Natural remedies for heart diseases

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Heart diseases have posed a great challenge in the developing countries. Heredity, high blood pressure, diabetes, high serum cholesterol, smoking, improper diet and stressful life styles are the factors, which are responsible for heart diseases. In Ayurveda believes that heart diseases are due to the imbalance of three *doshas* and bringing the normal levels of these *tridoshas* back to normal will be major step in management of heart diseases. Ayurveda treats heart diseases at two levels; first level is the preventive one and second level deals with the treatment of heart diseases with different plants and their formulations. In the paper, some of the plants and formulations, useful in the treatment of heart diseases have been summarized.

**Keywords:** Ayurvedic drugs, Heart diseases, Medicinal plants, Natural remedies

**IPC Int. CL:** A61K36/00, A61P9/00, A61P9/04, A61P9/06, A61P9/08, A61P9/10, A61P9/12

Ayurveda is a traditional and most commonly practiced form of medicine in India. Ayurveda comes from the words *Ayur* (life) and *Veda* (knowledge). The concept of Ayurveda is based on a combined study of body (*Sharira*), sense organs (*Indriyas*), mind (*Manas*) and soul (*Atman*). Equilibrium of all these is related to health. When an imbalance exists among any one of the three *Doshas*, Ayurveda suggests a unique combination of food, exercise, meditation and herbs. Ayurvedic herbs stimulate the function of specific organs in the body, possibly by altering hormones, affecting immunity and neurotransmitters, and conveying antioxidant properties. Cardiovascular problems have been dealt in detail in Ayurveda, which describes *Hridaya* (heart) as a body organ governing emotions and circulating blood to keep a person alive and healthy. Heart Disease (*Hrudroga*) is a global phenomenon. It is now becoming a major health problem even in developing countries. The predisposing factors are heredity, high blood pressure, diabetes, high serum cholesterol and smoking. Improper diet and stressful life styles lead to thickening of arteries (*Dhamani practicaya*) or hardening of arteries (*Dhamani kathinaya*) resulting in angio-obstruction (*Vata dosa*) and angina (*Ruja*).

Ayurveda has given different plants and formulations, which are useful in managing heart diseases (Table 1).

