


Anti-Toothache Medicinal Plants in Ethnobotanical Knowledge

Aisan Ghaznavi¹ , Roman Lysiuk²  

¹Department of Oral and Maxillofacial Radiology, School of Dentistry, Urmia University of Medical Sciences, Urmia, Iran. Email: aisanghaznavi@yahoo.com

²Department of Pharmacognosy and Botany, Danylo Halytsky Lviv National Medical University, Pekarska, 69., Lviv, Ukraine. Email: pharmacognosy.org.ua@ukr.net

Article Info	ABSTRACT
Article type: Review Article	Objective: Toothache, often caused by tooth decay, cracks, or sensitivity to temperature, is one of the most distressing types of pain. Medicinal plants have long been used in traditional medicine and ethnobotanical knowledge for treating toothache. This study aims to identify medicinal plants used in Iranian ethnobotanical practices to alleviate toothache.
Article History: Received: 15 April 2024 Received: 07 July 2024 Accepted: 31 August 2024 Published 16 Sep 2024	Methodology: In this review, articles were searched using keywords such as medicinal plants, Iran, tooth, toothache, and ethnobotany. Databases including Google Scholar, SID, Magiran, PubMed, and Scopus were utilized for the search. Relevant ethnobotanical articles were reviewed for this study.
 Correspondence to: Roman Lysiuk	Results: Medicinal herbs such as <i>Origanum vulgare</i> , <i>Papaver somniferum</i> , <i>Mentha aquatica</i> L., <i>Mentha spicata</i> L., <i>Ferula persica</i> Willd., <i>Glycyrrhiza glabra</i> L., <i>Perovskia abrotanoides</i> Kar., <i>Dianthus caryophyllus</i> , <i>Viola odorata</i> , <i>Astragalus verus</i> , <i>Zingiber officinale</i> , <i>Allium sativum</i> , <i>Thymus danensis</i> are identified as the most effective plants against toothache in traditional medicine.
Email: pharmacognosy.org.ua@ukr.net	Conclusion: Iran's diverse herbal flora and rich ethnobotanical knowledge offer valuable insights and resources for the treatment of toothache. The findings of this study highlight the importance of incorporating this traditional knowledge into pharmacological research to develop effective anti-toothache drugs.
	Keywords: Tooth, Toothache, Traditional Medicine, Ethnobotany, Medicinal Plants, Treatment, Iran
➤ How to cite this paper Ghaznavi A, Lysiuk R. Anti-Toothache Medicinal Plants in Ethnobotanical Knowledg. Plant Biotechnology Persa 2024; 6(2): 103-107.	

Introduction

Oral health is an integral component of overall well-being, contributing significantly to both physical and psychological health [1]. Beyond preventing oral diseases, it is increasingly recognized as a crucial factor in maintaining systemic health and enhancing self-esteem [2]. The intricate structure of the tooth, comprising enamel, dentin, cementum, and pulp, underscores its complex role in oral function and protection [2].

Toothache constitutes a potential indicator of severe dental or periodontal pathology, necessitating prompt and appropriate intervention to mitigate complications and maintain quality of life [3]. The etiology of toothache is multifaceted, encompassing dental caries, gum infections, tooth fractures, and pulpal inflammation [4].

The integration of medicinal plants into healthcare regimens has emerged as a complementary approach for symptom management and overall well-being. While their therapeutic potential is recognized, medical supervision is essential to ensure safety and efficacy [5]. Certain botanicals, including mint, clove, and green tea, possess oral health benefits such as reduced gingival inflammation and halitosis [6]. Traditional medicine has a rich history of utilizing medicinal plants for toothache relief; however, indiscriminate use may precipitate adverse effects, necessitating a cautious and informed approach [7].

The aim of the present study is to identify medicinal plants used in Iranian ethnobotanical knowledge for the treatment of toothache.

Methodology

A literature search was conducted to identify ethnobotanical knowledge pertaining to the use of medicinal plants for toothache management in Iran. Relevant articles were retrieved from multiple databases, including Google Scholar,

Results

Generally, the medicinal plants such as *Origanum vulgare*, *Papaver somniferum*, *Mentha aquatica* L., *Mentha spicata* L., *Ferula persica* Willd, *Glycyrrhiza glabra* L., *Perovskia*

SID, Magiran, PubMed, and Scopus, using the keywords "medicinal plants," "Iran," "tooth," "toothache," and "ethnobotany."

abrotanoides Kar., *Dianthus caryophyllus*, *Viola odorata*, *Astragalus verus*, *Zingiber officinale*, *Allium sativum*, *Thymus danensis* and etc. are among the most important herbal remedies used in traditional Iranian medicine for toothache. Additional information regarding herbal remedies for toothache can be found in Table 1.

