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

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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

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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].

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.

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Asafoetida	*Ferula assa-foetida*	Umbelliferae	This plant is anti-flatulent and helps in digestion and relieves the pain of gas retention.
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

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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, 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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