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Exploring Herbal Remedies for Infant Colic: Traditional Plants with Therapeutic Potential

Ali Zolfigol[1], Mohadeseh Pirhadi [2]✉

[1]Assistant Professor of Pediatric Cardiology, Department of Pediatric Disease, School of Medicine, Shahid Motahari Hospital, Urmia University of Medical Sciences, Urmia, Iran. Email: dr.alizolfi@gmail.com
dr.alizolfi@gmail.com

[2] Department of Environmental Health Engineering, Food Safety Division, School of Public Health, Tehran University of Medical Sciences and Health Services, Tehran, Iran. Email: m.pirhadi371@gmail.com

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✉ ***Correspondence to:***
Mohadeseh Pirhadi

Email:
m.pirhadi371@gmail.com

A B S T R A C T

Objective: Although professional dental whitening procedures like composite bonding, veneers, and bleaching are prevalent, traditional and herbal remedies present viable alternatives. These natural approaches can effectively contribute to tooth whitening and mitigate the formation of yellow and brown stains, frequently with fewer adverse effects.

Methods: This review article utilized keyword searches including medicinal plants, traditional medicine, tooth discoloration, and tooth whiteners across databases such as Web of Science, Medline, PubMed, Scopus, and Google Scholar. Relevant articles were reviewed to compile the information.

Results: In traditional Iranian medicine, several herbal remedies are recognized for their tooth whitening properties. These include lemon juice, turmeric, coconut oil, strawberries, orange peel, apple cider vinegar, banana peel, Persian pomegranate, licorice root, mint, wild thyme, and myrtle.

Conclusion: Herbal tooth whitening agents derive their efficacy from their distinctive chemical and biological characteristics. These botanical substances employ mechanisms including abrasiveness, pigment degradation, antibacterial and anti-inflammatory properties, and direct whitening effects to promote tooth whitening and overall oral health. Consistent and appropriate application of these remedies can contribute to the preservation of dental aesthetics and oral well-being.

Keywords: Tooth, Tooth discoloration, Whitening agents, Beauty, Traditional medicine

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Introduction

Neonates are particularly vulnerable to illness and thus necessitate optimal healthcare. Colic, often referred to as "qulanj" in Farsi, is characterized by excessive, inconsolable crying in otherwise healthy infants [1]. This condition afflicts approximately 20% of infants within the first few months of life, with peak incidence at six weeks of age and subsequent alleviation around the third or fourth month [2]. Differentiating colic from other causes of infant crying, such as hunger, discomfort, or fatigue, can be challenging [2]. Colic is diagnosed when an infant exhibits persistent crying despite apparent fulfillment of basic needs [3,4].

The precise etiology of colic remains elusive, though several contributing factors have been proposed. These include gastrointestinal immaturity, microbial imbalances, food sensitivities, feeding practices, neurological factors, and parental stress [5]. The clinical presentation of colic is characterized by excessive crying, irritability, and feeding difficulties. Infants often exhibit non-specific signs such as fist clenching, facial flushing, and bodily tension [6]. Additionally, gastrointestinal symptoms like flatulence and abdominal distension may be present [6].

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A range of therapeutic approaches have been employed for the management of infant colic, including dietary modifications, gastrointestinal interventions, and complementary therapies [7, 8]. Traditional medicine has extensively utilized medicinal plants due to their inherent bioactive compounds [9]. Given the prevalence of colic and the historical use of herbal remedies in Iranian culture, this study aims to identify and document medicinal plants traditionally employed for the treatment of infant colic.

Method

A comprehensive literature search was carried out using keywords such as "colic," "children," "traditional medicine," "medicinal plants," and "treatment" across multiple databases, including Google Scholar, SID, Magiran, PubMed, and Scopus. The search was restricted to studies published from the year 2000 onwards to ensure the inclusion of recent and relevant findings. The initial search yielded a broad set of articles, which were then screened for relevance based on title and abstract. Studies were included if they focused on the use of medicinal plants for the management of infant colic, were written in English or Persian, and were available in full-text format. Articles were excluded if they were duplicates, irrelevant to the topic, focused on non-plant-based treatments, or were not peer-reviewed. After applying these inclusion and exclusion criteria, the remaining articles were reviewed in detail to synthesize the current evidence on traditional plant-based remedies for infant colic.

