



Review Article

A BRIEF REVIEW ON CURRENT SCENARIO OF ANTIHYPERTENSIVE AYURVEDIC DRUGS

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ABSTRACT

Now a day's hypertension is most prevailing lifestyle disorder. It is also known as silent killer. Hypertension has been globally acknowledged as most prevalent risk factor for life threatening cardiovascular diseases. *Ayurveda* is a science of life and oldest medical science known to the mankind practised in India. Since ages Indian population have been benefited by the healing touch of this science. Due to life style of hurry, worry and curry, many lifestyle disorders become household diseases in developing countries and hypertension is one among them.

Hypertension is one of such disorders which can be caused by many factors, including increase in the volume of body fluid, resistance of the blood vessels, and other factors that elevate blood pressure. Modern treatment modalities although reduce the blood pressure very effectively but their long term efficacy i.e. target organ damage reduction is not enough. Despite various new drugs the overall percentage of population suffering from hypertension is increasing day by day. The use of herbal medicine is finding more relevance with the recognition that we are facing more challenges in the treatment of some medical conditions such as hypertension.

This review is regarding current on medicinal approach to deal with hypertension as well as antihypertensive actions of some herbal medicines and formulations, their therapeutic values in clinical situation and recent approaches to validate and document their antihypertensive efficacies. The central idea behind this review is that if we can demonstrate the value of our science and art of healing even in current lifestyle disorders like hypertension with proper evidence based documentation then it will not only increase faith for *Ayurveda* among young researchers but also enhance global acceptability of our science as a contemporary science of medicine.

KEYWORDS: Alternative Medicines, Hypertension, Contemporary Medicine.

INTRODUCTION

At present hypertension has been globally acknowledged as most prevalent cardiovascular disorders. Hypertension is a medical condition in which the blood pressure of the subject is elevated above 140/90 mm Hg. More than 90% of cases of hypertension are regarded as "primary hypertension" which means high blood pressure with no apparent underlying medical cause.^[1]

In developing countries like India the prevalence of hypertension among adults is 11%, which is rapidly increasing with more incidences in urban population than in rural. Recent studies using the criterion of 140/90 mmHg as the cut-off point for hypertension have shown a prevalence of 10–30.9% in urban areas, while earlier reports since 1950s showed a prevalence of 1– 3%.^[2] Hypertension is a major risk factor for the development of coronary artery diseases, stroke, congestive heart failure and

renal disorders.^[3] By year 2020, cardiovascular deaths in India are estimated to be 2.5 million per year and it may be the leading cause of death.^[4]

Hypertension means transitory or sustained elevation of systemic arterial blood pressure to a level likely to induce cardiovascular damage or other adverse consequences. About one-third of patients achieve optimal BP control using drug therapy. A reduction of 5 mmHg in systolic B.P has been associated with a 7% reduction in all-cause mortality.^[5] This fact reveals the importance of controlling blood pressure for a disease free life.

Modern treatment modalities although reduce the blood pressure very effectively but their long term efficacy i.e. target organ damage reduction is not enough. The conventional antihypertensive drugs have many adverse effects and are not well tolerated which lead to non-compliance. Hence many

patients discontinue the treatment. [6] World is looking toward Ayurveda hopefully for proper solution of hypertension.

Aims and objects

The percentage of hypertensive patients in society is rising sharply in spite of number of antihypertensive drugs in modern medicine. Human race today is looking towards Ayurveda in a search of an ideal and safe treatment. This review emphasizes on antihypertensive actions of herbal medicines. Therapeutic values of some herbal formulations in clinical situation and recent approaches to validate their antihypertensive efficacies have been discussed in the present study.

Material and Methods

Information has been collected regarding various researches on hypertension and its ultimate results which are published in various national and international journals.

Central idea

There is lot of concern and debate over the issue whether one should test the efficacy of ancient medicines on modern parameters or not? Many *Vaidyas* (Ayurvedic Doctors) feel that, *Ayurveda* is an ancient healing art inherited from the sages and has survived for thousands of years and hence there is no need for clinical validation. Whereas, if we want our system to reach on global platform, then the development of this ancient yet contemporary science with the firmness of clinical research and evidence is very essential. If we can demonstrate the value of our science and art of healing with proper evidence based documentation then *Ayurveda* will become globally acceptable as a contemporary science of medicine.