*Corresponding author
### Table 1—Plants used in Ayurvedic Pharmacopoeia

<table>
<thead>
<tr>
<th>Plant name</th>
<th>Plant parts used, preparation and dosage</th>
<th>Design and model</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Azadirachta indica</strong></td>
<td>Decoction of <em>Azadirachta indica</em>, <em>Boerhaavia diffusa</em>, <em>Cedrus deodara</em>, <em>Picrorhiza kurrooa</em>, <em>Terminalia chebula</em>, <em>Tinospora cordifolia</em>, <em>Trichosanthes lobata</em>, <em>Inula racemosa</em> (2 gm each, 8 hrly); <em>Commiphora mukul</em> (1/2 gm 8 hrly); and <em>Urgenia indica</em> 100 mg (8 hrly).</td>
<td>14 cases of congestive heart failure</td>
<td>All patients were given the decoction and <em>Urgenia indica</em>: patients with ischaemic heart disease, cardiomyopathy and cor pulmonale were given powder of <em>Inula racemosa</em>, while patients with rheumatic heart disease were given <em>Commiphora mukul</em>. After 2 weeks, 10 patients were cured completely, 2 had bradycardia and 2 were refractory.</td>
</tr>
<tr>
<td><strong>Cassia fistula</strong></td>
<td><em>Cassia fistula</em></td>
<td>Albino rats</td>
<td>Administration of <em>Cassia fistula</em> produced a significant decrease in blood and liver total lipids. Brain, spleen, kidneys and heart followed a similar trend but with moderate effect. Blood, liver kidneys, spleen and heart total cholesterol significantly decreased. The level of triglycerides was markedly improved.</td>
</tr>
<tr>
<td><strong>Cedrus deodara</strong></td>
<td>Decoction of <em>Azadirachta indica</em>, <em>Boerhaavia diffusa</em>, <em>Cedrus deodara</em>, <em>Picrorhiza kurrooa</em>, <em>Terminalia chebula</em>, <em>Tinospora cordifolia</em>, <em>Trichosanthes lobata</em>, <em>Inula Racemosa</em> (2 gm each, 8 hrly); <em>Commiphora mukul</em> (½ gm 8 hrly), <em>Urgenic indica</em> (100 mg, 8 hrly).</td>
<td>14 cases of congestive heart failure</td>
<td>All patients were given the decoction and <em>Urgenia indica</em>. Patients with ischemic heart disease, cardiomyopathy and cor pulmonale were given powder of <em>Inula acemosa</em>, while patients with rheumatic heart disease were given <em>Commiphora mukul</em>. After 2 weeks 10 patients were cured completely, 2 had bradycardia and 2 were refractory.</td>
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<tr>
<td><strong>Cocos nucifera</strong></td>
<td>Coconut and coconut oil</td>
<td>Clinical trial: 32 coronary heart disease16 matched healthy controls</td>
<td>Consumption of coconut oil was found to be similar in both groups. The groups did not differ in the fat, cholesterol consumption. The result implies no specific role for coconut or coconut oil in the causation of coronary heart disease in this set of patients.</td>
</tr>
<tr>
<td><strong>Elephantopus scaber</strong></td>
<td>Aqueous and hydroalcoholic extracts (0.3–6 gm/kg) of <em>Elephantopus scaber</em> whole plant.</td>
<td>Mice, rats</td>
<td>Both extracts induced writhing, loss of muscle tone, ataxia, prostration and death. Both reduced brewer’s yeast- induced hyperthermia but when given orally did not affect it. Aqueous extract reduced intestinal transit time while the hydroalcoholic extract increased it. Given IV, blood pressure and heart rate were reduced.</td>
</tr>
<tr>
<td><strong>Myristica fragrans</strong></td>
<td>Ethanolic extract of <em>Myristica fragrans</em> 500 mg/kg orally for 60 days.</td>
<td>Albino rabbits and controls</td>
<td>Total cholesterol, LDL, triglycerides, and cholesterol were significantly reduced. Extract also showed platelet antiaggregatory ability and a</td>
</tr>
</tbody>
</table>

*(Contd)*
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<td>Picrorhiza kurrooa</td>
<td>Decoction of Azadirachta indica, Boerhaavia diffusa, Cedrus deodara, Picrorhiza kurrooa, Terminalia chebula, Tinospora cordifolia, Trichosantes lobata, Inula racemosa (2 gm each, 8 hrly); Commiphora mukul, (1/2 gm 8 hrly); Urgenia indica (100 mg, 8 hrly).</td>
<td>14 cases of congestive heart failure</td>
<td>Patients were given Urgenia indica decoction. Patients with ischemic heart disease, cardiomyopathy and cor pulmonale were given powder of Inula racemosa, while patients with rheumatic heart disease were given Commiphora mukul. After 2 weeks 10 patients were cured completely, 2 had bradycardia and 2 were refractory.</td>
</tr>
<tr>
<td>Terminalia arjuna</td>
<td>Terminalia arjuna bark (500 mg, 8 hourly).</td>
<td>Clinical randomized controlled double-blind trial: 12 with congestive heart failure NYHA Class IV</td>
<td>Terminalia arjuna compared to placebo therapy was associated with improvement in symptoms and significant signs of heart failure. On long-term evaluation (phase II), patient continued to show improvement in symptoms, signs, effort tolerance, and NYHA class.</td>
</tr>
<tr>
<td>Terminalia chebula</td>
<td>Decoction of Azadirachta indica, Boerhaavia diffusa, Picrorhiza kurrooa, Terminalia chebula, Tinospora cordifolia, Trichosantes lobata, Commiphora mukul (1/2 gm each, 8 hrly); Urgenia indica (100 mg, 8 hrly).</td>
<td>14 cases of congestive heart failure</td>
<td>Patients were given the decoction and Urgenia indica. Patients with ischemic heart disease, cardiomyopathy and cor pulmonale were given Inula racemosa powder, while patients with rheumatic heart disease were given Commiphora mukul. After two weeks 10 patients were cured completely, 2 had bradycardia and 2 were refractory.</td>
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because of congestion and stagnation with phlegm clogging and reducing the blood flow; while in pitta type, it is mainly associated with anemia or damaged liver function. From Ayurvedic perspective, hypertension is commonly a pitta condition. However, it can occur in the other doshas as well. Generally, it is of three types. Vata hypertension is due to worry, strain, overwork, anxiety or insomnia, frequently associated with nervous system disorders. Kapha Hypertension is due to obesity, tiredness, edema, and high cholesterol. Pitta Hypertension is associated with liver disorders and the accumulation of internal heat.

