



The Use of Medicinal Plants in the Treatment of Vaginitis: A Review of Traditional Iranian Medicine Sources

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Abstract

Background and Objective: Traditional Iranian medicine has long provided natural and effective remedies for managing gynecological conditions resulting from various factors. This review aimed to identify and compile medicinal plants traditionally used in Iran for treating vaginitis.

Methods: Given the focus on traditional medicine, relevant medicinal plants were identified and reviewed using classical texts on Iranian traditional medicine, botanical literature, and credible online databases.

Results: Historically, a wide range of medicinal plants have been utilized in the treatment of vaginitis in Iran, including *Trigonella foenum-graecum* L., *Melaleuca alternifolia* (Maiden & Betche) Cheel, *Nigella sativa* L., *Curcuma longa* L., *Thymus vulgaris* L., *Mentha pulegium* L., *Salvia officinalis* L., *Matricaria chamomilla* L., *Achillea millefolium* L., *Calendula officinalis* L., *Rosa* spp. L., *Rubus idaeus* L., *Coriandrum sativum* L., *Foeniculum vulgare* Mill., *Ocimum basilicum* L., *Olea europaea* L., *Aloe barbadensis* Mill., *Lavandula angustifolia* Mill., *Mentha piperita* L., *Myrtus communis* L., *Viola odorata* L., *Artemisia absinthium* L., *Allium sativum* L., *Zingiber officinale* Roscoe. In traditional Iranian medicine, the Lamiaceae and Asteraceae families were the most commonly used for the treatment of vaginitis. The primary plant parts utilized included leaves (43%), flowers (21%), and seeds (12%). Regarding preparation methods, 71% of remedies were administered as decoctions, while 29% were prepared as infusions.

Conclusion: Traditional Iranian medicine offers a diverse array of herbal interventions for vaginitis. Historical evidence and classical texts suggest that numerous plants possess anti-inflammatory and antibacterial properties, supporting their therapeutic potential in managing this condition.

Keywords: Herbal medicine, Iran, Treatment, Vaginitis, Women

Introduction

Vaginitis is defined as inflammation of the vagina, often presenting with symptoms, such as

abnormal discharge, itching, and discomfort (1). This condition commonly results from disruptions in the vaginal microbiota or various

infections, with contributing factors, including postmenopausal estrogen decline and certain dermatological disorders (2). Vaginitis may involve both inflammation and infection of the vagina, caused by bacterial, fungal, or parasitic agents (3). The most prevalent forms are bacterial vaginosis (BV), yeast infections (candidiasis), and trichomoniasis, each of which requires accurate diagnosis and targeted treatment (3). Clinical manifestations typically include changes in the color, odor, or volume of vaginal discharge, itching or burning sensations, dyspareunia, dysuria, and mild bleeding or spotting (4). The characteristics of vaginal discharge can assist in differentiating types of vaginitis: grayish discharge with a fishy odor indicates BV; thick, white, cottage cheese-like discharge suggests a fungal infection; and yellowish-green discharge is characteristic of trichomoniasis (4). Bacterial vaginosis has been associated with an increased risk of cervical abnormalities and infections caused by pathogenic and non-pathogenic microorganisms (5).

Etiological factors for vaginitis include bacterial imbalances in the vaginal flora, *Candida albicans* infections, chemical irritants (non-infectious vaginitis), estrogen deficiency after menopause (vaginal atrophy), and sexually transmitted infections such as trichomoniasis (4). Additional risk factors include hormonal fluctuations (e.g., pregnancy, menopause, contraceptive use), sexual activity, certain medications (such as antibiotics and corticosteroids), uncontrolled diabetes, exposure to chemical hygiene products, vaginal douching, tight or damp clothing, and intrauterine device use (6).

Diagnosis is based on a comprehensive medical history, pelvic examination with a speculum, collection of vaginal secretions for microbiological testing, and measurement of vaginal pH (7). An elevated vaginal pH may suggest BV or trichomoniasis; however, pH

assessment alone is insufficient for definitive diagnosis and must be corroborated by laboratory tests (7).

