

Arjunadi Anubhoot Yog in Hypertension: A Review Study

Dr. Dipti Kalangutkar¹, Dr. Rashmi Patekar²

¹Asst. Professor, Department of Panchakarma, Bhaisaheb Sawant Ayurved Mahavidyalaya, Sawantwadi, Maharashtra, India.

²Asst. Professor, Department of Dravyaguna, Netra Chikitsa Ayurved College, Amreli, Gujarat, India

Corresponding Author: Dr .Dipti Kalangutkar

ABSTRACT

One of key risk factor for cardiovascular disease is hypertension or raised blood pressure is major risk for cardiovascular disease and ischemia's as well as hemorrhagic stroke, heart attack. WHO had published "A Global Brief on Hypertension-Silent killer, a public health crisis" on world health day 2013. According to WHO hypertension defined as, systolic blood pressure equal to/above 140mmhg and /diastolic blood pressure equal to /above 90mmhg. *Ayurvedic* texts provide no straight reference about essential hypertension, but disease can be explained on base of *Ayurvedic* principles. Though many *Ayurvedic* medicines were used for management of Hypertension, a holistic formulation containing ingredients that can address all possible pathways of Hypertension was not available. Therefore, new formulation containing *Arjuna (Terminalia arjuna)*, *Shankhapushpi (Convolvulus pluricaulis)*, *Ashwagandha (Withania somnifera)*, *Punarnava (Boerhaavia diffusa)*, *Jatamansi (Nordostachys jatamansi)* had been formulated to assess its efficacy.

Keywords: Ayurveda, Hypertension, Arjuna, Punarnava, Jatamansi

INTRODUCTION

Ayurveda is ancient science of medicine in world whose origin in Vedic era. The aim of *Ayurveda* is "to maintain the health in the healthy person and to alleviate the disorders in the diseased".^[1] Until 1940, majority of cardiovascular diseases were treated with traditional drugs obtained from plants but with time entry of conventional modern medicine has overshadowed the phytochemical products. In fact the

incidence of hypertension is still rising alarmingly; there is dire need to search for an effective and safe magical remedy because of lack of current therapies to either provide complete cure or treating patient at a cost of adverse effects. For preservation of the vital organs, the use of medicinal plant is the need of an hour. Antihypertensive drugs in modern medicine are not effective owing to dependence side effects and cost. Though practically adopted, there is very little scientific and systemic data available for the role and efficacy of *Ayurvedic* medicines in hypertension.

Ayurvedic texts provide no straight reference about essential hypertension, but disease can be explained on base of *Ayurvedic* principles. There are different opinion regarding *Ayurvedic* nomenclature for hypertension such as *Raktagata Vata*, *Dhamani prapurnata*, *Siragata vata*, *Dhamani Pratichaya*, *Vaishamyavrut Vata*, *Raktavata*, *Vyanabala vaisamyavrut Vata*, *Acharya Charak* has advised to treat such a disease without nomenclature by judging the involvement of *Doshadushya* only. Essential hypertension has been screened as *Vata Pitta Pradhana Raktaprdoshaja Vikara*. According to *Ayurvedic* principles main treatment of *Pitta* is *Virechana*. *Pitta* is *Mala* of *Rakta*. Therefore; *Rakta* can be pacified by *Virechana* treatment.

Though many *Ayurvedic* medicines are used for management of Hypertension, a holistic formulation containing ingredients that can address all possible pathways of Hypertension is not available in market. Therefore, new formulation containing

Arjuna (*Terminalia arjuna*), Shankhapushpi (*Convolvulus pluricaulis*), Ashwagandha (*Withania somnifera*), Punarnava (*Boerhaavia diffusa*), Jatamansi (*Nordostachys jatamansi*) has been formulated to assess its efficacy in above lines. All these ingredients are mentioned in

Ayurvedic literature as an individual herb and also as ingredients of various formulations. Each of these herbs has been reported to be safe by toxicity study. Acute oral toxicity of above mention drug formulation had been carried out in rats. [2]