Treatment includes avoidance of dairy, butter, eggs and high fat foods, incorporating plenty of hot spices in the diet, particularly mustard and onions. Crushed garlic clove with honey is taken once or twice a week. Nutmeg or Saraswat powder is given with warm milk. Mixture (1-3 gm) of Ashwagandha 1 part, Valerian 1 part, Gotu kola 1 part taken with warm water or with ghee calms the nerves and relieves heat and stress.

Arjuna preparations like Trikatu are very useful. Herbs such as gotu kola, calamus, valerian, skullcap, jatamansi, turmeric, cinnamon, ginger, cayenne, garlic, black pepper, myrrh, motherwort, hawthorn berries, barberry, katuka and cardamom are recommended for this condition. For vata types garlic is used; for kapha types cayenne or Trikatu is used; while for Pitta types, saffron or turmeric in a base of aloe gel is used. Gotu kola is another useful herb for Pitta hypertension. Brahma Rasayana and Saraswat powder are also used.

Heart Attack (Myocardial Infarction)

A heart attack (myocardial infarction) occurs when a coronary artery abruptly fails to deliver blood to a part of heart. Arteriosclerosis means thickening and hardening of artery walls due to calcium deposits. In atherosclerosis, the deposits consist of fatty substances, and artery walls lose elasticity and harden. Both arteriosclerosis and atherosclerosis affect circu-
lation. If not taken care of they can ultimately lead to high blood pressure and to angina (chest pain), heart attack, stroke, and/or sudden cardiac death.

**Kapha and Pitta** types are due to fat accumulations. **Vata** type is from the hardening of the arteries. Treatment for arteriosclerosis is similar to the treatment of heart diseases and for hypertension. Hypertension usually follows arteriosclerosis. **Guggul** lowers high cholesterol and is useful for **Kapha**. It improves circulation, reduces pain, removes accumulations and promotes healing. 1 gm is taken in the morning and evening for three months. Garlic is taken along with honey. Calamus, turmeric, elecampane, aloe vera gel with turmeric or safflower, katuka, myrrh, saffron, motherwort, and hawthorn berries are other useful herbs.

**Cardiomyopathies (Vatika Hrudoga)**

**Vatika Hrudoga** comprises of an umbrella of disorders. The main features include excruciating pain in heart, pricing, squeezing and crushing. Other features include breathlessness, feeling of emptiness in chest, palpitation, sudden lethargy, and loss of consciousness. The Ayurvedic treatment of IHD comprises of Panchkarmas, which mainly includes Virechna (Purgation) and Basti (medicated enemas). Internal medicines include drugs like Ajmoda, Vishatinduka and Bold. Externally a local treatment, known as Hrid-Basti, which is a type of oleation (Snehana) incorporating application of oils, decoctions, juices of herbs locally on mid sternal zone, forming a wall of wet gram paste is given.

**Congenital heart disease & cardiovascular diseases**

Congenital means inborn or existing at birth. In order to rectify the defects cardiac surgery is needed. According to Caraka Samhita of Agnivesa, plants termed as cardiac tonic are as follows

<table>
<thead>
<tr>
<th>Botanical name/Family</th>
<th>Common names</th>
<th>Useful parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnifera indica Linn.</td>
<td>Aam, Amba</td>
<td>Fruit</td>
</tr>
<tr>
<td>Gmelina asiatica, Linn.</td>
<td>Badhar</td>
<td>Fruit</td>
</tr>
<tr>
<td>Carissa carandas, Linn.</td>
<td>Karanda</td>
<td>Fruit, Bark, Leaves</td>
</tr>
<tr>
<td>Garcina indica Choisy (Guttifereae)</td>
<td>Amsul</td>
<td>Fruit</td>
</tr>
<tr>
<td>Garcinia pedunculata</td>
<td>Amlavettas</td>
<td>Fruit</td>
</tr>
</tbody>
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</thead>
<tbody>
<tr>
<td>Ziziphus jujuba Mill.</td>
<td>Kuval, Bor</td>
<td>Fruit, Leaves</td>
</tr>
<tr>
<td>Ziziphus nummularia Wight &amp; Arn. (Rhamna-ceae)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Punica Granatum Linn.</td>
<td>Anardana</td>
<td>Flowers, Fruits</td>
</tr>
<tr>
<td>Citrus medica Linn.</td>
<td>Mahalung</td>
<td>Fruit</td>
</tr>
</tbody>
</table>

