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The Most Important Medicinal Plants in the Treatment of Hypothyroidism in Iranian Traditional Medicine: A Review

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A B S T R A C T

Objective: Hypothyroidism occurs when the thyroid gland fails to produce enough hormones, leading to a reduction in metabolism and a slowing down of bodily functions. This condition is typically manageable with medication and is not usually a cause for major concern. The aim of this review study is to identify and report the most important medicinal plants effective in treating hypothyroidism in Iranian traditional medicine.

Methodology: In this review, we used keywords such as medicinal plants, hypothyroidism, Iranian traditional medicine, and herbal treatments to search for relevant articles. Databases like Google Scholar, SID, MegaIran, PubMed, and Scopus were used to search and gather reputable scientific articles. Articles and resources related to ethnobotany were reviewed and analyzed for information in this field.

Results: The medicinal plants most commonly used for treating hypothyroidism include *Zingiber officinale* Roscoe, *Malus domestica* Borkh., *Cocos nucifera* L., *Lens culinaris* Medik., *Curcuma longa* L., *Thymus vulgaris* L., *Cucurbita pepo* L., *Helianthus annuus* L., *Prunus dulcis* (Mill.) D.A.Webb, *Juglans regia* L., *Cinnamomum verum* J. Presl, *Allium sativum* L., *Arctium lappa* L., *Urtica dioica* L., *Matricaria chamomilla* L., *Vaccinium macrocarpon* Aiton, *Rubus idaeus* L., *Morus alba* L., *Morus nigra* L., *Salvia officinalis* L., *Aloysia citrodora* Paláu.

Conclusion: The use of medicinal plants in Iranian traditional medicine for the treatment of hypothyroidism highlights the potential of these plants to improve thyroid function and manage related symptoms. Further research and medical consultation are needed to effectively utilize Iran's native plant flora, so these plants can be used as adjunct therapies alongside standard treatments.

Keywords: Thyroid gland, Hormones, Hypothyroidism, Medicinal plants, Traditional medicine, Iran

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Introduction

Hypothyroidism, after diabetes, is the most common endocrine disorder and occurs when the thyroid gland is unable to produce sufficient amounts of triiodothyronine (T_3) and thyroxine (T_4) hormones [1]. These hormones play a fundamental role in regulating metabolism, heat production, and growth. The prevalence of this disease in women is three times higher than in men [2]. Approximately 2% of the global population suffers from this disorder, but many mild cases remain asymptomatic and are only detected through blood tests such as T_3 and T_4 levels [3]. Hypothyroidism gradually presents symptoms such as fatigue, joint pain, weight gain, constipation, reduced libido, hair loss, dry skin, decreased heart rate, memory impairment, depression, and dizziness [4]. The diagnosis is typically made through the evaluation of clinical symptoms, family history, and blood tests to measure thyroid hormone levels (T_3, T_4) and thyroid-stimulating hormone (TSH) [5]. If TSH levels are high and thyroid hormone levels are low, the individual is diagnosed with hypothyroidism [5]. The primary treatment for this condition is the use of hormone replacement medications such as levothyroxine. This medication helps regulate thyroid hormone levels and alleviate symptoms [6]. Adequate iodine intake in the diet (especially in areas where iodine deficiency is prevalent) can prevent the onset of hypothyroidism [7]. Untreated hypothyroidism can lead to complications such as imbalance in the elderly, heart diseases, infertility, joint pain, memory disorders, obesity, and peripheral nerve damage [8]. There is no definitive cure for hypothyroidism, but symptoms can be managed with synthetic thyroxine (levothyroxine) and adequate iodine [9]. A diverse and balanced diet, low in fat and sodium, is also beneficial. During pregnancy, iodine intake should be monitored by a doctor. For prevention, individuals at risk should consult their physician about iodine supplementation [8, 9].Traditional and herbal medicine has long been recognized as one of the effective ways to treat diseases [10]. In the treatment of hypothyroidism, medicinal plants play an important role, as many of these plants possess anti-inflammatory, antioxidant, and hormone-regulating properties, which can help improve thyroid function [11]. Since medicinal plants contain natural compounds, their use typically has fewer side effects compared to synthetic drugs, and they can be used as complementary treatments alongside traditional therapies for managing hypothyroidism [12, 13]. The purpose of this review is to identify and examine the most important medicinal plants effective in the treatment of hypothyroidism in Iranian traditional medicine.

Methodology

In this review study, keywords such as medicinal plants, hypothyroidism, Iranian traditional medicine, and herbal treatments were used to search for relevant articles. Databases such as Google Scholar, SID, MegaIran, PubMed, and Scopus were employed to search for and collect reputable scientific articles. Articles and resources related to ethnobotany were thoroughly reviewed and analyzed to gather relevant information in this field.

