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The Role of Indigenous Iranian Medicinal Plants in Supporting Pregnancy Health: A Traditional Medicine-Based Therapeutic Approach and Their Mechanisms of Action

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A B S T R A C T

Objective: Pregnancy is a critical period requiring special attention to both maternal and fetal health. The selection of effective and safe treatments for addressing pregnancy-related complications is of paramount importance. In this regard, medicinal plants, as a natural and complementary option within traditional medicine, have garnered increasing interest due to their potential in promoting pregnancy health and fetal development.
Methodology: This review investigates the indigenous medicinal plants of Iran traditionally used to support and strengthen pregnancy. The data collection involved comprehensive searches of reputable scientific databases including Web of Science, PubMed, Scopus, and Google Scholar, as well as classical texts of Persian traditional medicine and credible online sources. Non-relevant studies were excluded, and only those aligned with the subject matter were critically analyzed.
Results: According to the historical records and doctrines of Iranian traditional medicine, numerous herbal remedies are recommended for promoting maternal health during pregnancy. These include *Elettaria cardamomum* (cardamom), *Zingiber officinale* (ginger), *Melissa officinalis* (lemon balm), *Taraxacum officinale* (dandelion), *Lavandula angustifolia* (lavender), *Matricaria chamomilla* (chamomile), *Thymus vulgaris* (thyme), *Foeniculum vulgare* (fennel), *Glycyrrhiza glabra* (licorice), *Salix aegyptiaca* (willow), *Mentha piperita* (peppermint), *Trigonella foenum-graecum* (fenugreek), *Alhagi maurorum* (camelthorn), *Cuminum cyminum* (green cumin), *Tribulus terrestris*, *Urtica dioica* (nettle), *Rosmarinus officinalis* (rosemary), *Rosa damascena* (damask rose), *Lippia citriodora* (lemon verbena), *Cinnamomum verum* (cinnamon), and *Ziziphus jujuba* (jujube). The beneficial properties of these herbs such as anti-inflammatory, antioxidant, and calming effects contribute significantly to maternal well-being.
Conclusion: Evidence indicates that medicinal plants can play a vital role in supporting maternal health during pregnancy. Their therapeutic actions—ranging from reducing inflammation to enhancing systemic function underscore their relevance in natural prenatal care. Nonetheless, to avoid adverse outcomes and herb-drug interactions, their use must be supervised by qualified healthcare professionals or traditional medicine specialists.
Keywords: Pregnancy, Maternal Health, Medicinal Plants, Traditional Medicine, Protective

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Introduction

Pregnancy is a physiological condition in which a fetus develops inside the uterus following the fertilization of an ovum by a sperm. This process typically spans approximately 40 weeks and is divided into three trimesters [1]. During pregnancy, the female body undergoes a myriad of physical, hormonal, and psychological changes to facilitate fetal growth and development [2]. Early detection of pregnancy, alongside appropriate prenatal care, can significantly increase the likelihood of a healthy gestational experience and neonatal outcome [2,3]. Common early pregnancy symptoms include missed menstruation, breast tenderness, nausea, spotting, insomnia, heartburn, gastrointestinal issues, acne, frequent urination, and lower back pain—all primarily linked to hormonal and anatomical shifts occurring during gestation [3]. Maintaining maternal and fetal health is paramount, particularly considering potential complications such as gestational diabetes. Meticulous medical oversight and effective management of pre-existing conditions are crucial to mitigating these risks [4]. Adequate prenatal care profoundly influences both maternal physical and psychological well-being and fetal development. It plays a central role in preventing complications and ensuring a healthy delivery [5]. Nutritional adequacy before and throughout pregnancy is vital, with an additional daily intake of approximately 450 kcal recommended during gestation [6]. Essential dietary components include vegetables, fruits, whole grains, lean red meats, oily fish, low-fat dairy or alternatives, and folate-rich foods such as nuts and dark green leafy vegetables [6]. Given the unique and sensitive nature of pregnancy, regular health monitoring is essential for ensuring maternal and fetal safety. Furthermore, considering the mother's pivotal role in family and societal health, prenatal care assumes enhanced significance. The ultimate objectives of such care include sustaining maternal and fetal well-being and ensuring a safe, complication-free delivery [7]. Importantly, the use of synthetic medications during pregnancy may pose teratogenic risks or interfere with gestational physiology. Thus, many pharmaceuticals are contraindicated or limited during this period [8]. The growing interest in herbal medicine during pregnancy stems largely from concerns about the adverse effects of conventional drugs and a preference for natural alternatives [9]. Many expectant mothers seek herbal remedies to manage symptoms such as nausea, insomnia, muscular discomfort, and digestive issues [10]. However, it is essential to recognize that not all herbs are safe for use during pregnancy; some may have harmful effects on the fetus or elicit unwanted reactions. The objective of the present review is to identify and describe the indigenous medicinal plants of Iran that are traditionally utilized to support pregnancy and maternal health.

