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Phytomedicine in the Integrated Care of Angina Pectoris

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Abstract

Its most frequent clinical manifestation is angina pectoris, a condition normally caused by reduced coronary blood supply via stenosed or diseased coronary arteries. A good predictor of more hazardous types of cardiovascular diseases, including myocardial infarction, is the condition. Food deprivation, exposure to cold, exercise, and mental stress are normal causes of angina. Sublingual nitrates typically alleviate the characteristic pain, often described as a burning or pressure sensation in the chest, which may radiate to the left arm or jaw.. Angina pectoris is brought about by several risk factors, including hypertension, diabetes, dyslipidemia, smoking, obesity, physical inactivity, excessive alcohol or salt intake, male gender, and advancing age. Myocardial infarction, pericarditis, and musculoskeletal diseases are some of the differential diagnoses. Fruits and vegetables rich in polyphenols are increasingly recognized for their cardiovascular benefits; however, aspirin remains a well-established therapy due to its antioxidant and anti-inflammatory properties. Herbal therapies with cardioprotective and vasodilatory effects are also gaining popularity as alternatives or complements to conventional treatments. The combination of these herbal remedies may offer a potentially safer and more comprehensive approach to the management of angina and overall cardiovascular health..

INTRODUCTION

Angina pectoris is a consequence of myocardial ischemia secondary to diseased coronary perfusion, typically in the setting of atherosclerotic coronary heart disease. The clinical syndrome is an ominous sign of coronary insufficiency and is a valuable prognostic sign for myocardial infarction if caused by extensive coronary disease. The characteristic retrosternal chest pain is caused by a mismatch between myocardial oxygen demand and supply, typically radiating to the neck, jaw, shoulders, arms (preferably the left), or back(Braunwald et al., 1994). They are precipitated by exercise, emotional stress, cold, or heavy meals and relieved by rest or sublingual nitrates through coronary vasodilation (Dunder et al., 2004). Resolution of the symptom is typically within minutes; inability to relieve pain in spite of nitrate administration could indicate acute myocardial infarction or unstable angina requiring immediate treatment.

Modifiable risk factors proven to be set up are smoking, obesity, physical inactivity, diabetes mellitus, hypertension, dyslipidemia (increased LDL cholesterol and decreased HDL cholesterol), excessive alcohol or dietary sodium intake. Non-modifiable risk factors include advanced age, postmenopausal status in women, and family history of coronary heart disease or stroke(Al-Worafi, Y. M. (2024)). Multifactorial drug reduction by pharmacologic treatment and lifestyle modification continues to be at the forefront of angina therapy and cardiovascular events prevention.

Clinical diagnosis is based on typical patterns of symptoms, exercise correlation, and response to nitrates or rest (Siama et al., 2013). Differential diagnosis must be undertaken as angina signs can be mimicked by other conditions such as acute myocardial infarction (with persistent pain that is not relieved by nitrates), pericarditis, and gastro-esophageal disease.

There is growing evidence for the cardiovascular protective effects of polyphenol-rich foods, such as fruits and vegetables, attributable to their antioxidant, anti-inflammatory, and cardioprotective properties(Jia et al., 2024). These compounds can enhance endothelial function, suppress oxidative stress, and prevent platelet aggregation, thereby providing therapeutic effects comparable to conventional antiplatelet therapy. Observational studies have reported that dietary intake of foods rich in flavonoids and phenolic acids—including leafy vegetables, apples, grapes, berries, and green tea—are associated with reduced incidence of ischaemic heart disease. (Netala et al., 2024).

The traditional treatments such as Ayurveda and Unani medicine employed a number of botanicals in cardiovascular diseases such as garlic, onion, and green leafy vegetables with suspected lipid-lowering and cardio-protective effects (Vn et al., 2025). Although these complementary approaches management (CAM) treatments may provide additive effects in the prevention of cardiovascular disease, especially in patients opting for integrative treatment methods, there is still a paucity of meaningful clinical evidence. Additional randomized controlled trials would need to be conducted to determine the effectiveness, safety, and appropriate incorporation of these interventions into evidence-based treatment regimens for angina.