Treatment strategies depend on the underlying causes. BV is typically managed with antibiotics, such as metronidazole (8). Fungal infections are treated with topical or systemic antifungals, including miconazole. Vaginal atrophy is addressed with local estrogen therapy, and trichomoniasis is treated with metronidazole or tinidazole for both sexual partners (9). In cases of non-infectious vaginitis, avoiding irritants and using gentle hygiene products are recommended (9).

Medicinal plants play a significant role in vaginitis management in traditional Iranian medicine. Due to their anti-inflammatory and antiseptic properties, these plants can alleviate symptoms, such as itching, burning, and abnormal discharge (10). Traditional approaches also emphasize lifestyle modifications and restoration of bodily balance to prevent recurrence (11).

Given the high prevalence of vaginitis and its detrimental impact on women's quality of life, this review aimed to compile and identify medicinal plants used in its treatment within the framework of traditional Iranian medicine (12, 13). Such investigations may enhance our understanding of natural therapeutic mechanisms and inform the development of complementary treatment strategies.

Material and Methods

This systematic review, grounded in traditional Iranian medicine, aimed to identify and analyze medicinal plants used for vaginitis treatment. The research was conducted in two main stages:

Stage 1: Identification and Collection of Medicinal Plants

In this stage, medicinal plants relevant to vaginitis treatment were gathered from credible sources in traditional Iranian medicine,

including authoritative texts, herbal references, and reliable online databases (13-20). The inclusion criteria included documented use of the plant in the treatment of vaginal inflammation or infection, and evidence of its application in traditional sources. The exclusion criteria included sources that lacked sufficient information, did not specify vaginitis applications, or were deemed unreliable.

Stage 2: Review of Scientific Evidence and Recent Studies

At this stage, scientific evidence related to the identified plants was evaluated to confirm or complement the effects documented in traditional medicine with findings from modern research. The sources included articles published in international and national scientific databases. The inclusion criteria included laboratory, clinical, and review studies focusing on the anti-inflammatory, antiseptic, and symptom-reducing properties of the plants in the treatment of vaginitis. Studies that lacked scientific documentation, were irrelevant, or were of low quality were excluded.

Through this approach, the current study not only identified traditional medicinal plants used

to treat vaginitis but also evaluated their efficacy based on modern scientific evidence. This study aimed to provide a foundation for future research and the development of natural treatments for vaginitis.

Results

A review of traditional medical tests revealed that various medicinal plants have been historically used in Iran for vaginitis treatment. These plants include *Trigonella foenum-graecum* L., *Melaleuca alternifolia* (Maiden & Betche) Cheel, *Nigella sativa* L., *Curcuma longa* L., *Thymus vulgaris* L., *Mentha pulegium* L., *Salvia officinalis* L., *Matricaria chamomilla* L., *Achillea millefolium* L., *Calendula officinalis* L., *Rosa* spp. L., *Rubus idaeus* L., *Coriandrum sativum* L., *Foeniculum vulgare* Mill., *Ocimum basilicum* L., *Olea europaea* L., *Aloe barbadensis* Mill., *Lavandula angustifolia* Mill., *Mentha piperita* L., *Myrtus communis* L., *Viola odorata* L., *Artemisia absinthium* L., *Allium sativum* L., *Zingiber officinale* Roscoe. Table 1 presents a detailed list of medicinal plants used to treat vaginitis, along with their botanical information.