Emblica officinalis Gaertn. (Amla/Amalaki) is used to rebuild and maintain new tissues and increases red blood cell count. It is the highest natural source of vitamin C and reduces pitta without aggravating vata or kapha. It is a one of three herbs used in triphala, the primary Ayurvedic tonic for maintaining health. In Ayurveda, Amla fruits are reputed Rasayanas and rejuvenators. They are extensively used in Ayurvedic preparations for the treatment of a number of diseases and debility states and are one of the three constituents of triphala, which is a remedy for constipation, indigestion and hyperacidity. It contains gallic and ellagic acids, hydrolysable tannins, ascorbic acid (Vitamin C), phyllembic acid emblicol, and alkaloids. This Plant has shown its mettle in the areas of digestive, heart health, and diabetics. Plant even help to reduce the toxic side effects of chemotherapy, restores antioxidant status to the kidneys, and reduces blood sugar levels in diabetics. They have potent immunomodulatory, immunostimulant, antipyretic, spasmylytic, antifungal, antibacterial and antiviral activities.

Terminalia arjuna (Roxb.) Wight & Arn. (Arjuna) bark is used as medicine. Six teaspoonfuls of Arjunarishtha are given to the patient twice daily after food with an equal quantity of water. Arjuna is a cardiac tonic used in Ayurveda for a variety of heart conditions. Often it is combined with ashwagandha, brahmi and guggul in heart formulas. Arjuna is a coronary vasodilator, protects the heart, strengthens circulation, and helps to maintain the tone and health of the heart muscle. 1/2 teaspoon (500 milligrams to one gram) 3 times a day is given with honey and warm water. Administered at a dose of 15 mg/kg, arjunolic acid could protect against damage wreaked by myocardial necrosis, which translates into irreparable damage to heart cells.

Ocimum sanctum Linn (Tulsi) is used against a wide variety of diseases. Tulsi leaves are household remedy for common cold and cough. Ayurvedic text describes the herb to be aromatic and a pacifier/normaliser of vitiated and deranged Kapha-vata.
doshas and is useful in blood disorders (Raktavikar). Phytochemical investigations of leaves have shown the presence of flavones, glycosides, gallic acid and its ester, caffeic acid and volatile oil having eugenol (70.5%) as the main component. Tulsi leaf extract has shown adaptogenic, antiinflammatory and antiasthmatic activities.

*Picrorhiza kurroa* Royal ex. Benth. (Kutaki) rhizome is used for the treatment of fever, jaundice, liver afflictions, bile disorders, against infections, inflammatory and drainage morbid conditions. The herb pacifies the vitiated *Kapha-vata doshas* and corrects imbalance in them. It is astringent, bitter and a valuable tonic, extensively employed for rejuvenation therapy. It contains phenolic glycosides (androsin-aglycone, apocynmine), Iridoid glycosides (Kutkaside, picrosides I, II, III), Cucurbitaceous glycosides, vinallic acid, cinnamic acid. Active constituents of the herb have been found to be responsible for the inhibition of free oxygen radicals. Picroliv, a standardised fraction from root shows hepatoprotective activity against liver cirrhosis and liver toxicity, promoting the repair of injured tissues. The standard fraction, Picroliv also has exhibited hypolipidaemic action, altering lipolytic activities in plasma, liver, heart and adipose stimulating catabolism of risky low-density lipoprotein (LDL) while increasing the beneficial high-density lipoprotein (HDL) fraction. Roots also show antiasthmatic activity.