Table.1 The Botanical Name, latin name, part used and quantity in formulation

Name of drug	Latin name	Family	Part used	Amount (Matra)
1.Arjuna	<i>Terminalia arjuna</i> Roxb.	Combretaceae	Tvaka	1part
2.Ashwagandha	<i>Withania somnifera</i> Linn)	<i>Solanaceae</i>	Moola	1part
3.Jatamansi	<i>Nordostachys jatamansi</i> DC.	<i>Valerianaceae</i>	Moola	1part
4.Shankhapushpi	<i>Convolvulus pluricaulis</i> Chois.	<i>Convolvulaceae</i>	Panchanga	1part
5.Punarnava	<i>Boerhaavia diffusa</i> Linn.	Nycteginaceae	Panchanga	1part

Table 2. Raspanchak of drugs of formulations

Drug	Rasa	Guna	Virya	Vipaka	Doshakarma	Prabhav
Arjuna [3]	Kashaya	Laghu, Ruksha	Sheeta	Katu	Kaphahara, Pittahara	Hridya-pushti kara, Hridya
Ashwagandha [4]	Tikta, Kashaya, Madhura	Laghu, Snigdha	Ushna	Madhura	Kapha, Vata, shamak	Mastishkashamaka, Raktashodhaka Anulomana, Mutrala
Jatamansi [5]	Tikta, Kashaya, Madhura	Laghu, Snigdha	Sheeta	Katu	Tridosahara	Manasadoshahara Medhya
Shankhapushpi [6]	Tikta	Snigdha, Pichhila, Madhura	Sheeta	Madhura	Vatapitta Shamaka	Medhya, Manasroghruta Hridya, Nidrajanana [7]
Punarnava [8]	Madhura, Tikta, Kashya	Laghu, Ruksha	Ushna	Madhura	Vatashleshmahara	Mutrala, Anuloman Shothahara,

Recent researches of ingredients:

Drug	Action	Research work	Investigator/ Auther	Journal	Year of Publication
Arjuna	Hypotensive	Salutory effect of <i>Terminalia Arjuna</i> in patients with severe refractory heart failure	Bharani A, Ganguly A, Bhargava KD	Int J Cardiol.	1995
		Beneficial effects of <i>Terminalia arjuna</i> in coronary artery disease.	Dwivedi S, Jauhari R	Indian Heart J.	1997
	Cardiotonic	<i>Terminalia arjuna</i> in cardiovascular diseases : making the transition from traditional to modern medicine in India	Maulik SK, Katiyar CK	Curr Pharm Biotechnol	2010
		Herbal Treatment for Cardiovascular Disease the Evidence Based Therapy	Zafar Alam Mahmood; Mohammad	Pak Journal of Pharma	2010
		Medicinal properties of <i>Terminalia arjuna</i> (Roxb.) Wight & Arn.: A review	Amalraj A, Gopi S.	J Tradit Compliment Medicine	2016
Ashwagandha	Hypotension	Studies on <i>Withania ashwagandha</i> , Kaul. III. The effect of total alkaloids on the cardiovascular system and respiration.	Malhotra CL, Das PK, Dhalla NS, Prasad K.	Indian J Med Res	1981
	Antistress	Anti stressor effect of <i>Withania Somnifera</i>	Archana R. et al	Journal of Ethnopharmacology	1998
	Hypotension	Effects of <i>Withania somnifera</i> (Ashwagandha) and <i>Terminalia arjuna</i> (Arjuna) on physical performance and cardiorespiratory endurance in healthy young adults	Sandhu JS, Shah B, Shenoy S, Chauhan S, Lavekar GS, Padhi MM.	Int J Ayurveda Res	2010
Jatamansi	Antidepressant	Comparative study of antidepressant activity of methanolic extract of <i>Nordostachys jatamansi</i> DC Rhizome on normal and sleep derived mice	Rahman,H.Murlidhar an,P	Intrnational Journal Med.Arom.Plants.	2010
		Medicinal properties of <i>nordostachys jatamansi</i> a review	SAHUet al.	Orient. J. Chem.	2016
	Antihypertensive	Evaluation of antihypertensive activity of Sumbul-ut Tib (<i>Nardostachys jatamansi</i>) in adrenaline induced dog's blood pressure	Mohd. Ashfaque, Nisar Ahmad, Zaheda Begum and Faizana Nasreen	Journal of Pharmacognosy and Phytochemistry	2016
		A review article on phytochemistry and pharmacological profiles of <i>Nardostachys jatamansi</i> DC-medicinal herb	Purnima, Meenakshi Bhatt and Preeti Kothiyal	Journal of Pharmacognosy and Phytochemistry	2015
	Antihypertension	Effect of <i>Nardostachys jatamansi</i> extract on vascular endothelial dysfunction in hypertensive, hyperglycemic patients: An open-label, prospective study	Rajyalakshmi et al.	Journal of Pharmacy Research	2017