Table 1 Medicinal Plants Used in Traditional Iranian Medicine for the Treatment of Vaginitis

English Name	Scientific Name	Plant Family	Plant Part Used	Traditional Use
Fenugreek	<i>Trigonella foenum-graecum</i> L.	Fabaceae	Seed	Infusion
Tea tree	<i>Melaleuca alternifolia</i> (Maiden & Betche) Cheel	Myrtaceae	Leaf	Decoction
Black seed	<i>Nigella sativa</i> L.	Ranunculaceae	Seed	Decoction
Turmeric	<i>Curcuma longa</i> L.	Zingiberaceae	Root	Decoction
Thyme	<i>Thymus vulgaris</i> L.	Lamiaceae	Leaf, flower	Infusion
Pennyroyal	<i>Mentha pulegium</i> L.	Lamiaceae	Leaf, stem	Infusion
Sage	<i>Salvia officinalis</i> L.	Lamiaceae	Leaf	Infusion
Chamomile	<i>Matricaria chamomilla</i> L.	Asteraceae	Flower	Decoction
Yarrow	<i>Achillea millefolium</i> L.	Asteraceae	Flower, leaf	Decoction
Calendula	<i>Calendula officinalis</i> L.	Asteraceae	Flower	Decoction
Rose	<i>Rosa</i> spp. L.	Rosaceae	Flower	Infusion
Raspberry	<i>Rubus idaeus</i> L.	Rosaceae	Fruit, leaf	Infusion
Coriander	<i>Coriandrum sativum</i> L.	Apiaceae	Seed	Decoction
Fennel	<i>Foeniculum vulgare</i> Mill.	Apiaceae	Seed	Decoction
Basil	<i>Ocimum basilicum</i> L.	Lamiaceae	Leaf	Decoction
Olive	<i>Olea europaea</i> L.	Oleaceae	Leaf, fruit	Decoction
Aloe vera	<i>Aloe barbadensis</i> Mill.	Asphodelaceae	Leaf gel	Decoction
Lavender	<i>Lavandula angustifolia</i> Mill.	Lamiaceae	Flower, leaf	Decoction
Peppermint	<i>Mentha piperita</i> L.	Lamiaceae	Leaf	Infusion
Myrtle	<i>Myrtus communis</i> L.	Myrtaceae	Leaf, fruit	Decoction

Violet	<i>Viola odorata</i> L.	Violaceae	Flower, leaf	Decoction
Wormwood	<i>Artemisia absinthium</i> L.	Asteraceae	Leaf, stem	Decoction
Garlic	<i>Allium sativum</i> L.	Amaryllidaceae	Bulb	Decoction
Ginger	<i>Zingiber officinale</i> Roscoe	Zingiberaceae	Root	Infusion

Analysis of plant families used in the treatment of vaginitis in traditional Iranian medicine revealed that Lamiaceae and Asteraceae were the most frequently utilized. Figure 1 shows detailed information on the distribution and

frequency of plant families employed in traditional vaginitis treatments.

In traditional practice, 71% of the plants were used as decoctions while 29% were prepared as infusions.