Table 1: Medicinal Plants Effective for Toothache in Ethnobotany of Iranian

Scientific name	Herbal family	Plant name	Organ used	Potential Mechanisms for Relieving Tooth Pain	Study area
<i>Origanum vulgare</i>	Labiatae	Marzanjoush	Aerial parts	Anti-inflammatory and analgesic properties	Arasbaran, East Azerbaijan [8]
<i>Papaver somniferum</i>	Famariaceae	Khashkhash kouhi	Aerial parts	Analgesics; inhibits pain pathways in the CNS.	Urmia, West Azerbaijan [9]
<i>Mentha aquatica</i> L.	Lamiaceae	Poneh Abi	Leaf, Flower	A cooling sensation and reduces nerve response to pain.	Amol, Mazandaran [10]
<i>Mentha spicata</i> L.	Lamiaceae	Poneh sonbolei	Leaf, Flower	Analgesic and anti-inflammatory effects	Amol, Mazandaran [10]
<i>Ferula persica</i> Willd	Apiaceae	Fruleh	Aerial parts	Anti-inflammatory and analgesic properties.	Razojergalan, North Khorasan [11]
<i>Glycyrrhiza glabra</i> L.	Fabaceae	Shirinbian sosouk	Root	Reduces inflammation and soothes mucous membranes	Razojergalan, North Khorasan [11]
<i>Perovskia abrotanoides</i> Kar.	Lamiaceae	Brazembel	Aerial parts	Antioxidant and antiinflammatory properties.	Razojergalan, North Khorasan [11]
<i>Dianthus caryophyllus</i>	Caryophyllaceae	Mikhak	Flower	A natural anesthetic and anti-inflammatory agent.	Sarein, Ardabil [12]
<i>Viola odorata</i>	Violaceae	Banafsheh	Flower	Mild analgesic and anti-inflammatory effects.	Ajabshir, East Azerbaijan [13]
<i>Astragalus verus</i> Olivier.	Fabaceae	Gavan khardar	Flower, Resin	Anti-inflammatory effects.	Golestan [14]
<i>Dianthus caryophyllus</i> L.	Caryophyllaceae	Mikhenag	Seed	Pain relief by numbing the nerves and reducing inflammation	Golestan [14]

<i>Zingiber officinale</i> L.	Zingiberaceae	Zangabil	Aerial parts	Anti-inflammatory and analgesic effects.	Meshkin shahre, Ardabil [15]
<i>Allium sativum</i> L.	Amaryllidaceae	Sir	Bulb	Allicin provides antimicrobial properties; may help prevent tooth infections.	Meshkin shahre, Ardabil [15]
<i>Corcuma longa</i>	Zingiberaceae	Zadjoubeh	Rhizome	Anti-inflammatory and analgesic effects	Meshkin shahre, Ardabil [15]
<i>Thymus danensis</i>	Laminaceae	Avishan	Aerial parts	Antimicrobial, anti-inflammatory, and analgesic effects.	Meshkin shahre, Ardabil [15]

Discussion

Toothache constitutes a prevalent health problem with a substantial negative impact on quality of life. Iran, with its rich ethnomedicinal heritage, offers a valuable context for exploring the traditional use of medicinal plants for dental pain relief. Ethnobotany provides a framework for investigating the intricate relationship between humans and plants, offering insights into indigenous knowledge and practices [6].

