



Status of Herbal Drugs in Cardiomyopathy

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Abstract Cardiomyopathy refers to group of diseases related to abnormal structure and functioning of the myocardium that triggers heart failure and death. These may be primary myocardial disorders which may have genetic, non genetic or acquired causes or may originate as a secondary consequence to number of conditions like ischemia, inflammation, infections, increased heart load or exposure to certain toxicants. Cardiomyopathies are now being recognized with increasing frequency due to better understanding and clinical recognition of the cases and advances in cardiac Imaging techniques. Apart from the synthetic therapeutic approaches in practice herbal medicines also play great role in cardiomyopathies. The use of herbal medicines in treatment of ailments is employed since human history. Ayurveda is seen as the most traditional and promising form of medicine in India due to inexpensive and easy availability of herbal drugs with minimum side effects. In this article we will study the major herbal drugs that can be utilized as a remedy for cardiomyopathies.

Keywords *Crataegus monogyna; Terminalia arjuna; Coleus forskohlii; Salvia miltiorrhiza; Gingko biloba*

1. Introduction

The American Heart Association in 2006 described Cardiomyopathies as the diverse group of diseases coupled with electrical and mechanical dysfunction of the myocardium exhibiting inapt ventricular hypertrophy or dilation often due to genetic etiologies [1]. These may be either confined to the heart or may form part of the generalized systemic disorders [2]. Patients may show symptoms like dyspnea, fatigue and may also experience episodes of fainting due to irregular heartbeats [3]. They are the third leading cause of heart failure deaths in United States after CAD and hypertension. Based on the morphology and functioning of the myocardium the cardiomyopathies are classified into four categories namely: dilated cardiomyopathy (DCM), restrictive cardiomyopathy (RCM), hypertrophic cardiomyopathy (HCM) and arrhythmogenic right ventricular cardiomyopathy (RVCM) among which the DCM comprises 60% of cardiomyopathies being the most common form of heart muscle disease[4], [5]. The advancement in technology and cardiac imaging has attributed largely to the study and treatment of cardiomyopathies related heart failures [6], [7]. Amidst the availability of various allopathic treatment, use of herbal medicines has emerged out as a trending approach in the treatment of cardiomyopathies [8]. Herbal medicines have been in use for curing diseases since ancient eras. *Hrudoga* (heart disease as described in ayurveda) has become a global phenomenon. Hence there are a huge number of plants and formulations that are helpful in managing heart diseases. With the increase in population the demand for herbal medicines is also increasing due to their low costs, lesser side effects



and least dependence eventually favoring patient compliance. Some of the herbal drugs which can be used in cardiomyopathies are enlisted in the present review.

1. Hawthorn (*Crataegus monogyna*)

It is a herbal plant belonging to large genus of shrubs and trees namely *Crataegus monogyna* belonging to family Rosaceae. It is commonly called as thornapple, may-tree, whitethorn or hawberry. These are mainly native to Europe, Asia and North America. There are four species of hawthorn fruit i.e. *C. coccinea*, *C. punctata*, *C. ambigua*, *C. douglasii*. The main phytoconstituents present in hawthorn are phenolic acids, tannins, flavonoids and oligomeric proanthocyanidins [9]. The presence of procyanidins and quercetin makes the plant highly rich in antioxidants [10]. In researches hawthorn has been suggested beneficial in cardiomyopathy related heart failures. It is chiefly used in cardiovascular diseases like CHF, arrhythmias, chest pain, atherosclerosis and hyperlipidemia [11]. It helps in lowering blood pressure by vasodilation and also improves ventricular ejection fraction. It also lowers the cholesterol and triglycerides level in blood and prevents their deposition in arteries thus making it a suitable remedy for cardiomyopathy.

2. Arjuna (*Terminalia arjuna*)

Commonly named arjuna or arjun tree, *Terminalia arjuna* belonging to family Combretaceae is an evergreen tree about 20-25 metres tall found along the river banks in India. It is traditionally being used in the treatment of heart diseases hence named "Guardian of the Heart". The main part of the plant that comprises the medicinal value is its reddish bark which contains phytoconstituents like tannins, ellagic acid, betulinic acid, arjunolic acid and arjunones that are responsible for its cardiogenic action [12]. It mainly acts by reducing stress induced heart complications and supports effective blood vessel coordination and functioning and detoxifies blood. It also helps in lowering blood cholesterol level and prevents formation of atherosclerotic plaques [13]. In recent studies it has been found valuable in treating cardiomyopathic ailments. Apart from its cardiac effects it is also used in respiratory ailments since it helps in clearing the respiratory tract. The general cleansing property of the drug makes its use remarkable in urinary tract infections too.

3. Coleus (*Coleus forskohlii*)

It is obtained from the roots and leaves of the herb *Coleus forskohlii* belonging to family Lamiaceae. It is used as an ornamental plant in most regions. The roots of the herb retain medicinal value and contains high amounts of phytoconstituent namely forskolin. Forskolin is the herbal extract and has therapeutic use in cardiomyopathy by acting as an inotropic agent i.e. it increases force of contraction, causes vasodilation and decreases blood pressure without affecting oxygen consumption of the heart [14]. Besides cardiac actions it is also used therapeutically in glaucoma, asthma, obesity and psoriasis.

4. Dan shan (*Salvia miltiorrhiza*)

Dan shen also called commonly as Chinese salvia or Chinese Red Sage is a traditional Chinese medicinal herb. It is a powerful Chinese herb that helps in preventing cardiovascular diseases. Its acceptance is rising gradually and is gaining demand even in pharmaceutical companies. Tanshinones, the diterpene quinones is the principle chemical constituent responsible for its actions [15]. This herb is praised for its spectacular action in cardiomyopathy since it regulates contractions and also is useful in managing chest pain. It is also employed in eclampsia and preeclampsia conditions. It greatly reduces the risk of ischemic stroke which has been even surveyed on animals [16]. Apart from this it also has a relieving effect during menstrual cramps, improves diabetic retinopathy and also is used in cancer. It is under supervision in phase III clinical trials for its use in diabetic retinopathy. A distinguished use of dan shen is witnessed in regeneration of brain cells.

