities of various medicinal plants. Life. 2023 Jan 23;13(2):317. doi:10.3390/life13020317.
8. Porras G, Chassagne F, Lyles JT, Marquez L, Dettweiler M, Salam AM, Samarakoon T, Shabih S, Farrokhi DR, Quave CL. Ethnobotany and the role of plant natural products in antibiotic drug discovery. Chem Rev. 2020 Nov 9;121(6):3495-560. doi:10.1021/acs.chemrev.0c00416.

[Downloaded from pbp.medilam.ac.ir on 2026-11-25]

[DOI: 10.61186/pbp.6.1.88]

9. Moameri M, Abbasi Khalaki M, Dadjou F. Ethnobotany of Darwishchai-Sarein Watershed Plants with Medicinal and Food Approaches. 2020; 14 (4) :698-714.
10. Karimi, H., Taghi Maramzadeh, A., and Taghi Maramzadeh, A., 2020. A study on the diversity of medicinal plants in the Silvaneh region of Urmia in West Azerbaijan. The First National Conference on Challenges in Completing the Value Chain of Medicinal and Aromatic Plants, Urmia. Available at: https://civilica.com/doc/1240344.
11. Faraji, M., Dehdari, S., Shojaei, F., Kazemi, R., & Cheraghian, A. (2021). Collection and ethnobotanical study of medicinal plants in Hayatabad Majidi village, Behbahan County. 5th International Congress on the Development of Agriculture, Natural Resources, Environment, and Tourism in Iran, Tabriz. Retrieved from https://civilica.com/doc/1276160
12. Ghasemi PA, Momeni M, Bahmani M. Ethnobotanical study of medicinal plants used by Kurd tribe in Dehloran and Abdanan districts, Ilam province, Iran. African Journal of Traditional, Complementary and Alternative Medicines. 2013 Jan 18;10(2):368-85.
13. Moameri M, Abbasi Khalaki M, Dadjou F. Ethnobotany of Darwishchai-Sarein Watershed Plants with Medicinal and Food Approaches. 2020; 14 (4) :698-714
14. Derakhshan N, Khatamsaz M, Zolfaghari B. Ethnobotanical uses of plants in the Saghez (Kurdistan, Iran). jiitm 2017; 7 (4) :507-516
15. Karimi, H., Taghi Maramzadeh, A., & Taghi Maramzadeh, A. (2020). Study of the diversity of medicinal plants in the Silvana region of Urmia, West Azerbaijan. 1st National Conference on Challenges in Completing the Value Chain of Medicinal and Aromatic Plants, Urmia. Retrieved from https://civilica.com/doc/1240344
16. Khodayari, H., Amani, S., & Amiri, H. (2014). Ethnobotany of medicinal plants in northeastern Khuzestan Province. Retrieved from https://civilica.com/doc/1405826
17. Maleki-khezerlu S, Ansari-Ardali S, Maleki-khezerlu M. Ethno-Botanic Study and Traditional Use of Medicinal Plant of Ajabshir City. jiitm 2017; 7 (4) :499-506
18. Xu Z, Dong M, Yin S, Dong J, Zhang M, Tian R, Min W, Zeng L, Qiao H, Chen J. Why traditional herbal medicine promotes wound healing: Research from immune response, wound microbiome to controlled delivery. Adv Drug Deliv Rev. 2023 Apr 1;195:114764. doi:10.1016/j.addr.2022.114764.
19. Shanmugam S, Rajagopal V, Balamurugan S, Muthupandi CP, Eswaran VM, Raveendraretnam K, Rajendran K. Ethnobotanical indices on wound healing medicinal plants in the Arjuna river of Virudhunagar district in Tamil Nadu, Southern India. Asian J Ethnobiol. 2021 Mar 13;4(1). doi:10.46242/aje.2021.4.1.126.
20. Sharma A, Khanna S, Kaur G, Singh I. Medicinal plants and their components for wound healing applications. Fut J Pharm Sci. 2021 Dec;7(1):1-3. doi:10.1016/j.fjps.2021.100091. (Note: This entry is a duplicate of entry 5.)
21. Nigussie D, Makonnen E, Tufa TB, Brewster M, Legesse BA, Fekadu A, Davey G. Systematic review of Ethiopian medicinal plants used for their anti-inflammatory and wound healing activities. J Ethnopharmacol. 2021 Aug 10;276:114179. doi:10.1016/j.jep.2021.114179.
22. Nazir Y, Linsaenkart P, Khantham C, Chaitep T, Jantrawut P, Chittasupho C, Rachtanapun P, Jantanasakulwong K, Phimolsiripol Y, Sommano SR, Tocharus J. High efficiency in vitro wound healing of Dictyophora indusiata extracts via anti-inflammatory and collagen stimulating (MMP-2 inhibition) mechanisms. J Fungi. 2021 Dec 20;7(12):1100. doi:10.3390/jof7121100.
23. Akbari B, Baghaei-Yazdi N, Bahmaie M, Mahdavi Abhari F. The role of plant-derived natural antioxidants in reduction of oxidative stress. BioFactors. 2022 May;48(3):611-33. doi:10.1002/biof.1853.

[Downloaded from pbp.medilam.ac.ir on 2026-11-25]

[DOI: 10.61186/pbp.6.1.88]