Mechanism Effects of Phytotherapy on Cardiovascular Health

Herbal medication possesses various mechanisms of cardiovascular protection through anti-inflammatory, vasodilatory, and cardioprotective mechanisms. The clinical efficacy of several plants, including *Crataegus* species (hawthorn), *Allium sativum* (garlic), and *Ginkgo biloba*, has been demonstrated in clinical trials for reducing symptoms of angina pectoris. Instead of being subjected to extensive scientific evaluation, most herbal

therapy continues to be practiced traditionally (Abbas et al., 2025). Clinical integration requires careful consideration of potential adverse effects and drug interactions, alongside consultation with experienced healthcare practitioners, to develop evidence-based treatment guidelines that incorporate complementary botanical medicines with conventional therapy. Among Ayurvedic cardiovascular treatments, *Terminalia arjuna* demonstrates significant cardioprotective properties through enhancement of cardiac function, improvement of circulation, and reduction of blood pressure. The bark contains bioactive compounds including flavonoids, triterpenoids, tannins, and cardiac glycosides. Clinical studies have demonstrated that the potent antioxidant activity of *T. arjuna* can enhance left ventricular function, reduce systolic blood pressure, and improve myocardial perfusion through attenuation of free radical damage and lipid peroxidation (Parveen et al., 2025).

Randomized controlled trials indicated that *T. arjuna* bark extract decreases the frequency of angina and increases exercise tolerance considerably. Enhanced cardiac function is also evident from ECGs. Comparative studies have demonstrated parity with standard anti-anginal medications in symptom relief and functional improvement, showing enhanced quality of life and reduced severity of chest pain in patients.

Argan bark extract has not been as effective in reducing angina pectoris or improving EKG outcomes (Thakur et al., 2021).

However, *Terminalia arjuna* extracts have been shown to strengthen coronary arteries, enhance circulation, and promote overall cardiovascular health. Scientific evidence supports the therapeutic use of arjuna, with studies demonstrating its efficacy in improving cardiac function, regulating blood pressure, reducing angina episodes, and improving electrocardiographic parameters (Dutta, A., & Das, M., 2023). Its antioxidant

action also ensures heart health. Randomised controlled trials have demonstrated that arginine therapy for angina pectoris is as stable and effective as monotherapy, providing pain relief, improving blood flow, and enhancing patient comfort. Hawthorn (*Crataegus* spp.), belonging to the *Rosaceae* family, contains numerous physiologically active compounds, including flavonoids such as oligomeric proanthocyanidins, quercetin, hyperoside, and vitexin, as well as phenolic acids (Witkowska et al., 2024).

Here's a corrected version suitable for The Lancet:

"These compounds have demonstrated antioxidant activity, enhanced circulation, and cardiovascular health benefits. The flowers, leaves, and fruits of hawthorn are used medicinally and are considered beneficial in managing cardiovascular disease. Hawthorn promotes cardiovascular health by strengthening coronary arteries, improving circulation, and stabilizing cardiac rhythm.

The herb enhances myocardial contractility and helps manage hypertension through blood pressure regulation. At therapeutic doses, hawthorn increases cardiac output. The cardiovascular benefits of hawthorn are attributed to its ability to strengthen myocardial function, reduce vascular resistance, increase coronary blood flow, and improve circulatory efficiency.

Wu et al. (2020) reported that hawthorn also reduces LDL cholesterol, stabilizes atherosclerotic plaques, and exhibits potent antioxidant activity. The herb reduces cardiovascular disease risk and provides therapeutic benefits in angina pectoris and arrhythmias through cardioprotective mechanisms.

Crataegus species, rich in oligomeric proanthocyanidins, quercetin, hyperoside, vitexin, and phenolic acids, provide comprehensive cardiovascular protection through multiple mechanisms (Lu et al., 2023). These compounds provide potent antioxidant protection,

enhance myocardial contractility, regulate cardiac rhythm, and improve coronary perfusion.