5. Ginkgo biloba

Commonly known as ginkgo or maidenhair tree *Ginkgo biloba* is declared under endangered species as it being the only living species under ginkgophyta species. This herb is native to China and belongs to the family Ginkgoaceae [17]. It has shown to achieve beneficial results in treating cardiomyopathies. The leaves of the plant possess therapeutic activity and its extract is used in form of capsules or tablets. The phytoconstituents present in the leaves include phenolic acids, flavonoid glycosides, quercetin, kaempferol and terpenes ginkgolides and bilobalides. It is highly effective in management of high blood pressure, post-stroke recovery, peripheral artery disease and other

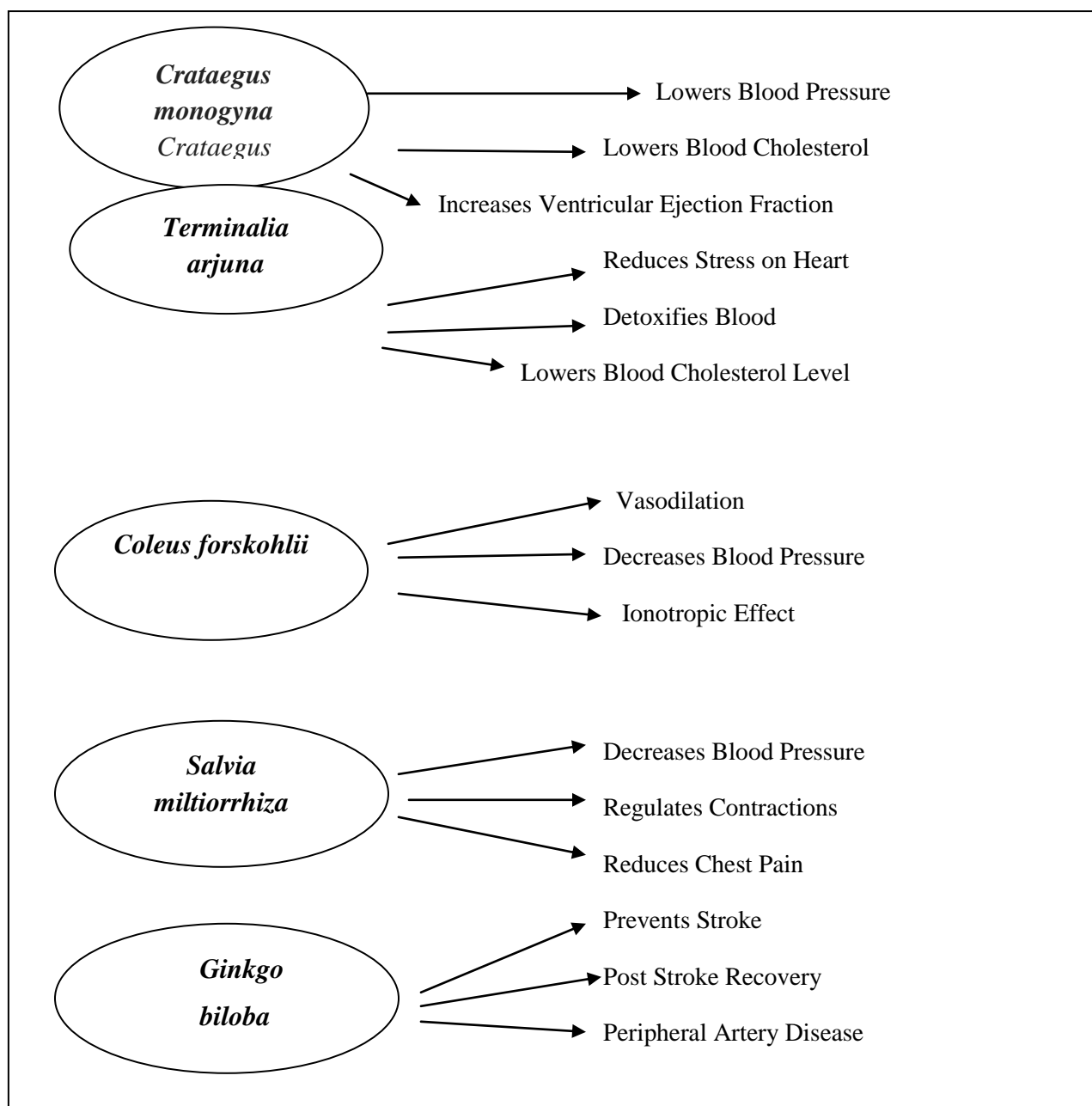


noncardiac complications like menopause, tinnitus and also altitude sickness. But this herb should be used cautiously in pregnancy due to low safety profile in pregnant woman. It has pronounced effect in cardiac associated disorders and is very functional.

Conclusion

The use of herbal drugs is increasing remarkably for treatment of cardiomyopathies. The ayurveda and Chinese system of medicines has been a promising form of medication for various ailments since human history. So many drugs native to China and ayurveda have proved to show extensive medicinal values in treating cardiomyopathies with lesser complications and ease of availability of the treatment at lower costs. They tend to improve the conditions of the heart without creating further organ related complications and aim to provide better healthcare to the patients.

Table 1: Herbals Plant Properties serving Beneficial role in Morbid Conditions



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