Methodology

This narrative review aims to identify indigenous medicinal plants of Iran traditionally used to support and maintain pregnancy health. Data were collected through systematic searches of internationally recognized databases such as Web of Science, PubMed, Scopus, and Google Scholar. In addition, reputable Persian traditional medicine texts and credible online sources were reviewed. Studies that lacked relevance or were published in languages other than Persian or English were excluded from the analysis. The final selection included peer-reviewed articles and texts that specifically addressed the use of Iranian medicinal plants during pregnancy

Results

According to Iranian traditional medicine, various medicinal plants have long been employed to support and sustain a healthy pregnancy. Among the most frequently cited are cardamom (*Elettaria cardamomum*), ginger (*Zingiber officinale*), chamomile (*Matricaria chamomilla*), thyme (*Thymus vulgaris*), fennel (*Foeniculum vulgare*), mint (*Mentha* spp.), fenugreek (*Trigonella foenum-*

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graecum), cinnamon (*Cinnamomum verum*), and jujube (*Ziziphus jujuba*). These plants are believed to contribute to maternal health owing to their anti-inflammatory, antioxidant, and calming properties [11–25].

Table 1 below provides a detailed list of native Iranian medicinal plants traditionally recognized for their protective roles during pregnancy. For each plant, the table outlines its botanical characteristics, traditional uses, and proposed mechanisms of action based on ethnomedical sources and contemporary understanding.

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Table 1: Medicinal Plants and Their Active Compounds with Mechanisms of Action

English Name	Persian Name	Scientific Name	Plant Family	Active Compound(s)	Mechanism of Action
Cardamom	Hel	*Elettaria cardamomum*	Zingiberaceae	Limonene	Anti-inflammatory, pain-relieving, supports digestion, and reduces nausea during pregnancy
Ginger	Zangabil	*Zingiber officinale*	Zingiberaceae	Gingerol	Eases morning sickness, relieves muscle pain, and reduces inflammation
Lemon Balm	Badranjbouye	*Melissa officinalis*	Lamiaceae	Anethole	Calms the nerves, eases anxiety, supports restful sleep, and relieves muscle spasms
Dandelion	Ghasedak	*Taraxacum officinale*	Asteraceae	Taraxacin	Acts as a diuretic, reduces swelling and inflammation, and strengthens digestive and liver function
Lavender	Ostokhodous	*Lavandula angustifolia*	Lamiaceae	Linalool	Soothing, anti-anxiety, stress-relieving, and enhances sleep quality
Chamomile	Babouneh	*Matricaria chamomilla*	Asteraceae	Azulene	Anti-inflammatory, antispasmodic, calming, and relieves stomach discomfort
Thyme	Avishan	*Thymus vulgaris*	Lamiaceae	Thymol	Antibacterial, anti-inflammatory, relieves digestive and respiratory issues
Fennel	Razianeh	*Foeniculum vulgare*	Apiaceae	Anethole	Promotes lactation, aids digestion, and soothes abdominal pain

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Licorice	Shirinbayan	*Glycyrrhiza glabra*	Fabaceae	Glycyrrhizin	Anti-inflammatory, boosts immunity, and protects liver and digestive function
Rose Water	Bidmeshk	*Rosa damascena*	Rosaceae	Rosmarinic acid	Calming, mood-enhancing, anti-inflammatory, and reduces anxiety
Mint	Naena	*Mentha piperita*	Lamiaceae	Menthol	Relieves bloating, supports digestion, and reduces nausea
Fenugreek	Shanbalileh	*Trigonella foenum-graecum*	Fabaceae	Phytosterols	Promotes milk production, improves digestion, and helps regulate blood sugar
Tribulus	Kharshotor	*Tribulus terrestris*	Zygophyllaceae	Saponins	Supports liver function, eases muscle pain, and reduces inflammation
Cumin	Ziresabz	*Cuminum cyminum*	Apiaceae	Cumene, Thymol	Improves digestion, reduces bloating and abdominal discomfort, and soothes nausea
Tribulus	Kharkhasak	*Tribulus terrestris*	Zygophyllaceae	Saponins	Strengthens immunity and enhances blood circulation
Nettle	Gazaneh	*Urtica dioica*	Urticaceae	Hydroxytryptamine	Immune-boosting, reduces swelling and inflammation
Rosemary	Rozmary	*Rosmarinus officinalis*	Lamiaceae	Caffeic acid, Rosmarinic acid	Enhances circulation, reduces inflammation, and supports digestion
Rose	Golemohammadi	*Rosa damascena*	Rosaceae	Rosewater, Flavonoids	Relaxes the mind, reduces stress and anxiety, and supports immune function
Lemongrass	Behlimou	*Cymbopogon citratus*	Poaceae	Citral, Limonene	Calms the nerves, reduces anxiety, and improves sleep quality

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Cinnamon	Darchin	*Cinnamomum verum*	Lauraceae	Coumarin, Cinnamaldehyde	Anti-inflammatory, supports digestive health, and helps regulate blood sugar
Jujube	Anab	*Ziziphus jujuba*	Rhamnaceae	Saponins, Phytosterols	Immune-boosting, calming, and supports restful sleep