	Antihypertension	Nardostachys jatamansi is a very effective, potential and safe drug for the management of patients with essential hypertension along with dietary restrictions and modified lifestyle [25]	Velpandian V et al	International Journal of Pharmaceutical and Phytopharmacological Research	2012
	Cardiotonic	Rhizome shows efficacy against mitochondrial and lysosomal damage induced by doxorubicin in rats. The cardioprotective efficacy of N. jatamansi could be mediated possibly through its antioxidant effect as well as by the attenuation of the oxidative stress	Rajakannu S. et al.	Journal of Health Science	2007
	Anxiolytic	The principal constituents of Nardostachys Jatamansi are volatile essential oil contain Jatamansone, Sesquiterpenoid [0.0 2-0.1%], Spirojatamol, patchouli alcohol, Jatamol A and B, Jatamansic acid, nardostachone and other constituents are resin, sugar, starch, bitter extractive matter and gum	V.M. Jhadav et al	Journal of pharmacy and research.	2009
Shankhapushpi	Antihypertension	Traditional Indian Herbs Convolvulus pluricaulis and Its Medicinal Importance	Debjit Bhowmik1 , K.P. Sampath Kumar,	Journal of Pharmacognosy and Phytochemistry	2012
	Anxiolytic, antidepressant	An update on Ayurvedic herb Convolvulus pluricaulis Choisy.	Agarwa P	Asian Pac J Trop Biomed	2014
	Antidepressant	Evaluation of the anti-depressant like activity of <i>convolvulus pluricaulis</i> choisy in the mouse forced swim and tail suspension tests	Dinesh Dhingra et al	Med sci monit	2007
	Antihypertensive	Shankhapushpi-A review	Velishala Hindu	International Research Journal of Pharmacy	2012
Punarnava	Diuretic	effect of Phyllanthus niruri on the diuretic activity of <i>Punarnava</i> tablets	Devi,M.V.et al	J Res Edu Med	1986
	Antihypertensive	In vitro screening of Traditional Medicines for Anti-hypertensive effect Based on Inhibition of the Angiotensin Converting Enzyme (ACE)	Hensen ,K.,et al	J Ethno pharmacol	1995
	Anti stress	Antistress, adoptogenic and immunopotentiating activity roots of <i>Boerhaavia diffusa</i> in mice	Meera Sumanth and SS Mustafa et al	International Journal of Pharmacology	2007

Name of the ingredient	Safety Data
Arjuna (<i>Terminalia arjuna</i> Roxb.)	<i>Terminalia arjuna</i> bark shows that is extract of this drug safe upto 2000mg/kg. ^[9]
Shankhapushpi (<i>Convolvulus pluricaulis</i> Choisy.)	The aqueous extract of this drug was safe upto 2000mg/kg. ^[10]
Jatamansi (<i>Nardostachys jatamansi</i> DC.)	LD50 of the aqueous extract was found to be greater than 5000mg/kg/body wt. After oral administration. (AS rasheed at el). ^[11]
Ashwagandha (<i>Withania somnifera</i> Linn.)	Acute toxicity study of extract from the roots of <i>W. Somnifera</i> , was found safe up to 1750mg (P.O.) in Albino mice. ^[12]
Punarnava (<i>Boerhaavia diffusa</i> Linn.)	50% aqueous extract of the whole plant did not show any sign of toxicity upto oral dose of 2gm/kg in mice. ^[13]