Non medicinal approach to deal with blood pressure

High risk individuals wanting to prevent hypertension or patients diagnosed as hypertensive can adopt lifestyle modifications to prevent cardiovascular disease. The JNC 7 guidelines advise to modify lifestyle bringing changes in dietary habits, weight reduction, and exercise. Reduced alcohol intake is also recommended in controlling blood pressure. [7]

Loosing excessive weight can help to reduce the blood pressure; less weight-less work for the heart. Salt causes the body to secrete less water and increases blood pressure. So avoid excessive salt intake. Avoid excessive alcohol consumption. Physical activity burns calories and helps to strengthen your heart. Smoking increases blood pressure by narrowing the blood vessels hence quitting smoking is helpful in hypertensive smokers.

Avoid stress or performing activities like *Yoga* and meditation regularly to deal with stress is helpful as stress increases blood pressure. [8]

Stress activates the sympathetic nervous system directly and sympathetic over activity in turn interact with high sodium intake, rennin-angiotensin and insulin resistance to mediate the pathogenesis of hypertension. [9]

Recently a study entitled, 'Role of *Yoga-Nidra* and *Shirodhara* on Hypertensive Patients', Saraswati was carried out by Devi and Saraswati Kala from D. S. V. V., Hardwar (U.K.).

In this study, it was found that *Takradhara* (*Amalki Kwath*) helped in reducing both systolic and diastolic pressure in essential hypertension which is found to be statistically significant. In Ayurveda, hypertension is a *Vata Pradhan Vyadhi*. According to *Ayurveda* *Takra* possesses qualities like *Laghu*, *Ruksha*, *Katu*, *Tikta*, *Kashaya Rasa* and *Ushna Virya* with *Katu Vipaka*. Its *Ushna Virya* helps in *Vatashaman* along with *Pitta Shamaka* action. *Amala* is a rejuvenating herb which nourishes all the body tissues and accelerates the cell regeneration process. It also cleanses the *Rasa Dhatu* and *Rakta Dhatu*. [10]

Medicinal approach

While considering dealing with hypertension using *Ayurvedic* formulations, treatment must be planned according to *Dosha* and *Dushya* involved in pathogenesis. *Manasa Bhavas* like *Chinta*, *Krodha*, *Bhaya*, etc., plays an important role in the pathogenesis, progression, and prognosis of the disease, and also have effect on the response to the treatment. Hence, the type of therapy recommended should be one that can pacify these disturbed *Manasika Bhavas*. [11]

Latest researches on antihypertensive activity of Ayurvedic formulations

1. *Muktavati* is a herbomineral compound commonly used to treat cardiovascular disorders. Mr. Sandeep Kumar et.al in their study entitled, 'A Study on the Antihypertensive Activity of *Mukta Vati* (Ayurvedic Preparation) In Deoxycorticosterone acetate (DOCA) salt Induced Hypertension in Rats' concluded that, increase in blood pressure was significantly prevented by the treatment with *Mukta Vati* at the dose of 10mg/kg for 6 weeks. This study is the first scientific study to validate the antihypertensive effect of *Mukta Vati* in DOCA salt model of hypertension. [12]
2. Bhavna H. Marya and colleagues have recently performed a study entitled, 'Investigation of Antihypertensive activity of Leaves of *Barleria Prionitis* in Doca Salt Induced Hypertensive Rats'. Leaves of *Sahachar* i.e., *Barleria Prionitis*

contains alkaloids, flavonoids, steroids, saponins, tannin and phenolic compounds. Because of presence of these compounds *Barleria Prionitis* leaves shows significant antihypertensive activity. The present study revealed that methanolic extracts of *Barleria Prionitis* possessed profound antihypertensive activity. Further research work is required for bio-fragmentation and isolation of constituent which is responsible for its antihypertensive activity. [13]

3. One recent study was performed regarding antihypertensive effects of *Centella asiatica* extract (*Mandukparni*) at institute of science, Suranaree University of Technology, Nakhon Ratchasima Province 30000, Thailand. In this study ThidaIntharachatorn and colleagues has assessed the effects of *Centella asiatica* extract on blood pressure and heart rate (HR) of N-nitro-L-arginine methyl ester (L-NAME) induced hypertensive rats.