Results

In Iranian traditional medicine, various medicinal plants are used to treat hypothyroidism. The most important of these include *Zingiber officinale* Roscoe, *Malus domestica* Borkh., *Cocos nucifera* L., *Lens culinaris* Medik., *Curcuma longa* L., *Thymus vulgaris* L., *Cucurbita pepo* L., *Helianthus annuus* L., *Prunus dulcis* (Mill.) D.A.Webb, *Juglans regia* L., *Cinnamomum verum* J. Presl, *Allium sativum* L., *Arctium lappa* L., *Urtica dioica* L., *Matricaria chamomilla* L., *Vaccinium macrocarpon* Aiton, *Rubus idaeus* L., *Morus alba* L., *Morus nigra* L., *Salvia officinalis* L., *Aloysia citrodora* Paláu. These plants are traditionally recognized for their anti-inflammatory, antioxidant, and thyroid-regulating properties, and they can help improve thyroid function and alleviate symptoms of hypothyroidism. Many of these plants, in addition to providing essential nutrients for optimal thyroid function, also contribute to regulating the immune

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system and improving body metabolism. A list of the most important medicinal plants for treating hypothyroidism in Iranian traditional medicine is presented in Table 1.

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Table 1. Medicinal Plants Effective on Hypothyroidism in Traditional Iranian Medicine [14-23]

Persian Name	English Name	Scientific Name	Plant Family	Chemical Compounds	Traditional Therapeutic Effect	Mechanism of Action on Hypothyroidism
Zangabil	Ginger	*Zingiber officinale* Roscoe	Zingiberaceae	Gingerol, Shogaol, Zingiberene	Boosts metabolism, anti-inflammatory	Increases metabolism and reduces thyroid inflammation
Sib	Apple	*Malus domestica* Borkh.	Rosaceae	Flavonoids, Polyphenols	Regulates thyroid function, antioxidant	Helps reduce oxidative stress on the thyroid
Nargil	Coconut	*Cocos nucifera* L.	Arecaceae	Lauric acid, Medium-chain triglycerides	Improves thyroid function, boosts energy	Stimulates metabolism and improves thyroid hormone production
Adas	Lentil	*Lens culinaris* Medik.	Fabaceae	Protein, Iron, Folate	Boosts immune system, rich in iodine	Provides iodine and supports thyroid hormone synthesis
Zardchoubeh	Turmeric	*Curcuma longa* L.	Zingiberaceae	Curcumin, Turmerone	Anti-inflammatory, antioxidant	Reduces thyroid inflammation and regulates hormone function
Avishan	Thyme	*Thymus vulgaris* L.	Lamiaceae	Thymol, Carvacrol	Strengthens immune system, anti-inflammatory	Reduces inflammation and regulates immune system in thyroid disorders

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Kadou	Pumpkin	*Cucurbita pepo* L.	Cucurbitaceae	Beta-carotene, Zinc, Selenium	Supplies essential nutrients for thyroid	Supports thyroid enzyme function
Aftabgardan	Sunflower	*Helianthus annuus* L.	Asteraceae	Tocopherols, Selenium	Enhances thyroid function	Reduces oxidative stress on the thyroid
Badam	Almond	*Prunus dulcis* (Mill.) D.A.Webb	Rosaceae	Vitamin E, Magnesium	Improves metabolic function	Aids in improving thyroid cell function
Gerdou	Walnut	*Juglans regia* L.	Juglandaceae	Omega-3 fatty acids, Selenium	Enhances thyroid function, rich in iodine	Supports thyroid hormone production
Darchin	Cinnamon	*Cinnamomum verum* J. Presl	Lauraceae	Cinnamaldehyde, Eugenol	Boosts metabolism, controls blood sugar	Enhances metabolism and reduces thyroid inflammation
Sir	Garlic	*Allium sativum* L.	Amaryllidaceae	Allicin, Selenium	Anti-inflammatory, regulates immune function	Reduces thyroid inflammation and regulates autoimmunity
Babaadam	Burdock	*Arctium lappa* L.	Asteraceae	Inulin, Phenolic acids	Detoxification, boosts metabolism	Aids in detoxification and strengthens thyroid function
Gazaneh	Nettle	*Urtica dioica* L.	Urticaceae	Flavonoids, Silica, Chlorophyll	Regulates thyroid function, anti-inflammatory	Regulates thyroid hormone production