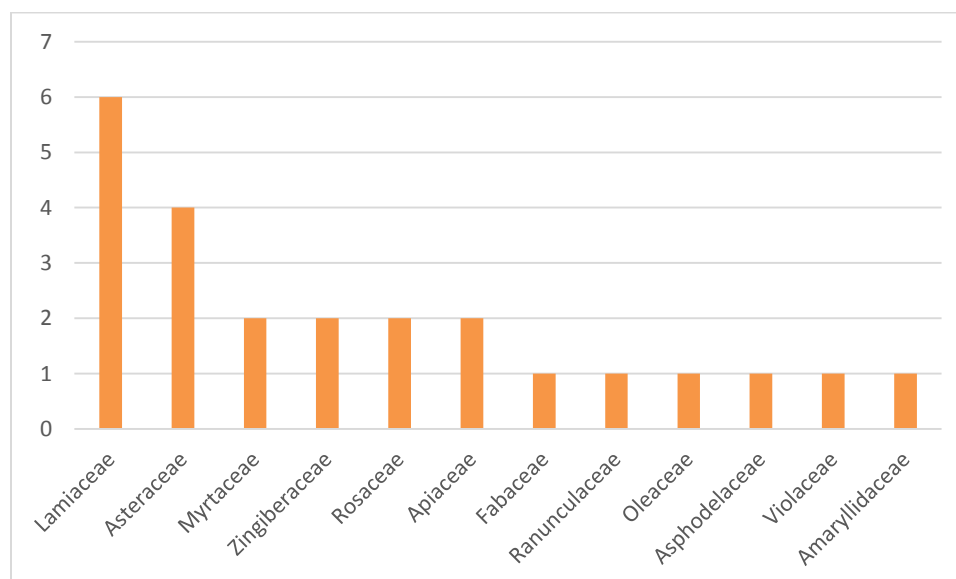


Fig. 1 Frequency of Plant Families Used in the Treatment of Vaginitis in Traditional Iranian Medicine

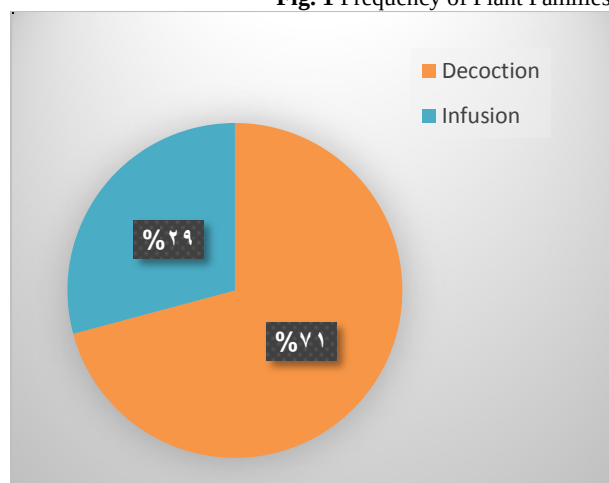


Fig. 2 Traditional Methods of Using Medicinal Plants for Vaginitis in Traditional Iranian Medicine

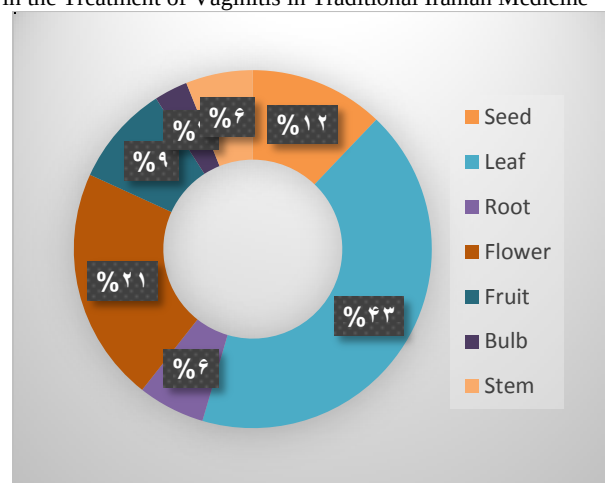


Fig. 3 Percentage of Plant Parts Used in the Treatment of Vaginitis in Traditional Iranian Medicine

Analysis of the plant parts employed revealed that leaves (43%), flowers (21%), and seeds (12%) were the most commonly used. Figure 3 shows detailed percentages of other plant parts utilized in traditional treatments for vaginitis.

Discussion

The available evidence suggests that medicinal plants and their extracts have significant potential to treat various types of vaginitis, including candidal, bacterial, aerobic, and

atrophic vaginitis. These natural compounds primarily exert their effects through antibacterial, antifungal, anti-inflammatory, and mucosal-protective properties, helping to alleviate common symptoms, such as itching, discharge, erythema, and inflammation (22, 23).

Studies have demonstrated that *Trigonella foenum-graecum* has notable effects on women's health and can improve symptoms of vaginal infections (22). Tea tree oil (*Melaleuca alternifolia*), which contains active compounds, such as terpinen-4-ol, exhibits antibacterial, antifungal, antitrichomonal, and anti-inflammatory properties, making it an effective antiseptic for the treatment of vulvovaginitis, particularly candidiasis, and some skin infections (23).