Results

In Iranian traditional medicine, medicinal plants such as ginger, olive, anise, aloe vera, asafoetida, chamomile, fennel, mint, dill, basil, sweet flag, lavender, green pepper, black caraway, and lemon balm are used to treat colic. Additional information on this topic is provided in Table 1.

Table 1 content is omitted for brevity, but it includes the Persian name, scientific name, plant family, and effects of various medicinal plants used for treating infant colic in Iranian traditional medicine.

Table 1. Anti-colic medicinal plants for infants and children in traditional Iranian medicine

Persian name	Scientific name of the plant	Plant family	Effect [10-23]
Ginger	*Zingiber officinale*	Zingiberaceae	Helps to treat nausea, muscle spasms and digestion.
Olive	*Olea europaea*	Oleaceae	A gentle circular massage on the baby's abdomen with olive oil can help eliminate inflammation, bloating and constipation.
aloe vera	*Aloe vera*	Liliaceae	Helps to eliminate bloating.
Anise	*Pimpinella ansium*	*Apiaceae*	Helps to treat nausea, muscle spasms and digestion.
Asafoetida	*Ferula assa-foetida*	Umbelliferae	This plant is anti-flatulent and helps in digestion and relieves the pain of gas retention.

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Chamomile	*Matricaria chamomilla*	Asteraceae	Chamomile is antispasmodic (19 different antispasmodic compounds) and sedative (5 compounds), which helps to relieve intestinal congestion and relaxes.
Fennel	*Foeniculum vulgaris*	*Apiaceae*	It helps to eliminate constipation and intestinal spasms.
Mint	*Mentha piperita*	*Lamiaceae*	Peppermint has anti-spasmodic properties that are useful for reducing intestinal spasms in babies and those who are suffering from colic.
Dill	*Anethum graveolens*	Apiaceae	It helps to eliminate constipation and intestinal spasms.
Basil	*Ocimum basilicum*	Lamiaceae	Basil contains large amounts of eugenol, which in turn has antispasmodic and sedative properties and helps to get rid of this problem.
Sweet flag	*Acorus calamus*	Acoraceae	It helps to eliminate constipation and intestinal spasms.
Lavandula	*Lavandula offiinalis*	Lamiaceae	It helps to eliminate constipation and intestinal spasms.
Chili pepper	*Capsicum minimum*	Solanaceae	It helps to treat indigestion, gas and reflux.
Caraway	*Carum carvi*	*Apiaceae*	It helps to treat indigestion, gas and reflux.
Dracocephalum	*Melissa officinalis*	Lamiaceae	It helps to relax, sleep and eliminate gas pain and cures colic.

Discussion

If an infant is crying and screaming excessively and no measures can be taken to soothe them, they might be suffering from colic [24]. Colic is defined as a condition where an infant, who is neither sick nor hungry, cries for more than three hours a day and is restless. This condition should persist for more than three days a week and more than three weeks [24]. Sesquiterpenes include zingiberene, zingiberol, monoterpene hydrocarbons, and sesquiterpene hydrocarbons, which are components of ginger [25]. Olive leaves contain glucosides, sugars, bitter compounds, chlorophyll, gallic acid, tannin, wax, and mannitol, while its fruit contains oleuropein [26]. Aloe vera contains aloin, famotidine, and isobarbaloein [27]. Aniseed contains various terpene compounds, carvone, flavonoids, fatty acids, sterols, proteins, phenylpropanoids, and furanocoumarins [28]. The essential oil of Asafoetida includes (E)-1-propenyl sec-butyl disulfide and propenyl sec-butyl disulfide (19.69%), as well as cis-propenyl sec-butyl disulfide and germacrene B [29]. Apigenin, quercetin, patuletin, and luteolin are the active compounds in chamomile [30]. Fennel essential oil contains anethol, limonene, fenchone, estragole,