*Tinospora cordifolia* (Willd) Miers (Gilot/Guduchi) consisting of stem of the herb, restores a balance among the vitiated and deranged *kapha, vata* and *pitta* doshas and is alterative and bitter. Categorised in Ayurveda as Rasayana, the herb is used in inflammation and rheumatism, diabetes, jaundice and allied liver problems and malarial fever. Chemical investigations of the stems have isolated compounds, broadly classified as alkaloids (berberine), glycosides (furanoid diterpene glycoside), lactones (Tinosporon, tinosporide), stearols and fatty acids. They are found to be rich in calcium (1.06%). Trace elements—manganese, zinc, copper and cobalt are also reported. *T. cordifolia* herb possesses potent immunomodulatory and immunostimulant activities. It produces significant leucocytosis (increased number of leucocytes in blood) in response to infection and predominant neutrophilia affording an increased protection against susceptibility to pathogenic infections. The herb is an adaptogen, and induces a marked protection against restraint stress-induced ulceration and other stress-mediated effects. Utility and therapeutic value of the herb has been demonstrated in various liver disorders including jaundice, and exhibited antihyperglycaemic activity. Toxicity study has shown the herb to be non-toxic with wide safety margin.

*Convolvulus pluricaulis* Choisy (Shankhpushpi) being astringent and bitter improves *Kapha-vata-pitta doshas*. Plant has shown presence of glycosides, coumarins, flavonoids and alkaloids. Alkaloid Shankhpushpine, has been identified as active principle. The herb induces a feeling of calm and peace, good sleep and a relief in anxiety, stresses, and mental fatigue, producing a significant reduction in the level of anxiety, neuroticism arising due to various levels of stresses. The herb appears to produce its action by modulation of neuro-chemistry of the brain. Further, the herb is non-toxic and its use does not produce any side effects.

*Allium sativum* Linn. (Garlic) is most important substance helpful in alleviating *vata doshas* controlling blood pressure and lowering cholesterol. Garlic is known to lower blood pressure, boost immune system, fight infections, and prevent cancer. Garlic lowers the over all cholesterol counts and helps to combat cold and flu. It also is helpful against parasites, bacterial infection, cancer, ulcers and even slows the growth of existing tumors.

*Cinnamomum zeylanicum* Breyn. (Cinnamon) powder with honey reduces the level of cholesterol in the blood by 10% within 2 hrs.

*Crataegus oxyacantha* Linn. (Hawthorn berry) tincture strengthens heartbeat and improves circulation in the blood vessels of the heart. Hawthorn extract gently dilates the coronary vessels increasing the supply of arterial blood to the heart. This action enhances oxygen utilization, resulting in a stronger, and more powerful heart muscle. Crataegus differs from digitalis, which is also an effective heart stimulant, in that it does not produce side effects. Crataegus strengthens the overall effect of digitalis.

*Centella asiatica* Urban (Mandukaparni) has shown promise in cognitive, circulatory, digestive health and venous hypertensive microangiopathy. In microangiopathy in diabetics, the triterpenic fraction (60 mg twice daily for 12 months) decreased capillary filtration and edema, which in turn improved the condition.

*Mucuna pruriens* Hook. (Kapikachchha) exhibited efficacy in heart disease and diabetes. Alcohol extract of *M. pruriens* inhibited lipid peroxidation, a factor in
free radical damage and heart disease. The extract had an antilipid peroxidation property, due to its effect in removing hydroxyl radicals and super oxides. 200 mg/kg/d exerted maximum anti-hyperglycemic effects after six weeks.

Withania somnifera Dunal (Ashwagandha) has immunostimulatory properties, exerts a positive influence on the endocrine, cardiopulmonary and central nervous systems and improves memory.

Azadirachta indica A. Juss. (Neem) is helpful in coronary artery disease and heart arrhythmias, in addition to protecting against ulcers and strep infections.

Gymnema sylvestre R. Br. (Mesrasringa) shows hypoglycemic and anti-hyperglycemic activity, useful for diabetics. An extract of leaves given to rats for three weeks influenced lipid metabolism, improving serum cholesterol and triglyceride levels.