DISCUSSION

Mode of Action-

Arjuna has *Kashaya rasa*, *Sheeta Virya* which act as *Pittashamaka*. *Ruksh Laghu guna* *Katu Vipaka* help to alleviate *Kapha*. Due to its *Hridaya-Pushtikara Prabhava*, it is used in the management of several cardiac disorders. Antioxidant, Hypotensive, antiatherogenic properties of *Arjuna* plant has been reported in various researches. *T. arjuna* is widely used for treatment of cardiovascular diseases, including heart diseases and related chest pain, high blood pressure and high cholesterol. The alkaloids in *Ashwagandha*

have a prolonged hypotensive, bradycardiac, and respiratory-stimulant action. The hypotensive effect was mainly due to autonomic ganglion blocking action and that a depressant action on the higher cerebral centers also contributed to the hypotension. *Ashwagandha* is effective *Vata-Kapha shamaka* drug due to *deepana* and *anulomana* property it clears *strotorodha*, improve *Agni*. It is *Balya*, *Rasayana*, *Shothanashaka*, *Medhya rasayana* *Nidrajanan* and *Vatanulomaka* properties which are supportive for treatment of EHT.

Jatamansi having property of *Tridoshshamaka* due to *Tikta*, *Kashaya*, *Madhura Rasa* pacifies *Pitta dosha*,

whereas *Katu vipaka* and *Laghu guna* pacifies *Vata* and *Kapha dosha*.by removing *Strotorodha*. *Madhura rasa* has *Shada-Indriya Prasadana* therefore works as *Manaprasadana karma*. Due to its *Manasadoshahara prabhava* it is *Medhya*, *Hridya-Balya*, *Akshepashamak* which helps in pacifying *dushti* of *Manovaha Strotas*. Having *Raktadoshhara*, *Hridaya balya*, *Medhya*, *Nidrajanan* property. *Manovaha Strotas* is main culprit in *samprapti* of Essential Hypertension. So by pacifying *dushti* of *Manovaha strotas* it helped in *Samprapti Vighatana* of EHT. Hypotensive, cardioprotective, anxiolytic properties of *Jatamansi* have been reported in various researches. It is also useful in the management of insomnia and CNS disorders.

Due to *Tikta*, *Kashaya Rasa*, *Snigdha*, *Picchila guna*, *Madhura vipaka* and *Sheeta virya*, *Shankhapushpi* acts as *Vata-Pitta shamaka*. It is effective *Medhya Rasayan* drug. Due to its *Manasadoshahrut* property it alleviates *Manasa dosha*. *Shankhapushpi* control the production of body's stress hormones like adrenaline and cortisol in our body and helps in reducing anxiety and stress. *Convolvulus pluricaulis* works as rejuvenation therapy and works as tranquilizer and psychostimulant. [14] It is also useful in hypertension. *Punarnava* pacifies all the vitiated *Doshas* in the body. *Rakta Punarnava* has *Shleshma-Pitta-Rakta Vinashini* property. It also possesses *Anulomana*, *Mutrala*, *Lekhana*, *Sothahara*, and *Hridya* properties. By *Mutrala* and *Sothahara* property, it reduces blood pressure leading to decreased load of heart. *Punarnava* may reduce the blood volume resulting into decreased blood pressure due to their *Mutral* property. *Kleda* formed in the body through several metabolic activities is also expelled out through *Mutral* property, thereby removing toxins in the body. Cardioprotective, Diuretic, Ca⁺ channel blocker, Cardiac stimulant, Hepatoprotective, Vasodilator, Hypotensive,

Anti stress properties of *Punarnava* has been reported.