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umbelliferone, scopletin, scoparin, bergapten, psoralen, and xanthotoxin [31]. Peppermint essential oil includes menthol, mentone, neomenthol, methyl acetate, and 1,8-cineole [32]. Dill essential oil contains compounds such as flavonoids, coumarins, xanthotoxin, and triterpenes [33]. The phenylpropanoid compounds in basil include eugenol, methyl eugenol, phenyl cinnamate, methyl chavicol, and elemicin [34]. Lavender contains linalyl acetate, linalool, geraniol, cineole, tannins, coumarins, and the flavonoid luteolin [35]. Black cumin contains alpha-terpinene-7-al, n-dodecanal, cumin aldehyde, 1,8-cineole, alpha-terpinene, and sabinene [36]. Phytochemical analysis of lemon balm shows it contains citronellal, citral, geraniol, linalool, eugenol acetate, rosmarinic acid, phenolic acids, and flavonoids [37]. Daily consumption of herbal teas by the mother can also help reduce infant colic [38]. Although doctors do not fully understand the causes of colic, herbal medicines with analgesic, sedative, antiemetic, antispasmodic, and carminative effects can improve colic symptoms [39-41]. Certain medicinal plants contain bioactive compounds such as flavonoids and polyphenols, which exhibit antioxidant and anti-inflammatory effects [42-44]. These properties may help alleviate infantile colic by modulating gastrointestinal function, reducing intestinal inflammation, and minimizing oxidative stress in the digestive tract.

Conclusion

The active compounds in medicinal plants include complex chemical substances that are produced and stored in various parts of the plants and are often used as raw materials in pharmaceuticals. Many of the therapeutic and medicinal effects of plants are due to the presence of these active compounds, such as plant antioxidants, phenols, flavonoids, flavones, saponins, tannins, and anthocyanins.

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.

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References

1. Gelfand AA. Infant colic. In: Seminars in Pediatric Neurology. 2016;23(1):79-82. doi:10.1016/j.spen.2016.01.009.
2. Zeevenhooven J, Browne PD, l'Hoir MP, de Weerth C, Benninga MA. Infant colic: mechanisms and management. Nat Rev Gastroenterol Hepatol. 2018;15(8):479-96. doi:10.1038/s41575-018-0007-9.
3. Mehran S, Ghodratizadeh S, Zolfi-Gol A, Charkhian H, Ranjbari M, Ebrahimi V, Gholinejad Z. Titanium Dioxide Nanoparticle and Cardiovascular Diseases: A Critical Review of the Literature and Possible Underlying Mechanisms. Nano Biomedicine & Engineering. 2022 Oct 1;14(4).
4. Zeevenhooven J, Browne PD, l'Hoir MP, de Weerth C, Benninga MA. Infant colic: mechanisms and management. Nat Rev Gastroenterol Hepatol. 2018;15(8):479-96. doi:10.1038/s41575-018-0007-9.
5. Miller-Loncar C, Bigsby R, High P, Wallach M, Lester B. Infant colic and feeding difficulties. Arch Dis Child. 2004;89(10):908-12. doi:10.1136/adc.2003.045468.
6. Sarasu JM, Narang M, Shah D. Infantile colic: an update. Indian Pediatr. 2018;55:979-87.
7. 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
8. 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.
9. Zangeneh MM, Zangeneh A, Etemadi N, Tabatabaei Aghda SJ, Pourkamalzadeh M, Zand S, et al. The Effect of Nano Silver Particles of the Aqueous Extract of *Artemisia aucheri* on the Healing Process of Skin Wounds in Rats. pbp. 2023;5(1):1-7.
10. Javan R, Feyzabadi Z, Kiani MA. Management of infantile colic; based on traditional Iranian medicine.
11. Montaseri S, Pourarian S, Montaseri H. Effects of Fumaria extract on colic pain in 3-16 weeks infants. Iran J Neonatol. 2013;4(2):10-5.
12. Shojaei H, Heidary SM, Moosavi Nezhad R, Rahafard S, Seydmohammadkhani A, Khakpour M, Ghahremani S, Salari Nasab J, Jafarpour H. The effect of fennel on infantile colic: A systematic review and meta-analysis. Int J Pediatr. 2020;8(3):11087-93. doi:10.22038/IJP.2020.44787.3642.
13. Ahmadipour S, Ahmadipour S, Mohsenzadeh A, Asadi-Samani M. The importance of some native medicinal

