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Herbal Medicine in the Treatment of Blood Vessel Blockage in Traditional Iranian Medicine: A Narrative Review

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A B S T R A C T

Introduction: Vascular blockage is a prevalent cardiovascular condition that can lead to serious health issues such as hypertension, stroke, and heart failure. Traditional Iranian medicine, which utilizes a wide range of medicinal herbs, offers natural approaches for the prevention and alleviation of vascular blockage symptoms. This study aims to identify and review the medicinal plants employed in Traditional Iranian medicine for the prevention and treatment of vascular blockage.

Methods: This study involved a narrative review of sources within Traditional Iranian medicine as well as relevant scientific literature to identify medicinal herbs that are effective in the prevention and treatment of vascular blockage. Data were collected from reputable Traditional medicine texts and scientific databases, then categorized and analyzed according to their applications and mechanisms of action. Inclusion and exclusion criteria were applied to ensure the accuracy and relevance of the information.

Results: A variety of medicinal herbs, including *Allium sativum* L., *Citrus limon* (L.) Osbeck, *Zingiber officinale* Roscoe, *Curcuma longa* L., *Capsicum annuum* L., *Borago officinalis* L., *Spinacia oleracea* L., *Cinnamomum verum* J. Presl, *Camellia sinensis* (L.) Kuntze, *Brassica oleracea* var. italica, *Citrullus lanatus* (Thunb.) Matsum. & Nakai, *Valeriana officinalis* L., *Melissa officinalis* L., *Mentha piperita* L., *Cuminum cyminum* L., *Salvia rosmarinus* (syn. *Rosmarinus officinalis*) L., *Passiflora incarnata* L., *Citrus bergamia* Risso & Poit., *Crocus sativus* L., *Rosa* × *damascena* Mill., *Trigonella foenum-graecum* L., *Cocos nucifera* L., *Prunus dulcis* (var. amara) / *Prunus amygdalus* Batsch, *Crataegus monogyna* Jacq. (or *Crataegus* species), *Olea europaea* L., *Citrus paradisi* Macfad., *Morus nigra* L., *Punica granatum* L., *Cucumis melo* L., *Malus domestica* Borkh., *Avena sativa* L., *Salvia officinalis* L., *Cynara scolymus* L., *Prosopis fracta*, *Prunus spp.* (e.g., *Prunus domestica*), *Ziziphus jujuba* Mill., *Medicago sativa* L., have been utilized in Iranian herbal and traditional medicine for the treatment of vascular blockage.

Conclusion: A wide range of medicinal plants has been used in Traditional Iranian medicine to prevent and alleviate vascular blockage, and their effects on improving circulation and cardiovascular health are well-documented. These herbs may represent a natural and low-risk approach for the prevention and treatment of vascular blockage. Further scientific research into the clinical effects of these herbs could support their integration into modern medical practice.

Keywords: Cardiovascular Diseases, Atherosclerosis, Coronary Artery Disease, Herbal Medicine, Phytotherapy, Iran

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Introduction

Arterial occlusion, a common cardiovascular condition, results from the narrowing or blockage of blood vessels due to fat, cholesterol, and other deposits on the arterial walls, often leading to reduced blood flow and impaired organ function [1, 2]. While atherosclerosis characterized by the hardening and

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thickening of vessel walls due to fatty plaque accumulation can cause arterial occlusion, other factors such as blood clots, hypertension, diabetes, smoking, sedentary lifestyle, and poor nutrition also contribute to its development [1–3]. Untreated arterial blockage may result in severe complications, including heart attacks and strokes, highlighting the importance of early detection and intervention [3].

Pharmaceutical interventions, including cholesterol-lowering agents, blood thinners, and antihypertensive drugs, are commonly employed but may cause side effects such as gastrointestinal discomfort, organ toxicity, or increased bleeding risk [4-6]. Consequently, there is growing interest in complementary therapies with fewer adverse effects, including herbal medicine [7].

Traditional Iranian medicine, with over a millennium of experience in cardiovascular care, identifies numerous medicinal plants capable of supporting arterial health through anti-inflammatory, antioxidant, and blood-purifying properties [8, 9]. Plants such as olive, garlic, borage, jasmine, and valerian have been traditionally used to improve circulation and manage arterial occlusion [10, 11].

This review aims to examine the scientific evidence on native Iranian medicinal plants and their potential role in treating arterial occlusion, offering insights for complementary strategies alongside conventional therapies.

Methods

Study Design

This study was designed as a narrative review following PRISMA guidelines to identify, evaluate, and synthesize evidence on medicinal plants used in Traditional Iranian Medicine (TIM) for the prevention and management of arterial occlusion and related cardiovascular disorders. A narrative synthesis was conducted to complement systematic findings where quantitative pooling was not feasible.