Clinical studies have demonstrated that hawthorn enhances cardiac output, reduces peripheral vascular resistance, and improves coronary flow. The extract provides significant therapeutic benefits for managing arrhythmias and angina symptoms, stabilizing atherosclerotic plaques, and reducing low-density lipoprotein cholesterol levels. Hawthorn (*Crataegus* spp.) has been extensively documented for its cardioprotective effects over several centuries. It enhances cardiac function, improves coronary perfusion, and supports blood pressure regulation (Szikora et al., 2025). Prolonged use is associated with improved circulatory efficiency and enhanced cardiac output. Hawthorn promotes optimal cardiovascular function by reducing vascular resistance and enhancing coronary artery perfusion. Through stabilization of atherosclerotic plaques and reduction of low-density lipoprotein (LDL) cholesterol levels, it demonstrates lipid-lowering properties and reduces the risk of plaque-related complications. Additionally, it exhibits potent antioxidant activity that protects cardiac tissue against oxidative damage. Hawthorn represents a valuable therapeutic agent for the prevention and treatment of cardiovascular disease due to its efficacy in managing arrhythmias and angina pectoris.

Garlic (*Allium sativum*) possesses multiple cardioprotective effects, including blood pressure reduction, cholesterol lowering, and anticoagulant properties. Garlic promotes vascular health by improving endothelial function and reducing coronary artery obstruction, thereby preventing myocardial infarction. Through vasodilatation, cholesterol reduction, and blood pressure control, garlic enhances vascular circulation, prevents arterial occlusion, and reduces cardiovascular disease risk (Elachouri et al.,

2024). It also possesses a healthy mind. Daily consumption of garlic guards against the heart. Garlic suppresses cholesterol reduction, prevents platelet clumping, enhances endothelial function, and reduces blood pressure. Clinical efficacy with scientific evidence exists for garlic. Clinical trials have shown that aged garlic extracts enhance lipid profiles, halt the development of coronary calcification, and decrease the frequency and severity of angina pectoris symptoms Aged garlic extract is significant in cardiovascular benefit via antiplatelet, lipid-lowering, and antihypertensive effects (Miki et al., 2025). Clinical trials demonstrate improved lipid profiles, prevention of coronary artery calcification progression, and reduced frequency and severity of angina. The active components enhance endothelial function, inhibit platelet aggregation, and exert vasodilatory effects, contributing to comprehensive cardiovascular protection

G. biloba extract with bilobalide and ginkgolides improves tissue perfusion specifically under ischemic conditions by increased microcirculation and nitric oxide bioavailability (Liao et al., 2024). While antioxidant and neuroprotective activities contribute to overall therapeutic efficacy, specific cardiac applications require targeted research to validate these therapeutic effects.

This adaptogenic plant demonstrates significant cardiovascular activity through stress reduction and enhancement of cardiac stress tolerance. Bilobalide and ginkgolides are *Ginkgo biloba* constituents that have been shown to improve tissue perfusion, particularly during ischemic conditions (Wu et al., 2023). They achieve this by inhibiting platelet activation factors, thereby improving blood flow, and by enhancing nitric oxide availability. The overall therapeutic potential of *Ginkgo biloba* is attributed to its neuroprotective and antioxidant properties (Zhu, Q., & Liu, D., 2024). Circulation effects resulting from these can promote increased myocardial perfusion and the healing of

angina pectoris, though additional research is needed to establish the specific role in heart supply. *Ginkgo biloba* is an ancient medicinal plant with established therapeutic applications due to its diverse bioactive phytochemicals, including flavonoids, terpenoids (bilobalide and ginkgolides), alkaloids, and saponins (He et al., 2024).