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Babouneh	Chamomile	*Matricaria chamomilla* L.	Asteraceae	Apigenin, Bisabolol	Calming, reduces inflammation	Reduces stress and inflammation, beneficial for hypothyroidism
Zoghaakhte	Cranberry	*Vaccinium macrocarpon* Aiton	Ericaceae	Flavonoids, Iodine	Rich in iodine, antioxidant	Helps provide iodine for thyroid hormone production
Tameshk	Raspberry	*Rubus idaeus* L.	Rosaceae	Flavonoids, Tannins	Anti-inflammatory, boosts metabolism	Reduces thyroid inflammation and supports metabolic function
Tote sefid	White Mulberry	*Morus alba* L.	Moraceae	Flavonoids, Resveratrol	Controls blood sugar, enhances thyroid function	Reduces inflammation and supports the thyroid gland
Toute siah	Black Mulberry	*Morus nigra* L.	Moraceae	Anthocyanins, Vitamin C	Strengthens immune system, rich in antioxidants	Reduces oxidative stress on the thyroid
Maryamgoli	Sage	*Salvia officinalis* L.	Lamiaceae	Tujone, Carnosol	Regulates hormones, anti-inflammatory	Supports hormonal balance in the thyroid
Behlimou	Lemon Verbena	*Aloysia citrodora* Paláu	Verbenaceae	Geraniol, Linalool	Calming, boosts metabolism	Reduces stress and improves thyroid metabolism

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Discussion

Hypothyroidism is a common endocrine disorder caused by decreased thyroid hormone production, leading to symptoms such as fatigue, weight gain, and depression. The primary treatment for hypothyroidism involves hormone replacement therapy prescribed by a doctor, but certain herbal teas may also help alleviate symptoms and improve overall health [24]. The effect of medicinal plants on the thyroid gland differs from that of chemical drugs. Although recent studies have not definitively confirmed the impact of these plants on thyroid disorders, evidence suggests that they can play a significant role in managing these disorders and enhancing thyroid function [25]. Some of the valuable plants used in the treatment of hypothyroidism include Ashwagandha, nettle, oat, cinnamon, ginger, and black pepper. Additionally, sea vegetables are known to have a significant effect on improving this condition [26]. Hypothyroidism is caused by the reduced production of thyroid hormones by the thyroid gland and can lead to symptoms like fatigue, weight gain, and depression. The primary treatment for this disease involves the use of hormone replacement medications, but medicinal plants can also help improve thyroid health [27].

Medicinal plants can assist in the treatment of hypothyroidism through various mechanisms. The first important mechanism is the reduction of thyroid inflammation. Chronic inflammation can disrupt thyroid function and exacerbate symptoms, while anti-inflammatory plants can help reduce this inflammation. Furthermore, medicinal plants, with their antioxidant properties, can protect thyroid cells from oxidative stress and improve thyroid hormone production [24-27]. Additionally, some medicinal plants stimulate metabolism and increase thyroid hormone production, thereby enhancing thyroid gland function. Iodine also plays a vital role in thyroid hormone production, and iodine-rich plants can help improve thyroid function. In autoimmune thyroid diseases, such as Hashimoto's disease, plants with immune-regulating properties can reduce inflammation and immune disorders [25-29]. Finally, medicinal plants, by enhancing detoxification processes and reducing stress, help maintain hormonal balance and improve thyroid function. Therefore, the use of medicinal plants can serve as an effective supplement alongside pharmaceutical treatments for managing hypothyroidism [24-29]. In many diseases and disorders [30-34], 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 [35]. The bioactive compounds of medicinal plants, by acting simultaneously on multiple biological pathways, have the potential to treat and prevent a wide range of diseases. With their antioxidant, anti-inflammatory, and metabolism-regulating properties, these compounds support the overall improvement of bodily functions [36-38]. However, their safe application requires rigorous scientific research and medical supervision [37-40].

Conclusion

The use of medicinal plants in Iranian traditional medicine for managing hypothyroidism highlights the potential of these plants in improving thyroid function and controlling the associated symptoms of this disorder. To optimize the use of native Iranian plants, further scientific research and consultation with medical specialists are essential so that these plants can be utilized as effective therapeutic supplements alongside conventional treatments.

Statements and Declarations

Conflict of Interest

The author declares no conflict of interest related to the publication of this article.

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Consent for Publication

The author confirms that the final version of the manuscript has been reviewed and approved for publication.

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Author's Contributions

LHGH and SSH was responsible for conceptualization, data collection, analysis, and manuscript preparation.

Ethical Considerations

As this study is a review article, it does not involve human or animal subjects and therefore does not require ethical approval or informed consent.

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