Data Sources

A comprehensive literature search was performed in electronic databases including PubMed, Scopus, Web of Science, and Google Scholar, as well as classical TIM reference books and ethnopharmacological sources. The search covered studies published from [2000–2025]. Only full-text articles with sufficient methodological detail were included.

Search Strategy

Search terms were developed using MeSH and non-MeSH keywords combined with Boolean operators (AND/OR). The following terms were used: “atherosclerosis,” “arterial occlusion,” “cardiovascular disease,” “medicinal plants,” “phytotherapy,” “Traditional Iranian Medicine,” “herbal medicine,” and “blood circulation.”

Study Selection

All retrieved records were imported into a reference manager, and duplicates were removed. Two independent reviewers screened titles and abstracts, followed by full-text evaluation based on predefined eligibility criteria. Disagreements were resolved through discussion.

Inclusion Criteria

Articles published in English or Persian

Studies evaluating medicinal plants referenced in TIM or Iranian ethnopharmacology

Experimental (in vitro/in vivo), clinical, or systematic review studies

Reported cardiovascular-related outcomes (e.g., lipid profile, atherosclerosis, inflammation, vascular function)

Clearly identified plant species

Exclusion Criteria

Case reports, editorials, conference abstracts without full text

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Studies lacking methodological clarity

Duplicate publications

Non-cardiovascular-focused studies

Ethnobotanical reports without scientific validation

Data Extraction

A standardized data extraction form was used to collect:

Scientific name and family

Plant part used

Preparation/extraction method

Pharmacological effects

Study design and model

Quality Assessment

Quality appraisal was conducted using:

SYRCLE tool for animal studies

CONSORT guidelines for clinical trials

PRISMA criteria for review studies Studies were classified as high, moderate, or low quality based on risk of bias and methodological rigor.

Data Synthesis

A qualitative synthesis was performed. Medicinal plants were categorized according to pharmacological activity (anti-inflammatory, antihyperlipidemic, antioxidant, vasodilatory effects) and level of evidence

Results

A wide range of medicinal herbs are utilized in Iranian herbal and traditional medicine for the treatment of arterial blockage. These include *Allium sativum* L., *Citrus limon* (L.) Osbeck, *Zingiber officinale* Roscoe, *Curcuma longa* L., *Capsicum annuum* L., *Borago officinalis* L., *Spinacia oleracea* L., *Cinnamomum verum* J. Presl, *Camellia sinensis* (L.) Kuntze, *Brassica oleracea* var. italica, *Citrullus lanatus* (Thunb.) Matsum. & Nakai, *Valeriana officinalis* L., *Melissa officinalis* L., *Mentha piperita* L., *Cuminum cyminum* L., *Salvia rosmarinus* (syn. *Rosmarinus officinalis*) L., *Passiflora incarnata* L., *Citrus bergamia* Risso & Poit., *Crocus sativus* L., *Rosa* × *damascena* Mill., *Trigonella foenum-graecum* L., *Cocos nucifera* L., *Prunus dulcis* (var. amara) / *Prunus amygdalus* Batsch, *Crataegus monogyna* Jacq. (or *Crataegus* species), *Olea europaea* L., *Citrus* × *paradisi* Macfad., *Morus nigra* L., *Punica granatum* L., *Cucumis melo* L., *Malus domestica* Borkh., *Avena sativa* L., *Salvia officinalis* L., *Cynara scolymus* L., *Prosopis fracta*, *Prunus spp.* (e.g., *Prunus domestica*), *Ziziphus jujuba* Mill., *Medicago sativa* L. These plants are recognized for their potential in alleviating symptoms associated with arterial blockage and improving cardiovascular health.

Detailed botanical information on these medicinal plants, including their roles in the treatment of atherosclerosis, is provided in Table 1.

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Table 1: Arterial Blockage -Reducing Medicinal Plants in Traditional Iranian Medicine

No.	Common Name	Scientific Name	Family
1	Garlic	Allium sativum L.	Amaryllidaceae
2	Lemon	Citrus limon (L.) Osbeck	Rutaceae
3	Ginger	Zingiber officinale Roscoe	Zingiberaceae
4	Turmeric	Curcuma longa L.	Zingiberaceae
5	Red Chili	Capsicum annuum L.	Solanaceae
6	Borage	Borago officinalis L.	Boraginaceae
7	Spinach	Spinacia oleracea L.	Amaranthaceae
8	Cinnamon	Cinnamomum verum J. Presl	Lauraceae
9	Green Tea	Camellia sinensis (L.) Kuntze	Theaceae
10	Broccoli	Brassica oleracea var. italica	Brassicaceae
11	Watermelon	Citrullus lanatus (Thunb.) Matsum. & Nakai	Cucurbitaceae
12	Valerian	Valeriana officinalis L.	Caprifoliaceae
13	Lemon Balm	Melissa officinalis L.	Lamiaceae
14	Peppermint	Mentha piperita L.	Lamiaceae
15	Cumin	Cuminum cyminum L.	Apiaceae
16	Rosemary	Salvia rosmarinus L.	Lamiaceae
17	Passionflower	Passiflora incarnata L.	Passifloraceae
18	Bergamot	Citrus bergamia Risso & Poit.	Rutaceae
19	Saffron	Crocus sativus L.	Iridaceae
20	Damask Rose	Rosa damascena Mill.	Rosaceae