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plants of Iran effective on gastrointestinal disorders in children: A review. Der Pharm Lett. 2016;8(1):61-6.
14. Mohammadian-Dameski M, Farhat A, Afzal Aghaee M, Nademi Z, Hadianfar A, Shirazinia M, Motavasselian M, Askari VR. The effect of topical olive oil application on the symptoms of infantile colic: A randomized, double-blind, placebo-controlled clinical trial. Health Sci Rep. 2023;6(4). doi:10.1002/hsr2.1164.
15. Vakili M, Ahmadipour S, Rahmani P. Concise review: Herbal remedies and herbal plants for constipation in children. Biomed Res Ther. 2018;5(5):2260-7. doi:10.15419/bmrat.v5i5.442.
16. Ghazanfarpour M, Sadeghi R, Kiani MA, Khorsand I, Saeidi M. Most common herbal medicines in the treatment of Iranian children: A systematic review. Int J Pediatr. 2014;2(4.3):437-44.
17. Mohamadi Sorme F, Tabarra M, Alimadady H, Rahimi R, Sepidarkish M, Karimi M. Efficacy of *Matricaria chamomilla* L. in infantile colic: A double-blind, placebo-controlled randomized trial. J Pharm Res Int. 2020;31(6):1-1.
18. Mohammadi G, Ghazanfarpour M, Kargarfard L, Babakhanian M. Effectiveness of herbal medicines containing phytoestrogens to treat infantile colic: A meta-analysis review. J Pediatr Rev. 2019;7(1):1-0.
19. Fazel N, Pejhan A, Taghizadeh M, Tabarraei Y, Sharifi N. Effects of *Anethum graveolens* L. (Dill) essential oil on the intensity of retained intestinal gas, flatulence, and pain after cesarean section: A randomized, double-blind placebo-controlled trial. J Herb Med. 2017;8:8-13. doi:10.1016/j.hermed.2017.03.003.
20. Mohammadian Dameski M, Mehri M, Feyzabadi Z. Flatulent foodstuff, an agent in the creation of infantile colic: a narrative study based on traditional Iranian medicine and modern investigation. Int J Pediatr. 2017;5(2):4285-93.
21. Amiri MS, Joharchi MR. Ethnobotanical investigation of traditional medicinal plants commercialized in the markets of Mashhad, Iran. Avicenna J Phytomed. 2013;3(3):254.
22. Shojaei H, Heidary SM, Moosavi Nezhad R, Rahafard S, Seydmohammadkhani A, Khakpour M, Ghahremani S, Salari Nasab J, Jafarpour H. The effect of fennel on infantile colic: A systematic review and meta-analysis. Int J Pediatr. 2020;8(3):11087-93. doi:10.22038/IJP.2020.44787.3642.
23. Yousefi SS, Sadeghpour O, Hamzehgardeshi Z, Sohrabvand F. The effects of *Carum carvi* (Bunium persicum Boiss) on early return of bowel motility after Caesarean section: double-blind, randomized, placebo-controlled trial. J Fam Reprod Health. 2019;13(1):35.
24. Mutlu B, Erkut Z, Şerife AV, Girgin SS, Gönen İ. The practices used by mothers to infantile colic and their perceptions on the benefits of the practices. Online Turk Sağlık Bilimleri Dergisi. 2020;5(1):8-16.
25. Guerrini A, Tacchini M, Chiocchio I, Grandini A, Radice M, Maresca I, Paganetto G, Sacchetti G. A Comparative Study on Chemical Compositions and Biological Activities of Four Amazonian Ecuador Essential Oils: *Curcuma longa* L. (Zingiberaceae), *Cymbopogon citratus* (DC.) Stapf, (Poaceae), *Ocimum campechianum* Mill. (Lamiaceae), and *Zingiber officinale* Roscoe (Zingiberaceae). Antibiotics. 2023;12(1):177. doi:10.3390/antibiotics12010177.
26. Khelouf I, Karoui IJ, Lakoud A, Hammami M, Abderrabba M. Comparative chemical composition and antioxidant activity of olive leaves *Olea europaea* L. of Tunisian and Algerian varieties. Heliyon. 2023;9(12). doi:10.1016/j.heliyon.2023.e16403.
27. Khaldoune K, Fdil N, Ali MA. Exploring Aloe vera: A comprehensive review on extraction, chemical composition, biological effects, and its utilization in the synthesis of metallic nanoparticles. Biocatal Agric Biotechnol. 2024;57:103052. doi:10.1016/j.bcab.2023.103052.
28. Shetty NS, Lakshmikanthan M, Anusha B, Kumar NA. Aniseed (*Pimpinella anisum*). In: Medicinal Spice and Condiment Crops. 2024. p. 131-145.
29. Amiri H, Hassan Gavyar PH, Hassanzadeh SK. Effect of Lavandula angustifolia essential oil on treatment of infantile colic: A randomized, double-blind, placebo-controlled study. Complement Ther Med. 2019;46:160-166. doi:10.1016/j.ctim.2019.06.012.
30. Kose K, Seker S. Foeniculum vulgare as a commonly used plant in gastrointestinal problems and a promising agent against colic: A review. Journal of Ethnopharmacology. 2021;280:114-134. doi:10.1016/j.jep.2021.114054.
31. Zhao L, Zhong W, Kong X, Kang Q, Hao L, Zhu J, et al. Profiling the chemical properties of *Foeniculum vulgare* Mill. and its flavonoids through comprehensive LC-MS/MS to evaluate their anti-motion sickness effect. Fitoterapia. 2024;173:105816. doi:10.1016/j.fitote.2023.105816.
32. El Omari N, Chamkhi I, Balahbib A, Benali T, Akhazzane M, Ullah R, et al. GC-MS-MS analysis and biological properties determination of *Mentha piperita* L. essential oils. Biochem Syst Ecol. 2024;116:104875. doi:10.1016/j.bse.2023.104875.
33. Milenković L, Ilić ZS, Stanojević L, Danilović B, Šunić L, Kevrešan Ž, et al. Chemical composition and bioactivity of dill seed (*Anethum graveolens* L.) essential oil from plants grown under shading. Plants. 2024;13(6):886. doi:10.3390/plants13060886.
34. Wirtu SF, Mishra AK, Jule LT, Ramaswamy K. *Ocimum basilicum* and *Ocimum americanum*: A systematic literature review on chemical compositions and antimicrobial properties. Nat Prod Commun. 2024;19(4):1934578X241247640. doi:10.1177/1934578X241247640.
35. Massoud RI, Bouaziz M, Abdallah H, Zeiz A, Flamini G, El-Dakdouki MH. Comparative study on the chemical composition and biological activities of the essential oils of *Lavandula angustifolia* and *Lavandula x intermedia* cultivated in Lebanon. ACS Omega. 2024;9(7):4125-34. doi:10.1021/acsomega.4b00256.
36. Agnihotri V, Shashni S, Tripathi M. Morphological, phytochemical and pharmacological properties of *Carum carvi* (Caraway) and *Bunium persicum*