Ginkgo biloba extracts exhibit multiple pharmacological actions, including antioxidant, neuroprotective, anti-inflammatory, and vasoregulatory activities, demonstrating efficacy in the treatment of cognitive impairment, vascular disorders, and neurodegenerative diseases (Liu et al., 2024). *Ginkgo biloba* prevents the development of myocardial infarction and cardiovascular diseases by increasing blood flow and stabilizing vascular membranes, thereby maintaining cardiovascular health. Its bioactive compounds inhibit lipid deposition, suppress abnormal cellular proliferation, and modulate inflammatory cytokines such as TNF-α and IL-6, thereby exhibiting cardioprotective and anti-atherogenic properties. Withanosides, alkaloids, saponins, and withanolides in *W. somnifera* offer complete stress adaptation (Adil et al., 2025). Clinical studies demonstrate reduced psychological stress, improved physical tolerance, and enhanced immune function, all of which contribute indirectly to angina management through comprehensive stress reduction. The indirect action is the most significant mechanism through which the plant eases angina pectoris management (Khaled et al., 2023). *W. somnifera* is expected to decrease angina frequency and severity through a reduction of psychological stress, one of the key angina triggers, as well as a general stress tolerance increase. Clinical trials document significant reductions in self-reported stress levels, cortisol concentrations, and anxiety scores, all contributing to improved cardiovascular outcomes (Pandit et al., 2024). It mitigates stress-mediated cardiovascular responses, including elevated blood pressure and catecholamine-induced cardiac stress.

The bioactive compounds withanosides, alkaloids, saponins, and withanolides in the root promote systemic physiological adaptation to cardiovascular stressors.

Ashwagandha (*Withania somnifera*), an adaptogen with centuries of traditional use, reduces stress-induced cardiovascular events and blood pressure while maintaining overall cardiac health and enhancing cardiac resilience to oxidative and ischaemic stress. The herb increases the energy level, decreases fatigue, and enhances the nervous system (Wal et al., 2024). Regular consumption of ashwagandha reduces psychological stress and alleviates physical fatigue while enhancing immune function. The herb improves muscle strength over time and reduces exercise-induced fatigue, thereby enhancing energy levels and exercise performance. Through strengthening musculature and reducing physical weakness, ashwagandha contributes to overall health improvement and cardiovascular disease risk reduction. The herb promotes cardiac stability and enhances circulation while providing anxiolytic effects and nervous system support. Ashwagandha facilitates improved sleep quality and stress management, contributing to enhanced mental and physical wellbeing (Singhal et al., 2024).

It also optimizes neurological function. In patients with angina, the herb provides significant indirect benefits by reducing cardiac workload and improving functional capacity through enhanced mental and physical endurance. This strategy lightens the patient's life by reducing the severity of the heartache as well as promoting the overall health of the heart

Curcumin, the active phytochemical constituent of turmeric, exhibits potent anti-inflammatory and antioxidant activities through modulation of key inflammatory cytokines including TNF-α and IL-6. Human trials show enhanced endothelial function and decreased markers of oxidative stress (Tehrani et al., 2024). The drug improves

vascular function, attenuates atherosclerotic development, and can yield symptom relief in angina by enhancing myocardial perfusion and diminishing vascular inflammation.

Benestoxycurcumin, the primary active compound found in curcumin, is widely recognized for its potent anti-inflammatory and antioxidant functions (Rezaei et al., 2024). It clears the toxins released by the body and keeps cells safe from damage. Upon administration, it reduces inflammation, enhances immune function, and provides disease prevention benefits. It maintains cardiovascular health, reduces inflammatory conditions, and protects coronary arteries.

This mechanism improves cardiac health, reduces the risk of vascular occlusion, and attenuates systemic inflammation, thereby decreasing the likelihood of endothelial dysfunction and vascular damage. This substantially reduces cardiovascular disease risk. Long-term effects include improved circulation, reduced blood pressure, and enhanced overall patient health.