Syzygium aromaticum, commonly known as clove, has a longstanding reputation for its analgesic properties, specifically in the management of toothache [17]. Clove oil, a potent antiseptic, contributes to the reduction of dental infections [18]. Ginger, renowned for its anti-inflammatory actions, offers potential relief from the inflammation and pain associated with dental conditions. Both ginger tea and extract can be utilized for analgesic purposes [19]. Garlic, with its established antimicrobial and anti-inflammatory properties, has been traditionally employed for toothache management. Topical application of garlic cloves is often advocated for rapid pain alleviation [20]. Chamomile, known for its sedative and anti-inflammatory effects, can mitigate both dental pain and associated anxiety [21]. Turmeric, with its inherent anti-inflammatory and antioxidant attributes, promotes oral health and can be topically applied in combination with coconut oil for pain relief [22]. Thyme, possessing antimicrobial properties, aids in infection control and pain reduction, and can be utilized as a mouthwash [23]. Cinnamon, with its antimicrobial actions, offers potential benefits in managing dental infections and pain. A combination of cinnamon powder and honey is often recommended as a topical analgesic [24]. The analgesic mechanisms of these medicinal plants predominantly involve anti-inflammatory, analgesic, and

antiseptic properties, contributing to the reduction of inflammation and pain throughout the body [24].

Conclusion

Traditional Iranian medicine offers a wealth of knowledge regarding medicinal plants and their therapeutic applications. This study highlights the potential of these plants in managing toothache. While ethnobotanical insights provide valuable information, it is imperative to emphasize the importance of professional dental care for comprehensive treatment.

Statements and Declarations

Funding support

The authors did not receive support from any organization for the submitted work

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. Approval was granted by the Ethics Committee of Urmia University of Medical sciences, Urmia, Iran.

Consent to participate

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

Author contributions

AGH: Conceptualization, the original draft writing, investigation, writing including reviewing and editing and investigation and formal analysis; RL: Conceptualization, supervision, and project administration; RL and AGH:

Conceptualization, the original draft writing, investigation, writing including reviewing and editing

Acknowledgments

The authors would like to express their gratitude to the clinical research development unit of Ilam University, for English editing.