[Downloaded from pbp.medilam.ac.ir on 2026-11-05]

(Black Caraway) seeds: A review. J Food Eng Technol. 2024;13(1):25-31.
37. Hosseinabadi S, Yavari A, Abdollahi F. Essential oil variation in Melissa officinalis L. cultivated under industrial field conditions: effects of different harvesting times and plant materials. J Essent Oil Bear Plants. 2024;27(1):285-99.
38. Duygu A, Handan A, Gözüm S, Orbak Z, Karaca Çifçi E. Effectiveness of massage, sucrose solution, herbal tea or hydrolysed formula in the treatment of infantile colic. J Clin Nurs. 2008;17(13):1754-61. doi:10.1111/j.1365-2702.2008.02326.x.
39. Said AA, Derfoufi S, Sbai I, Benmoussa A. Ethnopharmacological survey of traditional medicinal plants used for the treatment of infantile colic in Morocco. J Chem Pharm Res. 2015;7(7):664-71.
40. Oshikoya KA, Senbanjo IO, Njokanma OF. Self-medication for infants with colic in Lagos, Nigeria. BMC Pediatr. 2009;9:9. doi:10.1186/1471-2431-9-9.
41. Haq AU, Imran H. Medicinal plants with spasmolytic activity for treating infantile colic. Phytopharmacological Commun. 2022;2(2):159-75.
42. Pirhadi M, Altememy D. Determination of methanol and ethanol levels in herbal distillates (mint, burdock, spring orange, chicory, thyme, chives, and horseradish) at supply level of Ahvaz using gas chromatography. Journal of Biochemicals and Phytomedicine. 2024; 3(1): 36-40. doi: 10.34172/jbp.2024.8.
43. Usunobun U, Mukhtar T, Abubakar H, Pirhadi M. Determining the amount of lead heavy metal in Lavandula angustifolia medicinal plant. Journal of Biochemicals and Phytomedicine. 2023; 2(382: 8–85. doi: 10.34172/jbp.2013.16.
44. Zolfigol A, Pirhadi M. Phytotherapy in Children's Colds. pbp 2025; 7 (1) :96-100. doi: 10.61186/pbp.7.1.2

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