Clinical trials have demonstrated that turmeric dietary supplements improve endothelial function and reduce markers of oxidative stress (Hao et al., 2025). These effects contribute to overall cardiovascular health through coronary artery strengthening, enhanced circulation, and reduced cardiovascular disease risk. Turmeric promotes cardiovascular function by improving blood flow, reducing arterial inflammation, and decreasing the risk of atherosclerotic occlusion.

Curcumin, its main bioactive compound, fortifies the heart, enhances healthy cardiac function, and increases oxygen and nutrient transport. They can treat angina pectoris and offer long-term protection to the heart by alleviating chest pain, tightness, and vascular resistance. Curcumin in turmeric reduces vascular inflammation and improves circulation while inhibiting thrombosis and maintaining vascular integrity, thereby

reducing cardiovascular disease risk. The compound also provides symptomatic relief from chest pain and vascular stiffness. Through reduction of arterial lipid accumulation and improvement of overall cardiovascular health, turmeric decreases cardiovascular disease risk (El-Rakabawy et al., 2025). Turmeric has been demonstrated in animal models to preserve heart function and reduce the extent of tissue injury following a heart attack. It enhances circulation, improves cardiac health, prevents arterial occlusion, reduces inflammation, and decreases cardiovascular disease risk.

Curcumin intake improves cardiac function. Tangeretin, found in citrus plants, is believed to provide therapeutic benefits in angina pectoris

It improves blood flow, strengthens heart health, prevents artery blockage, reduces inflammation, and lowers the risk of heart disease. The use of curcumin enhances cardiac function. Tenginone, found in some plants, is believed to be beneficial in angina (heart pain). It helps dilate the heart's arteries, improving blood flow and increasing oxygen supply, which reduces heart pain (Dastani et al., 2019). Tenginone strengthens heart health by reducing heart pain (Liu et al., 2016). However, its use should be done with caution, and consultation with a specialist is advised.

Salviano (Sea B) is considered useful in heart diseases, particularly angina (chest pain). It improves blood flow, helps dilate arteries, and increases oxygen supply to the heart, providing relief from chest tightness and pain (do Nascimento, O. V., & de Almeida, S. C. (2022)). Its use enhances blood flow, dilates arteries, and increases oxygen supply to the heart, alleviating chest tightness and pain. Potential cardioprotective benefits of magnesium lithospermate B have been demonstrated, particularly in the management of angina pectoris (Shen et al., 2025). It increases myocardial blood flow, promotes coronary artery dilatation, and increases oxygen delivery to heart tissue (Soma et al.,

2012). These movements reduce chest narrowing and discomfort and improve global cardiovascular function and economy (Peng et al. 2017). It provokes oronary arterial vasodilation, enhances myocardial perfusion, and improves cardiac tissue oxygenation (Chang et al., 2011). These therapies alleviate chest pain and constriction while improving overall cardiac efficiency. Angina can be managed using several botanicals employed in traditional Chinese medicine (Tian et al. 2020).

Salvia miltiorrhiza (Danshen) demonstrates significant cardioprotective actions including coronary vasodilation, microcirculation enhancement, and reduction of myocardial infarction severity, all mediated by its anti-inflammatory and antithrombotic effects. Through facilitation of myocardial perfusion and improvement of overall cardiovascular function, these mechanisms underpin its therapeutic potential in managing ischaemic heart disease (Zhang and colleagues, 2024). Meta-analyses supporting its therapeutic application demonstrate improved exercise tolerance and clinical symptom management, further confirming its value in cardiovascular therapy. Danshen is a traditional Chinese herb used to treat angina pectoris (Tian et al., 2023).

Through improved myocardial oxygenation, anticoagulant effects, and relief of arterial stenos is, it alleviates chest tightness and pain. Danshen specifically reduces myocardial infarction size, enhances microcirculation, and promotes coronary vasodilation. It also provides therapeutic benefits in ischaemic heart disease by significantly reducing oxidative stress and preventing thrombosis. Scientific evidence, including meta-analyses, confirms its therapeutic application in cardiovascular therapy, demonstrating improved exercise tolerance and reduced angina symptoms. (Chen et al., 2025). Dansheng has significant anti-inflammatory, anti-platelet, and antioxidant capabilities.