References

1. Ghaznavi D, Babaloo A, Shirmohammadi A, Zamani AR, Azizi M, Rahbarghazi R, Ghaznavi A. Advanced platelet-rich fibrin plus gold nanoparticles enhanced the osteogenic capacity of human mesenchymal stem cells. *BMC Research Notes*. 2019 Dec;12:1-6. doi: 10.1186/s13104-019-4863-2.
2. Rahimi B, Karimian S, Ghaznavi A, Jafari Heydarlou M. Requirements specification, design, and evaluation of dental image exchange and management system with user-centered approach: A case study in Iran. *Health Sci Rep*. 2023 Dec;6(12):e1760. doi: 10.1002/hsr2.1760.
3. Kim IH, Mupparapu A, Yablonski JN, Mupparapu M. A Patient with Herpes Zoster of the Maxillary Division of Trigeminal Nerve Presents for Oral Evaluation and Toothache. *Dent Clin North Am*. 2023 Jun;67(4):687-90. doi: 10.1016/j.cden.2023.04.004.
4. Telgote A, Udupurkar P. An Overview Treatment and Prevention of Toothache. *J Drug Deliv Ther*. 2024 Jan;2(01):120-30. doi: 10.22270/jddt.v2i01.585.
5. Rehman S, Iqbal Z, Qureshi R, AlOmar TS, Almasoud N, Younas M, Rauf A, Irfan M. Ethno-Dentistry of Medicinal Plants Used in North Waziristan, Pakistan. *Int Dent J*. 2024 Apr;74(2):310-20. doi: 10.1016/j.identj.2024.01.008.
6. Kashyap P, Shamim MZ, Plawan B, Kakoti D, Suantak G, Nath P, Baruah P. Herbal Tooth Gel for the Management of Gingival Bleeding and Toothache. *J Pharm Negat Results*. 2023 Feb;14:3046-54. doi: 10.47750/jpbmr.v14.02.119.
7. Dakkaki J, Ibenmoussa S, Sidqui M. Contributions of Medicinal Plants in the Treatment of Oral Diseases. *Open Access Libr J*. 2023 Jul;10(7):1-26. doi: 10.4236/oalib.1109477.
8. Islam Z, Ebrahim A, Elah W, Kefaki S, Bibalani Q. Identification of medicinal plants in Arsbaran region and study of native knowledge of local people (case study: Arsbaran forests, Mardanqom Chai watershed). *Res Med Aromat Plants Iran [Internet]*. 2013;28(3 (57 series)):534-550. Available from: <https://sid.ir/paper/105535/fa>.
9. Yousefi H, Sheidai-Karkaj E, Mofidi-Chelan M. Indigenous knowledge of medicinal and edible plants from the point of view of local communities in the some rangelands of Urmia County. *Int Conf Biol Med Plants*. Qom, Iran.
10. Puya A, Rana F. Ethnobotany of medicinal plants of Raz and Jarglan region in North Khorasan province. *Res Med Aromat Plants Iran [Internet]*. 2021;37(6 (serial 110)):873-907. Available from: <https://sid.ir/paper/1033447/fa>.
11. Moameri M, Khalaki MA, Dadjou F. Ethnobotany of Darwishchai-Sarein Watershed Plants with Medicinal and Food Approaches. *Res Pasture Watershed*. 2020;14(4):698-714.
12. Kiasi Y, Farouzeh MR, Mirdilami SZ, Nik Nihad H. Phytoethnography of edible, medicinal, and industrial species of Khosh Yilagh pasture in Golestan province. *Two Quart Indigenous Knowl Iran*. 2018;6(11):151-204. doi: 10.22054/qjik.2020.50142.1192.
13. Maleki-khezerlu S, Ansari-Ardali S, Maleki-khezerlu M. Ethno-Botanic Study and Traditional Use of Medicinal Plant of Ajabshir City. *J Indigenous Knowl Iran*. 2017;7(4):499-506.
14. Nojadeh SM, Amani M, Khanlou HY, Badri L, Fathizadeh O, Karakaj IS. Medicinal plants with therapeutic uses in indigenous communities located in Sablan range (case study: Meshkinshahr city, Ardabil province). *J Res Pasture Watershed*. 2021;74(3):529-542. doi: 10.22059/jrwm.2021.311829.1542.
15. Farhad-Mollashahi N, Mollashahi LF. Antibiotic-Seeking Behavior in Toothache. *Int J High Risk Behav Addict*. 2024;13(2):e21309. doi: 10.5812/ijhrba.21309.
16. Askari VR, Najafi Z, Rahimi VB. *Syzygium aromaticum*–Role in Oral Health and Dental Care. *Pharmacol Stud Nat Oral Care*. 2023 Oct;3:499-518. doi: 10.1016/j.psnoc.2023.09.001.
17. Hammud KK. Activity of clove and feverfew constituents towards toothache: in silico answer. *J Duhok Univ*. 2022 Apr;25(1):6-21.
18. Waghmare P, Diwane C, Jadhav P, Patil V, Barhe P. An Overview on 'Zingiber officinale' (Ginger). *World J Pharm Res*. 2022 Feb;11(4):625-46.
19. Kumar A, Giri AK, Kattel B. Herbal Home Remedies for Toothache during the COVID-19 Pandemic. *J Nat Remedies*. 2023;23(1):42-50. doi: 10.18311/jnr/2023/24999.
20. Paramawidhita RY, Safitri RA. Formulation and Evaluation of Toothpaste Combining Clove Flower Extract (*Syzygium aromaticum* L.) and Chamomile Flower Essential Oil (*Matricaria chamomilla*). *Crown J Dent Health Res*. 2024 Jul;2(2):93-102. doi: 10.32734/cjodhr.v2i2.220.
21. Razavi BM, Rahbardar MG, Hosseinzadeh H. A review of therapeutic potentials of turmeric (*Curcuma longa*) and its active constituent, curcumin, on inflammatory disorders, pain, and their related patents. *Phytother Res*. 2021 Dec;35(12):6489-513. doi: 10.1002/ptr.7132.
22. Mandorah A, Wali O, Alqais M, Alsaegh L, Fatani B, Alomar Z, et al. Using Herbal Medicine for Dental Pain in Saudi Arabia: Prevalence and Knowledge Assessment. *J Pharm Res Int*. 2021 Dec;33(57B):69-77. doi: 10.9734/jpri/2021/v33i57B34157.
23. Goel B, Mishra S. Medicinal and nutritional perspective of cinnamon: A mini-review. *Eur J Med Plants*. 2020 Feb;31(3):10-6. doi: 10.9734/ejmp/2020/v31i330217.
24. Khan H, Pervaiz A, Intagliata S, Das N, Nagulapalli VKC, Atanasov AG, et al. The analgesic potential of glycosides derived from medicinal plants. *DARU J Pharm Sci*. 2020 Jun;28:387-401. doi: 10.1007/s40199-020-00331-7.