Ayurvedic formulations

The principles underlying Ayurvedic formulations can be broken into four parts: synergy, opposition, protection and enhancement. The various formulations used in heart diseases are as follows:

Chandraprabha, is used to maintain healthy cholesterol levels and blood sugar levels. Abana containing arjuna, ashwaganda, and shatavari promotes healthy cholesterol levels, helps regulate blood pressure and supplies needed oxygen to the heart. Abana regulates serum lipids by lowering the cholesterol, triglyceride, low-density lipoprotein (LDL) and very low-density lipoprotein (VLDL) levels, and restores the cardioprotective high-density lipoprotein (HDL) level. Abana also reduces platelet aggregation. Abana reduces the sensitivity of the heart to adrenergic stimulation and improves the contractility of the heart by exerting a positive ionotropic action. Digest Ease is a digestion formula for pitta. It supports proper digestion and absorption for individuals prone to hyperacidity and heartburn. Arjuna, bala and Hawthorn berry are effective in nourishing and strengthening heart muscle, stimulating circulation and oxygen flow. It promotes healthy cholesterol levels aiding in the defense of heart disease. Arjuna (Koha) paste is helpful in heart diseases, acne, and diarrhoea. Cholest Control, an Ayurvedic herbal formulation helps to reduce cholesterol levels in the body. Guggul is effective in arthritis, bronchitis, atherosclerosis, diet & weight loss, PMS, stress, and ulcers. Avipattikkar churna containing Vindanga, Shankara, Lavanga, Pipili, Trifala, Mustaka, Ela, Tejpata, and Kala mirch is effective in acidity, heartburn, gastritis, anorexia, loss of appetite, constipation, and hyperactivity. Bala (Sida cordifolia Linn.) is commonly used for heart diseases, soothing for arthritic pain, rejuvenative, nutritive, and stimulant for the heart, helps in the inflammation of nerve tissue. Bala pacifies high vata-pitta conditions. Haritaki (Terminalia chebula Retz.; C.B. Clarke is used in cough, asthma, abdominal distention, tumors, heart disease, skin disease, and itching. Tribulus terrestris Linn. is also used in cardiovascular diseases. Cardoclear regularizes heart function, maintains lipid and cures heart diseases. Hriday Amrit is a remedy for coronary heart diseases & other cardiac disorders. Hriday Amrit is composed of Terminalia arjuna, Boerhaavia diffusa Linn., Plumbago zeylanica Linn., Terminalia chebula Retz., Withania somnifera Dunal, Vitex negundo Linn., Vanda roxburghii R. Br., Solanum nigrum Linn., Tinospora cordifolia Miers ex Hook f.& Thoms., Piper longum Linn., Cyperus scariosus R. Br., and Embelia ribes Burm. f.

Baidyanath Arjunarishta is a cardiac tonic. Art Capsules contains garlic, hawthorn, passionflower extract and vitamin E. Muktavati containing Bacopa monnieri (Linn.) Pennel., Evolvulus alsinoides Linn., Inula racemosa Hook. f., Celastrus paniculatus Willd., Withania somnifera Dunal, Onosma bracteatum Wall., Tinospora cordifolia Miers ex Hook f.& Thoms., red coral powder and pearls is a remedy for high blood pressure, anxiety and Insomnia. Hinguvachaidi Gutika is useful in pain in the heart, difficulty in passing urine, anemia, haemorrhoids, hiccups, respiratory disorders, and cough. Arjuna Nectar improves poor blood circulation, increases red blood cell count, Coronary heart disease, Heart palpitations, Irregular heartbeat, arteriosclerosis and angina pectoris. Parahdyari shrimp containing Arjuna for heart and lung diseases, as a cardiac stimulant and for controlling blood pressure. Hridayarnava rasa and Prabhakara vati are given in various cardiovascular diseases. Mrigamadasava is the ideal drug at the time of acute attacks. The Blisfil Joy herbal supplement is a restorative containing Arjuna, Ashwagandha and other nourishing herbs.

Conclusion

Ayurveda has offered a novel remedies for the management of heart diseases. Plants such as Arjuna, Garlic, Cinnamon and their formulations are very useful in treating heart diseases. Guggula and pushkar-
mula has been shown to be a best combination for treatment of Ischemic heart diseases. Chandraprabha and Abana formulations are helpful in lowering the cholesterol levels. Research is required to find out the specific molecules, responsible for the their beneficial actions in heart diseases along with their toxicological studies. The detail investigation of the plants and their constituents for their pharmacological actions will help in the development of new molecules for the treatment of heart diseases.

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