Through inhibition of prostaglandin and thromboxane pathways, it significantly inhibits platelet aggregation (Hou et al., 2025). Its weak vasodilatory activity causes relaxation of coronary arteries, thus improving coronary blood flow and alleviating symptoms of angina pectoris. Suppression of triglyceride formation and atheroma development was demonstrated in animal models treated with ginger extracts (Williams et al., 2025). Human studies have also validated Danshen's beneficial effects on lipid metabolism and circulation.

Zingiber officinale (ginger) exhibits anti-inflammatory, antiplatelet, and mild vasodilatory effects through modulation of prostaglandin and thromboxane pathways, potentially alleviating angina symptoms via coronary vasodilation. Animal studies demonstrate ginger's capacity to reduce atherosclerotic plaque formation and improve lipid profile (Mohammadabadi et al., 2025). Mild vasodilatory activity may promote coronary artery dilation and reduce angina symptom frequency. Relaxes coronary arteries, potentially enhancing myocardial perfusion. Decreases vascular inflammation by cytokine modulation. Early studies indicate positive effects on serum triglycerides and plaque development in atherosclerosis (Puteri et al., 2024). Human trials indicating circulatory advantages and cholesterol metabolism enhancement offer preliminary support for cardiovascular use, although angina-specific trials are few (Jafari, A., & Sahebkar, A. (2025)).

Rauvolfia serpentina, containing reserpine and related alkaloids, historically provided antihypertensive treatment through catecholamine depletion. Although valuable for blood pressure and heart rate regulation, safety concerns have limited modern clinical use in favor of safer alternatives, though traditional medicine systems continue careful utilization (Gupta, T., & Ankit, M. P. (2025)).The root of *Rauvolfia serpentina*

(sarpagandha), belonging to the Apocynaceae family, is used medicinally and contains potent alkaloids including reserpine, ajmaline, and serpentine. *Rauvolfia serpentina* is employed in cardiovascular disease management, particularly angina pectoris. It reduces blood pressure, stabilizes cardiac rhythm, and alleviates psychological stress, thereby relieving tension and chest pain. Administration requires medical supervision. By eliminating catecholamines from the periphery of the peripheral sympathetic nervous system, this potent herb lowers cardiac contamination and peripheral vascular resistance (Bankar et al., 2024). Blood pressure and heart rate regulation are of paramount importance for effective angina pectoris management.

One of its main ingredients, the reservoir, was one of the first blood pressure-lowering medications in the modern health system. Although it has been largely replaced by safer alternatives due to concerns about adverse effects, *Rauvolfia serpentina* has been traditionally used for its cardiovascular benefits. This plant contains various bioactive alkaloids, particularly reserpine and ajmaline, which are responsible for its antihypertensive, cardioprotective, and antioxidant activities (Al-Hasan et al., 2024). Eugenol, a constituent of cloves, is thought to be beneficial for angina pectoris and heartache. It dilates blood vessels and increases blood flow, alleviating heartache and offering minor relief. Caution needs to be exercised when using it.

Ocimum tenuiflorum (holy basil) exhibits potent adaptogenic effects, particularly in alleviating stress-related angina, by enhancing endothelial function and reducing psychological stress. Clinical evidence supports its potential to improve lipid profiles and reduce serum cholesterol levels, thereby decreasing overall cardiovascular risk. Current evidence suggests that *Ocimum tenuiflorum* (holy basil) holds therapeutic promise as an adjunct treatment for angina pectoris, offering benefits such as improved cardiac

function, enhanced circulation, and reduced psychological stress. However, rigorous randomized controlled trials comparing herbal interventions with conventional treatments remain essential for establishing robust clinical guidelines (Siddiqui et al., 2025). Mechanistic studies of vascular function, lipid metabolism, and inflammatory regulation elucidate the cardioprotective actions of *Ocimum tenuiflorum* (holy basil)) (Arya et al., 2024). Its bioactive compounds target multiple pathways in cardiovascular disease through modulation of lipid metabolism, improvement of endothelial function, and inhibition of pro-inflammatory cytokines. The efficacy of Holy Basil as an adjuvant and prophylactic therapy for angina is supported by extensive traditional use for cardiovascular wellness over centuries.

