



Editorial

Credential evidences of Ayurvedic cardio-vascular herbs

The British scientist, Dr. N.J. Wald and Dr. M.R. Law of Wolfson Institute of Preventive Medicine at the University of London suggested a pill (six-in-one formulation) consisting of statin (hypocholesteremic), three hypotensive drugs (thiazides, a beta blocker and an angiotensin-converting enzyme inhibitor), folic acid and aspirin for preventing heart attacks and stroke to be taken by everyone above the age of 55 years. This polypill can check four risk factors indicated for heart diseases, that is, (1) Abnormal levels of cholesterol and imbalance in the levels of proteins that transport it in the body, (2) abnormal blood pressure because of blockage of the tubes that carry it, (3) high levels of the harmful amino acid homocysteine, which damages blood vessels and (4) important functioning of the blood cells called platelets leading to blood clotting and vessel rupture – stroke.^[1]

Though cardiovascular system was not envisaged by Ayurveda in the way in which it is being described presently in modern medicine, it appears that the various references pertaining to cardiovascular activities indicate that ancient Ayurvedists had a similar concept. References to the actual act of circulation are available in the *Samhitas*. The fluid that circulates in the body is spoken as *Rasa* because it is always going, that is, ever circulating. The *Rasa* circulates round the body, like a rotating wheel. Sushruta states that the nutrient fluid circulates throughout the body with variable velocity, like the speed of light, sound and water. Bhela states that the nutrient fluid comes into circulation from the heart spreads all over the body through *Siras*.^[2] The circulation described in Ayurvedic classics may be too sketchy as it does not describe portal circulation, renal circulation, etc. Alteration of the degree of circulation to the peripheral areas was described in Sushruta's description of blood not flowing out freely in *Siravyadha* (venesection). Charaka mentions that if the places where pulsations of vessel generally seen, if suddenly become free from pulsations it indicates a very bad prognosis. *Dhamani Praticaya* described under *Kaphaja Nanatmajavikara*, is akin to atherosclerosis. Hypertension, which is the most important condition contributes for cardiovascular or cerebrovascular disorders was not described in Ayurveda and can be interpreted with different conditions like *Raktavata*, *Raktagatavata*, *Siravata*, *Kaphavrita Vyana* etc.^[3]

Ayurvedic treatise documented drugs employed in *Hridroga* (Heart disease). Charaka introduced ten drugs under *Hridya Mahakashaya* group that comprises mostly like ascorbic acid of citrus fruits in it. It is proven that certain phytoconstituents present in these herbs help to maintain a healthy state of blood vessels including coronary arteries. Heart diseases are categorized according to *Doshika* dominance and *Krimi*. It appears to be very difficult to incorporate all the

cardiovascular conditions described by modern medical science into these varieties. A critical analysis of the herbal lore utilized in the management of *Hridroga* (Heart disease) like *Arjuna* (*Terminalia arjuna* (Roxb.) Wight and Arn.), *Pushkarmoola* (*Inula racemosa* Hook. f.), *Bala* (*Sida cordifolia* Linn.), *Nagabala* (*Sida humilis* Linn.), *Shunthi* (*Zingiber officinale* Roscoe.), *Pippali* (*Piper longum* Linn.), *Yashtimadhu* (*Glycyrrhiza glabra* Linn.), *Haritaki* (*Terminalia chebula* Retz.) and *Dashmoola*, etc., clearly indicates that they are possessing hypotensive, hypocholesteremic, anti-platelet and thrombolytic activities which play a crucial role in the management of cardio-vascular and cerebrovascular disorders.