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21	Fenugreek	Trigonella foenum-graecum L.	Fabaceae
22	Coconut	Cocos nucifera L.	Arecaceae
23	Bitter Almond	Prunus dulcis (var. amara)	Rosaceae
24	Hawthorn	Crataegus monogyna Jacq.	Rosaceae
25	Olive	Olea europaea L.	Oleaceae
26	Grapefruit	Citrus paradisi Macfad.	Rutaceae
27	Black Mulberry	Morus nigra L.	Moraceae
28	Pomegranate	Punica granatum L.	Lythraceae
29	Muskmelon	Cucumis melo L.	Cucurbitaceae
30	Apple	Malus domestica Borkh.	Rosaceae
31	Oat	Avena sativa L.	Poaceae
32	Sage	Salvia officinalis L.	Lamiaceae
33	Artichoke	Cynara scolymus L.	Asteraceae
34	Prosopis species	*Prosopis fracta*	Fabaceae
35	Plum	Prunus spp.	Rosaceae
36	Jujube	Ziziphus jujuba Mill.	Rhamnaceae
37	Alfalfa	Medicago sativa L.	Fabaceae

Discussion

Arterial blockage is a prevalent cardiovascular issue that can lead to severe conditions, such as heart attacks and strokes. This condition arises when blood clots, fatty plaques, and cholesterol accumulate on the arterial walls, obstructing blood flow and ultimately resulting in cardiovascular events [22]. Contributing factors such as poor diet, hypertension, diabetes, and sedentary lifestyles increase the risk of developing arterial blockage.

A study investigating Iranian medicinal plants effective in treating hyperlipidemia identified several plants with lipid-lowering effects. These include *Thymus vulgare*, *Apium graveolens*, *Cichorium intybus*, *Fumaria officinalis*, *Cynodon dactylon*, *Heracleum rawianum*, *Anthemis altissima*, *Gundelia tourneforttii*, *Anthriscus sylvestris*, *Silybum*

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marianum, *Tragopogon aureus*, *Trigonella foenum-graecum*, *Solanum nigrum*, *Berberis vulgaris*, *Glycyrrhiza glabra*, *Arum elongatum*, *Rheum ribes*, and *Mentha spicata*. These plants lower blood fat levels through mechanisms such as inhibiting fat absorption and enhancing metabolism, highlighting their significance both in scientific research and Iran's traditional medicine [23].

Another study focused on ethnobotanical knowledge from Southern Iran identified plants commonly used for hyperlipidemia treatment, including *Lepidium latifolium*, *Cichorium intybus*, *Achillea millefolium*, *Silybum marianum*, *Arum elongatum*, *Glycyrrhiza glabra*, *Rheum ribes*, *Amygdalus lycioides*, *Withania somnifera*, *Caralluma edulis*, *Rumex acetosa*, *Coriandrum sativum*, *Allium sativum*, *Sesamum indicum*, *Anethum graveolens*, *Anthriscus sylvestris*, *Gundelia tournefortii*, *Tragopogon aureus*, *Trigonella foenum-graecum*, *Solanum nigrum*, and *Phoenix dactylifera*. The leaves of these plants are commonly used to reduce blood fat levels [24].

In Traditional Iranian medicine, herbal supplements play a key role in managing coronary artery disease (CAD) and reducing stress in patients. Herbs such as marjoram, chamomile, lavender, rose, and green tea are used to alleviate stress and improve heart health. When combined with conventional treatments, these herbs have the potential to enhance quality of life and reduce cardiovascular risks in patients [25].

Several studies have identified plants that are beneficial in treating atherosclerosis within Traditional Iranian medicine. Plants such as *Equisetum arvense*, *Citrus limon*, *Curcuma longa*, and *Rosmarinus officinalis* possess anti-inflammatory, antioxidant, and lipid-lowering properties, contributing to the prevention and treatment of atherosclerosis [26]. Additionally, certain plants, like *Camellia sinensis*, *Chrysanthellum indicum*, and *Glycyrrhiza glabra*, have been found to possess anti-inflammatory, antioxidant, and vasodilatory effects, improving circulation and protecting the skin from oxidative damage [27].