CONCLUSION

The world is looking towards natural remedies system like *Ayurveda*, even though there are various antihypertensive drugs in contemporary system of medicine. Where the scope is almost fully lies on *Ayurveda* concepts, because of it focuses on preventive measures. So it is time to adopt proper screening model of antihypertensive and search for best solution from herbs for HTN. Hypertension screeed as *tridoshaja vikara* with *Vata- Pitta* dominance. Circulating *Rakta dhatu* is main *dushya* and *strotas Raktavaha*, *Rasavaha* together with *Manovaha* are involved. Drug combination possessing *Hridya*, *Rasayan*, *Medhya*, *Mansadoshahara*, *shleshmashoshak*, *Raktadoshahara*, *Nidrajanan*, *Mutral* properties help to *samprapti vighatana* of hypertension. It can be given for longer duration without any hazards to body and prevent complications of advance stage of disease. By studying pharmacodynamics which given in *Ayurveda* another drug combination can be formulated.

REFERENCES

1. Carakasamhita of Agnivesh(Vol-I) edited by Acharya Vidyadhar Shukla & Prof. RaviDutt Tripathi, Chaukhamba Sanskrit Pratishthan, Delhi, Reprint-2007 Chi 30/26,p447
2. Dipti Kalangutkar et al, Acute Oral toxicity study of Polyherbal formulation NIA/DG/2015/01” Journal of Drug Research 2016; 5(2): 1-5
3. Bhavprakash Nighantu of Sri Bhavmisra commentary by Prof. K.C. Chunekar, Chaukhambha Bharati Academy, revised n=&enlarged Edition 2010 p.511.
4. Bhavprakash Nighantu of Sri Bhavmisra commentary by Prof. K.C. Chunekar, Chaukhambha Bharati Academy, revised n=&enlarged Edition 2010 p 379
5. Bhavprakash Nighantu of Sri Bhavmisra commentary by Prof. K.C. Chunekar, Chaukhambha Bharati Academy, revised n=&enlarged Edition 2010 p 229

6. Bhavprakash Nighantu of Sri Bhavmisra commentary by Prof. K.C. Chunekar, Chaukhambha Bharati Academy, revised n=&enlarged Edition 2010 p 439
7. Carakasamhita of Agnivesh(Vol-II) edited by Acharya Vidyhar Shukla & Prof. RaviDutt Tripathi, Chaukhamba Sanskrit Pratishthan, Delhi, Reprint-2007, Chi.1/3/30,p29
8. Bhavprakash Nighantu of Sri Bhavmisra commentary by Prof. K.C. Chunekar, Chaukhambha Bharati Academy, revised n=&enlarged Edition 2010 p 406
9. Subramaniam S,et al.Antihyperlipidemic and anti oxident Potential of different fractions of Terminalia Arjuna Roxb.bark against Px-407 induced hyperlipidemia International J.Exp Biol.2011 Apr;49(4); 282-8.
10. V.D. Ravichandra, C. Ramesh, K.A. Sridhar. Hepatoprotective potentials of of aqueous extract of *convolvulus pluricaulis* Against thioacetamide induced liver damage in rats. Biomedicine and Aging Pathology. 2013. 3(3); 131-135
11. AS Rasheed,S venkataraman, KN Jayaveera Evaluation of toxicological and Antioxident potential of *Nordostachys jatamansi* in reversing haloperidol-induced catalepsy in rats.Intenational Journal of general medicine 2010;3:127-136
12. Singh et al. African Journal Trdit Compliment Altern Med.(2011)8(s):208-2013
13. Chandra BK,Sharma AK and Anand KK. Boerhaavia diffusa:a study of its hepatoprotective activity. J. Ethnopharmacy, 31(3):299,1991
14. Debjit Bhowmik1, Traditional Indian Herbs Convolvulus pluricaulis and Its Medicinal Importance, Journal of Pharmacognosy and Phytochemistry, 2012

How to cite this article: Kalangutkar D, Patekar R. Arjunadi anubhoot yog in hypertension: a review study. International Journal of Science & Healthcare Research. 2019; 4(4): 117-121.