The combination of *Nigella sativa* L. with clotrimazole vaginal cream is more effective in treating candidal vulvovaginitis compared to clotrimazole alone, significantly reducing symptoms, such as itching, discharge, and inflammation (24). Additionally, plants, such as thyme, pennyroyal, saffron, and sage, possess potent antibacterial activity and can be used as alternatives for treating bacterial infections or for enhancing antibiotic sensitivity (25).

The combination of sage and clotrimazole has also been shown to prevent the recurrence of candidal vulvovaginitis and enhance treatment effectiveness compared to clotrimazole alone, without causing significant side effects (26). Vaginal creams containing *Achillea millefolium* have shown promise in reducing symptoms of candidal vulvovaginitis; however, further studies with larger sample sizes and varying doses are needed to assess the precise effects of this treatment (27).

Vaginal creams containing *Calendula officinalis* have proven effective in treating BV and serve as a suitable alternative to chemical drugs without causing significant side effects (28). The essential oils of coriander and thyme exhibited both antibacterial and antifungal activities, with

coriander being more effective against bacteria and thyme being more effective against *Candida albicans*. These findings provide scientific support for the safe use of these oils as alternative treatments for vaginal infections (29).

Vaginal creams containing flaxseed, fennel, and sage, sources of phytoestrogens, have been shown to reduce symptoms of atrophic vaginitis following menopause, though additional clinical studies are needed to confirm their effectiveness (30). Hydroethanolic extracts of *Ocimum basilicum* and *O. gratissimum* have demonstrated antibacterial, antioxidant, and anti-inflammatory properties, making them viable natural options for the prevention and treatment of aerobic vaginitis (31).

Essential oils of *Boswellia serrata* and *Mentha piperita* exhibit antibacterial and antifungal activities, with myrrh showing the most significant effect against *Pseudomonas aeruginosa*. However, peppermint demonstrated higher toxicity in toxicity tests on *Artemia salina* eggs, necessitating further safety investigations (32).

Women's health, as a critical component of public health, requires special attention to their physiological, psychological, and social needs. Women's diseases encompass issues, such as cancers, hormonal disorders, reproductive health problems, and pregnancy-related conditions, where early detection and prevention play a significant role in maintaining health and quality of life (33-35). Finally, vaginal gels containing *Myrtus communis* L. or *Berberis vulgaris* in a metronidazole base have been found to improve BV treatment and reduce recurrence rates (36). Overall, scientific evidence supports the use of medicinal plants as a safe, effective, and multifaceted treatment for vaginitis. These plants target both microbial causes of the condition and help reduce inflammation and vaginal mucosal disruption. However, to optimize therapeutic effects and ensure long-term safety, larger clinical trials, optimal dosing,

formulation standardization, and exploration of the molecular mechanisms are necessary.

Conclusion

This study underscores the significant role of medicinal plants in the prevention and treatment of various types of vaginitis, serving as safe alternatives or complementary therapies to conventional chemical treatments. The antibacterial, antifungal, anti-inflammatory, and phytoestrogenic compounds present in these plants help alleviate common symptoms, including itching, abnormal discharge, and inflammation. Plants such as fenugreek, black seed, sage, chamomile, and calendula, along with essential oils derived from coriander, thyme, myrrh, and peppermint, have demonstrated clinical and antimicrobial benefits. Phytoestrogenic compounds in flaxseed, fennel, and sage may alleviate atrophic vaginitis in postmenopausal women. Moreover, combining these medicinal plants with topical agents, such as clotrimazole or metronidazole, can enhance therapeutic outcomes. Further clinical trials and molecular investigations are warranted to optimize safety, dosing, and efficacy.

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Conceptualization, supervision, and project administration: Z.S.

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