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# Plant-Based Approaches for Prevention and Treatment of Cardiovascular Disorders

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***Authors' Contributions***
*1Data Collection & Processing, Data Analysis Drafting of Manuscript*
*2 Drafting of Manuscript, Critical Review*

***Article info.***
*Received: October 06, 2025*
*Accepted Dec 03, 2025*
*Published Dec 26 ,2025*

***Funding Source:*** *Nil*
***Conflict of Interest:*** *Nil*

**Cite this article:** *Hassan A ,Fatima W,Misbah F,* Plant-Based Approaches for Prevention and Treatment of Cardiovascular Disorders, *International Journal of Trends in Food Sci and Tech. 2025;3:17-22*

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## ABSTRACT

Cardiovascular diseases are associated with many individuals. They are the cause of one-third of all deaths around the world. The usual medicines that doctors prescribe to people to deal with such issues for blood pressure are antihypertensive and statins. However, these medicines can also have side effects and it is difficult for people to use them.This review is going to acknowledge at how herbal medicine can help people with cardiovascular diseases. Herbal medicine can be used along with the synthetic medicines to help manage the disease. The review is going to suggest about some herbs that are beneficial for the heart like Garlic and Crataegus spp. These herbs can helps in strengthening the heart. The Hawthorn and Terminalia arjuna are effective for our health. These herbs contain many therapeutically active constituents. They contain anti-inflammatory effect reduced such markers that damage our body like inflammation and other inflammatory diseases. The Hawthorn and Terminalia arjuna also help lower the cholesterol in our blood.

This article usually emphasizes about the methods of using Hawthorn and Terminalia arjuna by making herbal teas from them or using different traditional methods, like advanced nanotechnology. The World Health Organization (WHO), indicates that these therapies are clinically effective and effective for the treatment of heart diseases. The review concludes that herbal medicines offer a holistic, multitargeted approach with fewer side effects, rigorous standardization and clinical validation are essential for their safe integration into modern cardiology.

**KEYWORDS:** herbs, cardio-protection, inflammation, phytochemicals, cardiovascular diseases.

## INTRODUCTION

Detailed overview of heart diseases including myocardial infarction, high blood pressure, heart failure, Angina are included in cardiovascular diseases(1). Health statistics globally show that CVDs accounts for about 1/3rd of the fatalities in individuals and makes it a major public health related concern. Many different medications are used for the treatment of heart diseases including Antihypertensive medications, anticoagulants, Beta blockers, Calcium channel blockers. These medications are beneficial for the treatment but many patients with poor socioeconomic factors face difficulties in accessing these therapies(2).

Demographically, many different patients were utilizing herbal treatments and oldest medicines for cure and for the treatment of many unusual illnesses mainly cardiovascular issues. Nowadays use of ancient therapies and old remedies mostly herbs are found to be growing rapidly and seen in enhancing therapeutic out comes in many patients(3). There are many active constituents present in herbs, which includes poly-phenols, flavonoids, saponins, alkaloids and also comprise of lipid lowering property, vascular dilation, anti-inflammatory and anti-oxidant effects are also beneficial for heart.

**OVERVIEW OF CVD:**

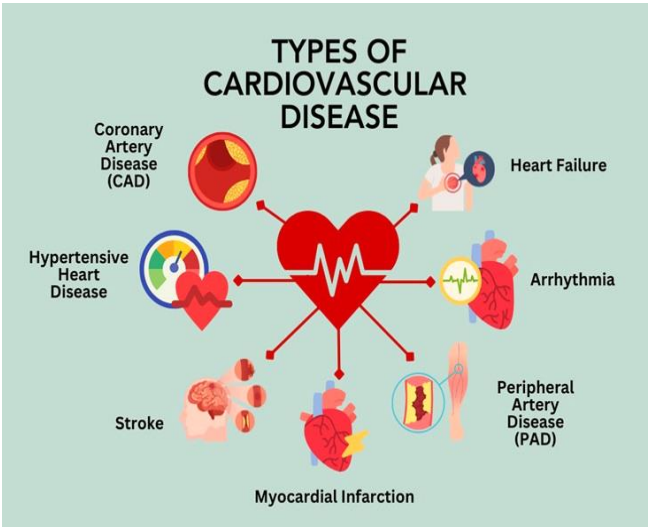
Many heart related diseases are mostly caused due to improper blood supply towards heart due to any structural, electrical or biochemical disruption in system. Commonly seen cardiovascular diseases includes:

**Atherosclerotic plaque:**

Occurs due to buildup of plaque in vessels which narrows it and decreases the blood supply, ultimately causing heart related problems.