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Discussion

During pregnancy, the use of medicinal plants as a complementary and natural approach can significantly contribute to maternal well-being. One of the most well-known herbs in this context is Elettaria cardamomum (cardamom), valued for its limonene content, which exhibits anti-inflammatory and soothing properties. Cardamom has been traditionally recognized for its beneficial effects on the digestive system, particularly in alleviating morning sickness, thereby serving as a natural remedy for gastrointestinal discomfort [25]. *Zingiber officinale* (ginger), containing the active compound gingerol, is another extensively documented herb known for its effectiveness in reducing pregnancy-related nausea [27]. Gingerol not only possesses potent anti-inflammatory activity but also aids in relieving musculoskeletal pain. By improving gastrointestinal function, ginger proves highly advantageous for expectant mothers coping with digestive disturbances [27]. *Melissa officinalis* (lemon balm), rich in the compound anethole, offers calming and anxiolytic effects that are especially beneficial in reducing stress and enhancing sleep quality during pregnancy. Its antispasmodic properties also help alleviate muscular cramps, which tend to be more common in the later stages of gestation [28]. *Taraxacum officinale* (dandelion), with its natural diuretic qualities, assists in reducing oedema and inflammation resulting from fluid retention. Additionally, this plant supports liver function and digestion, contributing to detoxification and digestive balance issues often experienced during pregnancy [29]. *Lavandula angustifolia* (lavender), through its active component linalool, exerts relaxing and anxiolytic effects, thereby reducing stress and promoting emotional stability in pregnant women [30]. Likewise, *Matricaria chamomilla* (chamomile), due to its azulene content, displays anti-inflammatory and antispasmodic activities, making it effective for gastrointestinal pain and related discomforts. Chamomile's action in soothing digestive inflammation is also instrumental in alleviating nausea and vomiting [31]. *Thymus vulgaris* (thyme), which contains thymol, is known for its antibacterial and anti-inflammatory properties. It may aid in addressing both digestive and respiratory complaints during pregnancy, while also strengthening the immune system and improving gastrointestinal performance [32]. *Foeniculum vulgare* (fennel), because of its high anethole concentration, is reputed for promoting lactation, balancing hormonal activity, and easing gastrointestinal spasms. This herb is frequently employed to manage abdominal pain and other digestive disturbances common in pregnancy [33]. *Glycyrrhiza glabra* (liquorice), known for its glycyrrhizin content, supports immune and liver function while also offering anti-inflammatory benefits. It may play a role in reducing anxiety and supporting the nervous system, which can be especially helpful in managing stress during pregnancy [34]. *Rosa damascena* (Damask rose) is traditionally regarded for its calming and anti-inflammatory properties, which may contribute to mood enhancement and stress reduction in expectant mothers. Furthermore, it supports immune function and improves sleep quality, both vital for maternal health during gestation [35]. *Mentha* spp. (mint), containing menthol, is known for its carminative and soothing effects on the gastrointestinal tract. Mint is particularly useful in reducing nausea, abdominal pain, and bloating frequent complaints in pregnancy [36]. *Trigonella foenum-graecum* (fenugreek) helps regulate blood sugar and enhances digestion, while also being notable for its role in stimulating milk production [37]. *Alhagi maurorum* (camelthorn) offers anti-inflammatory and analgesic effects, supporting liver function and overall maternal health [38]. *Cuminum cyminum* (cumin), due to the presence of thymol and its anti-inflammatory properties, is beneficial in relieving abdominal bloating and nausea [39]. *Tribulus terrestris* (puncture vine) supports immune function and circulation, alleviating muscular and joint pain during pregnancy [40]. *Urtica dioica* (nettle) enhances immune function and improves blood circulation, thereby helping reduce swelling and inflammation, while also benefiting kidney function and urinary health [40]. Overall, the use of medicinal plants during pregnancy can offer a range of therapeutic benefits for both mother and fetus. Their anti-inflammatory, anxiolytic, digestive, and immune-modulating properties help alleviate the common discomforts associated with pregnancy and support maternal resilience throughout gestation. In many diseases and disorders [41-46], turning to nature and embracing traditional or natural therapeutic approaches can serve as a beneficial and complementary strategy helping to alleviate symptoms, support overall well-being, and enhance patients' quality of life [47].

Conclusion

In conclusion, the medicinal plants discussed herein demonstrate diverse therapeutic actions that can significantly alleviate common pregnancy-related symptoms such as nausea, stress, musculoskeletal pain, and digestive disturbances. While their use can offer substantial benefits, it is essential that these herbal remedies be administered under the supervision of qualified healthcare professionals to prevent potential drug-herb interactions or adverse effects. Integrating traditional herbal knowledge

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with modern medical oversight ensures both safety and efficacy in supporting maternal health during pregnancy.

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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

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

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