Through enhancement of endothelial function and stress reduction, Holy Basil promotes optimal cardiovascular health. Given that stress is a primary contributor to cardiovascular disease, particularly angina pectoris, the plant is believed to alleviate symptoms and strengthen cardiac function. Its potent anti-inflammatory and antioxidant properties reduce oxidative damage and vascular inflammation, thereby enhancing cardiovascular health. The plant, therefore, contributes significantly to improving circulation, reducing myocardial infarction risk, and providing cardioprotection.

Clinical studies indicate that holy basil reduces serum cholesterol levels and improves lipid profiles, thereby decreasing cardiovascular disease risk and maintaining vascular health. Regular Holy Basil consumption may enhance overall health and wellness.

Patient education programs must focus on evidence-based practice, informed decision, and active engagement of care participation (Yang et al., 2025). Lifestyle modification by

smoking cessation, enhanced physical exercise, and optimization of risk factors of diet is still warranted for the combined management of angina.

Standardized herbal products, optimum dosage regimens, and synergistic interactions with conventional drugs are the research focus areas in the future. Integration of traditional medical approaches while maintaining accessibility and cultural relevance requires rigorous scientific evaluation. This comprehensive approach ensures therapeutic efficacy and safety through detailed investigation of mechanisms of action and potential application in contemporary drug development and personalized medicine

Through modification of physiological parameters that enhance the body's capacity to withstand physical and psychological stress, all together may benefit angina pectoris, which is often exacerbated by psychological stress.(Lin et al., 2024), can be treated.

It also prevents cardiovascular disease, enhances vascular function, and promotes overall cardiac health. Exercise improves patient awareness of their condition, decision-making capacity, and ability to participate actively in their healthcare.

Lifestyle modifications, including dietary changes, exercise, and smoking cessation, are fundamental to disease treatment and prevention. Further clinical research is required to establish the safety and efficacy of herbal medicines in angina pectoris, particularly compared with conventional therapies. Investigation of their mechanisms of action, including anti-inflammatory effects, lipid metabolism modulation, and vascular function enhancement, may lead to more targeted and effective treatments

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Conclusion

Based on available evidence, herbal remedies may serve as beneficial adjuvant therapy in angina management. However, comprehensive randomized controlled trials comparing herbal interventions with standard treatments remain necessary to establish definitive clinical guidelines. Mechanistic studies investigating vascular function, lipid metabolism effects, and inflammatory modulation can advance therapeutic agent development. Integrative approaches may offer sustainable, cost-effective treatment options for patients with chronic cardiovascular conditions such as angina pectoris, particularly benefiting populations with limited healthcare access or those seeking complementary therapeutic modalities alongside conventional treatment. Economic evaluations comparing integrated treatments with conventional therapy alone are needed to determine cost-effectiveness ratios and healthcare resource utilization patterns, ensuring economic justification. When conventional medications require optimization or augmentation, naturopathic medicine and targeted lifestyle modifications represent valuable therapeutic approaches for angina. Alternative therapies emphasizing antioxidant-rich foods, particularly polyphenol-rich vegetables and fruits, have demonstrated significant cardiovascular benefits through multiple mechanisms. *Inula helenium* (elecampane) represents an emerging botanical agent with potential cardiovascular applications, although clinical evidence remains limited. Polyphenolic compounds within these plant materials preserve vascular integrity by reducing oxidative stress and modulating inflammatory pathways, potentially achieving synergistic effects when combined with standard anti-anginal therapy.

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