**High Blood Pressure:**




Constantly elevation of the heart's blood pressure leads to increase in cardiac output and it's workload.

**Coronary arterial disease:**

Any kind of blockage or reduced blood flow in coronary artery which causes angina and myocardial infarction

**Cardiac failure:**

Heart becomes unable to pump sufficient amount of blood towards the circulatory system(1).

**Strokes:**

Brain dysfunction due to improper blood supply from heart towards cerebral system.

Pathogenesis involved in cardiovascular diseases are endothelial abnormality, lipid profile imbalance, oxidation stress, chronic inflammation from disease and thrombus formation. Thus, medications and therapeutic treatments are required for the cure of these problems. Bioactive substances and natural anti-oxidant properties of many herbal formulations are used in the treatment of these pathological issues.

This review article aims to explore the role of herbal medicines in cardiovascular management as compare to synthetic drugs.

## METHOD

This systematic review was conducted to evaluate the role of plant-based medicine in the management of cardiovascular diseases. The search was employed by using different digital databases including Google scholar, Science direct, Pubmed, and Scopus including the keywords such as “cardioprotective”, “herbal therapy”, “anti-inflammatory”, ‘heart failure”, “cardiovascular diseases”, “garlic”, “phytochemicals”. To ensure the comprehensive retrieval of literature boolean operators (AND, OR) were used(4).

Inclusion criteria includes herbs that are recorded with its cardioprotective effect in both invivo as well as in invitro testing. The appropriate data was extracted based on its active constituents present, dosage form, therapeutic effect, safety, patient compliance and formulations. Studies were excluded which lack scientific evidence, those studies were also excluded that mentions non-cardioprotective roles of herbs.

Obtained information was analyzed to evaluate its role in cardio-protection, as well as it is also compared with conventional pharmacological approaches to check for the efficacy and limitations. This review provides comprehensive approach and scientific foundation(5) to help in upcoming researches, clinical use and, production of effective herbal preparations of cardiovascular health.

## RESULTS

### MAJOR HERBS USER IN CARDIOVASCULAR DISORDERS:

Traditional medicinal system such as traditional chinese medicine, homeopathy, Ayurveda,Unani medicine using plant based treatments for ages. An extensive range of plants have been acknowledged for the use for its cardioprotective role. Below are some major herbal drugs used in the cardiovascular risk management:

### 1.GARLIC (Allium sativum):

Garlic is extensively used medicinal plant for its role in minimization of cardiovascular risks. The active component present in garlic that is allicin having strong anti-platelet and lipid lowering properties. It significantly lowers the level of LDL while enhances the HDL levels that overall improves lipid profile. Garlic also reduces the thrombolytic events as well as inhibits platelet aggregation. It also exhibit anti-hypertensive effect by accelerating hydrogen sulphide production and nitric oxide that leads to vasodilation. Frequent consumption of garlic improves cardiovascular function and reduces the risk of atherosclerosis(6).

### 2.HAWTHORN (Crataegus spp):

Hawthorn is commonly used a cardiotonic. Different parts of hawthorn such as berries, leaves, and flowers contain different constituent such as flavonoids, oligomeric procyanidins, phenolic acids, and tri-terpenic acids which improves coronary blood flow as well as improves cardiac contractility. It also helps in maintenance of normal blood pressure and it is also

efficient in prevention of mild heart failure. It also exert potent antioxidant effect by inhibiting the activity of reactive oxygen species and it also inhibits lipid peroxidation thus protecting myocardial tissues from oxidative damage. Hawthorn is safe for its prolonged use due to to its low toxicity profile(7).