Further studies have highlighted the cardiovascular benefits of plants such as dill seeds (*Anethum graveolens*), chicory (*Cichorium intybus*), small fumitory (*Fumaria parviflora*), citrus (*Citrus spp.*), long mint (*Mentha longifolia*), garlic (*Allium sativum*), olive (*Olea europaea*), hawthorn (*Crataegus microphylla*), blueberry (*Vaccinium arctostaphylos*), medlar (*Zizyphus vulgaris*), tribulus (*Tribulus terrestris*), sour cherry (*Prunus cerasus*), and corn (*Zea mays*). These plants are known for their anti-inflammatory, antioxidant, and cardiovascular health-boosting properties [28].

Herbs such as saffron, ginger, cinnamon, chamomile, aloe vera, dill, purslane, coriander, fenugreek, and black seed have demonstrated effects on blood sugar and lipid levels in the context of diabetes and arterial blockage [29]. Medicinal plants like garlic, ginger, and turmeric, with their anti-inflammatory and antioxidant properties, help reduce inflammation in vascular walls and prevent LDL oxidation, thereby contributing to the prevention of arterial blockage [30]. Plants like watermelon and garlic promote vasodilation and improve blood flow through the production of nitric oxide [31]. Additionally, plants such as green tea and cinnamon aid in reducing blood fats and improving lipid profiles [32]. Stress-reducing plants like passionflower and valerian help lower blood pressure, potentially preventing cardiovascular issues. Native Iranian plants, including apple, pear, and hawthorn, also improve vascular function and reduce blood fat levels. Prevention and care of diseases not only improve individual health, but also contribute to the public health of the community. These measures can also help reduce the pressure on healthcare systems and lower costs. Ultimately, given the importance of prevention and care, more attention should be paid to education and raising public awareness [33-35]. The best approach for preventing and treating diseases is using natural resources and medicinal plants. Due to

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their therapeutic properties and low risk, these methods can often serve as a suitable alternative to pharmaceutical drugs [36].

In traditional medical knowledge, particularly within the ancient Iranian medical system, the use of medicinal plants is based on a profound understanding of the temperament (mizaj), humoral balance, and clinical effects of each herb. Traditional physicians believed that the active constituents of plants although not described in modern terms as "bioactive compounds" exert therapeutic effects through qualities such as heat, coldness, moisture, and dryness, which determine their impact on different organs of the body [37-40]. This empirical knowledge has evolved over centuries through clinical observation, trial and error, and oral transmission, leading to the identification of a wide range of medicinal plants with anti-inflammatory, circulation-enhancing, lipid-lowering, and cardioprotective properties. Today, with advances in pharmaceutical sciences and phytochemistry, many of these effects are attributed to compounds such as flavonoids, alkaloids, terpenoids, and phenolic compounds, which, in agreement with traditional observations, play a significant role in the prevention and treatment of diseases [41-44].

Limitations

Despite the comprehensive approach of this study, several limitations exist, including the lack of high-quality clinical trials for many medicinal plants, heterogeneity of sources such as traditional medicine texts, experimental studies, and observational research, as well as significant variation in dosages, plant parts used, and preparation methods, which may reduce comparability and reproducibility of results. In addition, some studies may have potential biases and lack standardization in research design, affecting the reliability of findings. Overall, these factors limit the interpretation of results and highlight the need for well-designed, standardized clinical studies.

Conclusion

The present review indicates that a variety of medicinal plants traditionally used in Iranian medicine possess potential cardioprotective properties, particularly in relation to arterial occlusion and atherosclerosis. The most frequently reported effects across the reviewed literature include improvement of lipid profiles, reduction of oxidative stress, anti-inflammatory activity, and enhancement of endothelial function. Collectively, these mechanisms suggest a possible supportive role for these plants in the prevention and management of cardiovascular disorders.

However, the current evidence remains largely preclinical or based on traditional and observational reports, with a limited number of well-designed clinical trials. Therefore, the therapeutic efficacy and safety of many of these medicinal plants have not been fully validated in rigorous clinical settings. In addition, variability in study design, extraction methods, dosage, and bioactive composition limits the comparability of findings.

It is also important to emphasize that medicinal plants should not be considered a substitute for evidence-based pharmacological therapies but rather as complementary approaches within an integrated treatment framework. Further high-quality clinical studies are required to confirm their efficacy, establish standardized dosing, and evaluate potential herb–drug interactions.

In conclusion, while medicinal plants show promising potential in cardiovascular protection, their clinical application should be approached with caution until stronger scientific evidence becomes available.

Statements and Declarations

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Competing interests

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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

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

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