In the present study they found that fresh juice of *Centella asiatica* (32 g/kg, p.o.) could decrease SBP in deoxycorticosterone acetate (DOCA) - salt induced hypertensive rats, but had no effect in normotensive rats. [14] Quercetin, a flavonoid found in *Centella asiatica*, was found to possess hypotensive effects in L-NAME induced hypertensive rats. Quercetin significantly decreased the elevated mean arterial pressure, systolic blood pressure and diastolic blood pressure in L-NAME induced-hypertensive rats. [15] More detailed studies are required to evaluate the hypotensive effects of purified flavonoids from *Centella asiatica*.

4. Harisha. S, et. al, have conducted clinical study on a poly-herbal compound "Hypercum" entitled, 'Clinical study to evaluate the efficacy and safety of "Hypercum" in hypertension and associated quality of life - An open labelled proof of concept study. Hypercum is a poly-herbal drug which comprises of *Rauwolfia serpentina*, *Nardostachys jatamansi*, *Allium sativum*, *Ocimum sanctum*, *Curcuma longa*, *Embilica officinalis*, *Azadirachta indica*, *Trigonella foenumgraecum*, *Zingiber officinale*, *Tribulus terrestris*, *Withania somnifera*, *Pueraria tuberosa*, *Terminalia arjuna*, *Centella asiatica*, *Mentha arvensis* and *Marsh mint*. Indian literature has reviewed the efficacy and safety of these ingredients at various concentrations in many clinical conditions. However this is one of its kinds of study where effect of these ingredients when used in combination has been assessed.

In this study researcher found that, the baseline blood pressure prior to administering the drug

was taken and at that point the systolic blood pressure was 152.50 ± 12.38 mmHg, diastolic blood pressure was 99 ± 10.03 mmHg and the mean arterial blood pressure was 113.88 ± 19.37 mm Hg. The systolic pressure after 30 min was 145.88 ± 9.56 , diastolic pressure after 30 min was 94.13 ± 9.02 and the mean arterial blood pressure recorded was 110.21 ± 20.30 mmHg. Further long-term effect was also assessed which is found to be statistically significant.

Further, when these changes were compared with each visit statistically the p value was < 0.005 ; they have concluded that Hypercum is a potent poly-herbal combination in controlling hypertension. Hypercum can be taken safely along with other antihypertensive modern drugs. Hence from the above study we can say that Hypercum is not only is an effective line of treatment against hypertension but also a safe combination which can be taken along with other prescribed medication which helps in reducing other illness associated with hypertension. [16]

5. One study on antihypertensive effect of a celery (*Ajmoda*) extract in mild to moderate hypertensive patients of has been conducted by Doddabele Madhavi and colleagues at Prajna Kuttera Ayurveda Hospital in Mysore, India. The celery extract intervention supplied 75 mg of a celery seed extract per capsule. The celery seed extract was dispensed and subjects were told by the investigators to take 2 capsules daily, 1 in the morning and 1 in the evening. The total dose was 150 mg/d of the celery seed extract. Study shows that there was a decrease in systolic blood pressure (SBP) of 4.6 mmHg ($P < 0.005$) and diastolic blood pressure (DBP) of 4.5 mmHg ($P < 0.005$) at week 3 compared to baseline. Similarly after 6 weeks of consumption, the decrease in SBP and DBP compared to baseline was 8.9 and 8.5 mmHg, respectively ($P < 0.005$). This antihypertensive effect of celery seed extract is found to be highly effective statistically. [17]

6. The alcoholic extract of the fruits of *Pedaliium murex* (*Brihad Gokshur*) reduced blood pressure in dog and rat, which was blocked by atropine sulphate. It also caused contraction of the smooth muscle of guinea ileum and rabbit intestine. The decoction of the fruits showed diuretic activity in rats. [18]

CONCLUSION

The knowledge about drugs is a prime factor in successful practice. For health issues and issues

related with life style disorders rational use of natural products is gaining popularity. So as to combat various physiological threats including cardiovascular complexities modern society is choosing natural products over the use of chemicals prepared synthetically in laboratory. This kind of study will ultimately boost the use of traditional remedies due to an array of scientific evidence in its favour. From the number of researches carried out at various institutions all over the world, it is clear that there is a lot of potential in Indian herbal medicine to control hypertension if used wisely.

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