**3.GINKGO BILOBA:**

Ginkgo biloba is a widely known herb for maintenance of vascular integrity and improves microcirculation. Chemical constituents that are present in ginkgo biloba are Ginkgolides and bilobalide it enhances endothelial function, both of the constituent inhibits platelet activation due to which the formation of clot stops. Ginkgo helps regulate blood flow towards heart and brain which facilitates the nutrient and oxygen supply towards heart and brain. Moreover, it a powerful antioxidant that reduces the risk of oxidative damage and ischemia(8).

**4.GREEN TEA (Camellia sinensis):**

Green tea plenty of polyphenols mainly catechins such as epigallocatechin gallate that reduces oxidative stress and inflammation. Routine use of green tea shows reduced cholestrol levels, enhanced endothelial function and reduced arterial blockage. Presence of catechin also inhibits LDL oxidation that significantly lowers the risk of plaque formation. It also accelerates fat oxidation and thermogenesis, which regulates body mass and enhancing overall cardiovascular wellbeing.

**5.ARJUNA (Terminalia arjuna):**

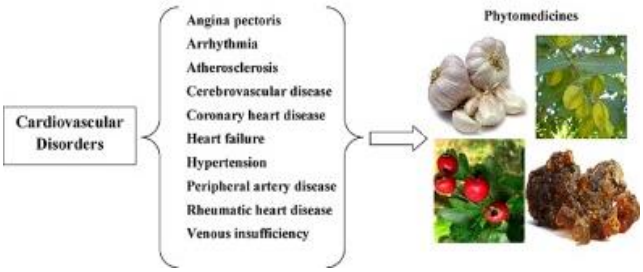
It has a significant role in Ayurvedic medicine as cardioprotective. The bark stem extract of arjuna contains different constituent such as flavonoids, glycosides that protect myocardium. It also possess potent antioxidant activity helps reduce oxidative stress in cardiac cells, thereby preventing damages associated with heart diseases(9).

**6.TURMERIC (Curcuma longa):**

Due to the presence of polyphenolic compounds that is curcuminoids (curcumin, demethoxycurcumin, bisdemethoxycurcumin) as well as volatile oils (zingeberene, turmerol etc) it scavenges reactive oxygen species, inhibits inflammatory meditators and overall improves endothelial function. It also inhibits platelet aggregation reduces the risk of stroke(10).



## CONCLUSION




The treatment of heart diseases with herbs is really interesting. This is an area where plants and old remedies meet medicines. People around the world use herbs to help their hearts. Heart diseases and herbs this is a topic that shows herbs can really help people, with heart diseases. The best part is that herbs are not too expensive. Cultural acceptance for herbs are seen for the treatment of cardiovascular diseases. For heart diseases people like to use herbs because they are simple, easily available and easy to use. Different researchers and scientists are still finding out

the treatment of disease. They are finding out that the herbal treatment of diseases is really useful. It helps reduce stress on the body. The herbal treatment of diseases makes the heart healthier. It also improves the way blood vessels work. The herbal treatment of diseases keeps blood pressure under control. It protects the heart muscle. Many different patients are finding herbal treatment beneficial more as compared to synthetic because it is a natural way of curing heart diseases.

The way people make therapies has gotten a lot better. Now we have things like extracts and herbal capsules that help our bodies use the good things in plants. Herbal therapies are really important, for our heart health. We need to take care of our heart health and herbal therapies can help us do that.

The World Health Organization and other groups thinks that we have to check if these herbal therapies are safer for people to use and to find out if they are really effective. WHO requires clinical based evidences to ensure herbal remedies are authentic for the treatment of CVDs and to make sure that these herbs are good for the people with heart problems without any serious side effects or adverse effects(25).

Overall, herbal remedies cardiology offers a advantageous and complementary approach to synthetic - conventional treatment, promoting holistic and natural patient care, low side effects, and easily accessibility in low economical areas and healthcare settings. Proper research, oversight of regulatory compliance, and validation of clinical aspects will improve it's role in modern cardiovascular system.

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