Scientific evidence is available on the usefulness of several Ayurvedic drugs in cardiovascular diseases. Clinical studies have shown the efficacy of the bark of *T. arjuna* in congestive cardiac failure,^[4] chronic stable angina^[5] and hypertension.^[6] *T. arjuna* and its constituent, Arjunolic acid have shown cardioprotective effects due to antioxidant activity in rats.^[7,8] Alcoholic extract of the bulb of *Allium ascalonicum* (*single clove garlic*) showed significant anticoagulant, fibronolytic and hypocholesterolaemic activity in rabbits.^[9] Crude extract of *Andrographis paniculata* (Burm.f.) Wall. Nees and its active ingredient andrographaloides have shown hypotensive activity in rats.^[10] Studies reveal that it inhibits human platelet aggregation and could be useful in the prevention of myocardial ischemia.^[11] The plant also helps in preventing re-stenosis of artery after coronary angioplasty.^[12] Rhizome of *Curcuma longa* Linn. (turmeric) and its constituent, curcumin possess hypolipidemic effect, anti-atherosclerotic action^[13] and antithrombotic effects.^[14] In animal (rats, cats, dogs) studies, essential oil of rhizome of *Nardostachys jatamansi* DC. as well as Jatamansone displayed significant and prolonged hypotensive effect. Jatamansone was also shown to possess antiarrhythmic activity in certain animal models, besides its sedative and tranquillizing activities. Clinical support for these activities has also been obtained.^[15] *Pushkarguggulu* (prepared form *Pushkarmoola* and *Guggulu*) has shown anti anginal and hypolipidemic activities in coronary heart disease.^[16] Dr. Dean Ornish, the modern scientist, developed a program to reverse heart diseases with regular *Suryanamaskar* exercises and certain lifestyle modifications.^[17]

A careful review of modern pharmacology indicates that cardiovascular drugs were developed initially from certain medicinal plants. Williams Withering (1776) reported that *Digitalis* (foxglove) had shown miraculous effect in few cases of dropsy. In 1911, Sir James Mackenzie demonstrated that, *Digitalis* blocks the atrio-ventricular condition.^[18] This invention

unearthed the potentialities of medicinal plants for the management of cardiac failure and paved the way for the search of cardiovascular drugs from natural resources. Quinidine, an isomer of the anti-malarial drug quinidine, is one of the natural alkaloids occurring in the Cinchona bark was introduced as an anti-arrhythmic drug.^[19] Reserpine, an alkaloid from the root of *Rauwolfia serpentina* (L.) Benth. ex Kurz. is by far the most potent of all hypotensive alkaloids, whereas ajmaline had quinidine like properties.^[20] Dihydrogenated ergot alkaloid (hydergine) is indicated in anti-hypertensive therapy.^[21] Aspirin, initially developed from natural resources (English Willow-*Salix alba* var. *cearulea* tree) has been demonstrated to reduce the incidence of myocardial infarction in patients with chronic stable and unstable angina.^[22]

Experimental research has produced vivid evidence about medicinal plants of Ayurvedic Materia Medica for their cardio protective, hypolipidemic, antianginal, fibrinolytic, thrombolytic, antiplatelet and antihypertensive activities. Unfortunately, none of these drugs are subjected to different phases of clinical trials for demonstrating their therapeutic utility. At the same time no attempts have been made so far to demonstrate the efficacy of Ayurvedic herbs in different varieties of *Hridroga* viz., *Vataja*, *Pittaja*, *Kaphaja*, *Tridoshaja* and *Krimija* varieties from Ayurvedic perspectives. Certain herbs appear to have a role in the prevention of heart diseases. The need of the hour is to produce credential clinical evidence for their role in the management of cardiovascular diseases.

For the prevention of heart diseases and cerebrovascular diseases, a herbal polypill can be developed by incorporating Ayurvedic herbs with known and proven value like – *Guggulu*, *Arjuna*, *Pushkarmoola*, *Lasuna*, *Amalaki* and *Jatamansi* for managing risk factors of cardiovascular conditions. Adaptation of performing *Suryanamaskara* (Sun salutation) may have added value in the programme of prevention of cardiovascular diseases. In this issue a review articles on natural medicaments in dentistry and some basic aspects of statistics in health sciences; eight clinical research articles; one case study on wound healing; two articles of pharmaceutical standardization and five articles of pharmacological study are included. The issue ends with a book review, on the work entitled 'Rasashastra' written by Andrew Mason.

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