

MANAGEMENT OF ESSENTIAL HYPERTENSION USING HERBAL FORMULATION WITH AND WITHOUT GOKSHURA KWATHA – A COMPARATIVE STUDY

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ABSTRACT

Hypertension is one of the major causes of cardiovascular morbidity and mortality worldwide. It is a global health problem affecting the people of different ethnicity and ages around the world. An estimated 1.13 billion people worldwide have hypertension, most (two-thirds) living in low- and middle-income countries. According to WHO (2015) the overall prevalence of hypertension in India was 24.2% and 22% among the men and women respectively. Hypertension is called a silent killer, non-communicable chronic disease because it rarely exhibits symptoms before it damages vital organs like kidney, brain or heart. In Ayurveda there is not a single disease which resemble with hypertension, but physician should understand the disease through *Dosha*, *Dushya*, *Samprapti* and initiate the treatment. A lot of potent modern antihypertensive drugs are available but none of them are free from untoward side-effects. So, a clinical study was done using herbal formulation containing *Sarpaghandha*, *Sankhpushpi*, *Arjuna*, *Jatamansi* and *Ashwagandha* in the form of *Ghanvati*. A comparative study was done as this *Ghanvati* was given with and without *Gokshur kwath*. For clinical study 52 (Group A- 25 and Group B- 27) clinically diagnosed patients of essential hypertension who fulfil inclusion criteria were selected irrespective of their age, sex, religion, occupation etc. and simple random sampling technique was followed for grouping the patients into 2 groups. All

the patients selected for the clinical trial were divided in two groups 'A' and 'B'. Patients of Group A were given 250 mg of *Ghanvati* two times a day with water as *Anupan* and patients of Group B were given 250 mg of *Ghanvati* with water as *Anupan* and *Gokshur kwath* both two times a day. Duration of the study for each group was 30 days. The present study showed that herbal formulation is also effective in the management of essential hypertension.

Keywords: Essential hypertension, *Ghanvati*

INTRODUCTION

Hypertension (HTN or HT), also known as high blood pressure or arterial hypertension, is a chronic medical condition in which the blood pressure in the arteries is persistently elevated. Hypertension is one of the major causes of cardiovascular morbidity and mortality worldwide. It is a global health problem affecting the people of different ethnicity and ages around the world. It is an asymptomatic medical condition in which systemic arterial blood pressure is elevated beyond the normal value. According to 2010 guidelines of 'European Society of Cardiology' and the 'European Society of Hypertension' hypertension is defined as office SBP values ≥ 140 mm of Hg and DBP values ≥ 90 mm of Hg¹.

- According to WHO (2015) the overall prevalence of hypertension in India was 24.2% and 22% among the men and women respectively². Hypertension is called a silent killer, non-communicable chronic disease because it rarely exhibits symptoms before it damages vital organs like kidney, brain or heart. It is estimated that by 2025, the global targets for non-communicable diseases is to reduce the prevalence of hypertension by 25%³ and this need multidisciplinary efforts.

Following factors made me to go for clinical study on Essential hypertension:

- Essential hypertension is one of the common complaints of this modern era and is silent killer of mankind.
- It is a risk factor for all clinical manifestations of atherosclerosis.
- It is an independent predisposing factor for heart failure, coronary artery disease, stroke, renal disease and peripheral arterial disease and rarely exhibits symptoms before it damages vital organs like kidney, brain or heart.

- In *Ayurveda* there is not a single disease which resembles with hypertension but physician should understand the disease through *Dosha*, *Dushya*, *Samprapti* and initiate the treatment Hypertension is one of such diseases that is not described in *Ayurveda* as such, the reasons implicated are that it has no clear classical symptoms but is rather a machine diagnostic disease. In *Ayurveda* although there is no clinical entity available in classics however there are certain pathological conditions which can be considered to manifest some of the features comparable to that of Hypertension like – *Pittavritavata*, *Pittavrita Udana*, *Pittavritavyana*, *Pranavritaudana*,

In majority of patients with high blood pressure, the cause is unknown and is classified as primary or essential hypertension. A small portion of patients have a specific cause of their high blood pressure, which is classified as secondary hypertension.

Aim & Objectives:

- To evaluate the efficacy of Herbal formulation in the management of hypertension.
- To evaluate the efficacy of Herbal formulation along with *Gokshura kwatha* in the management of hypertension.

To compare the efficacy of Herbal formulation & Herbal formulation along with *Gokshura kwatha* in the management of Hypertension.

Material & Methods:

a. Source of the patients

For the present study patients of Essential hypertension fulfilling the criteria of diagnosis and criteria of inclusion were randomly selected from OPD (of Kayachikitsa department) and IPD of Pt. Khushilal Sharma Govt. (Auto) Ayurveda Hospital, Bhopal.

• **Sampling and grouping**

Total 52 patients were registered and divided randomly into two groups viz. Group A and Group B.

Group A: 25 patients of this group were treated with Herbal formulation.

• **Group B:** 27 patients of this group were treated with Herbal formulation along with *Gokshura kwatha*.

• **Drug review**

➤ **Group A:** Herbal formulation

The Herbal formulation contains the following drugs namely *Sankhpusphi (Convolvuluspluricaulis)*, *Arjun (Terminalia arjuna)*, and *Ashwagandha (Withaniasomnifera)* taken in equal quantity and the rest two drugs *Sarpaghandha (Rauwolfia serpentina)* and *Jatamansi (Nordostachysjatamansi)* each in half of the quantity of any one mentioned above then *Ghanvati* is prepared as mentioned in ayurvedic classics .

Dose: 2-tab (each 250 mg) BID, in the form of ghanvati after meal for 30 days

Follow up: will be on 7th, 15th and 30th day

Anupan: Lukewarm water

➤ **Group B:** Herbal formulation with *Gokshura kwatha*

Dose: 2-tab (each 250mg) BID in the form of *Ghanvati* after meal and *kwatha* (20 ml) BD for 30 days

Anupan: Lukewarm water

Duration: 30 days

b. Selection Criteria

➤ **Inclusion Criteria:**

- Patients of either sex between the age of 40 years to 65 years.
- Patient having elevated blood pressure with or without clinical symptoms as described in ayurvedic and modern medicine.
- Patients having elevated blood pressure either systolic or diastolic or both are included as mentioned below.

SBP < 159 mmHg & ≥140 mmHg

DBP < 99 mmHg & ≥ 90mmHg

- Allopathy medicine of patient was stopped during the study period.

➤ **Exclusion Criteria:**

- Patients having Renal or Hepatic disease.
- Complicated hypertensive case e.g. cardiovascular disease.
- Pregnant.
- Diabetic patients with uncontrolled sugar condition.
- Patients having chronic systemic illness
- Patients not willing for written consent

c. Criteria for diagnosis:

Objective Criteria:

The main diagnostic tool adopted will be measuring elevated BP in suitable position.

Table 1: JNC & WHO criteria for Diagnosis Hypertension.

Category of HTN	Systolic BP (mmHg)	Diastolic BP (mmHg)
Stage 1 Hypertension	140 - 159	90 - 99

d. Lab investigations:

- Random Blood sugar,
- Lipid profile
- ECG

- The relative extent of all these criteria was recorded according to the rating scale in each patient at the initial stage and subsequent follow-ups of 7, 15 and 30 days for total 30 days.

Observations and Results

Table 2: Showing effect of therapy on systolic and diastolic blood pressure (objective parameter): (paired ‘t’ test)

S.No.	Variable	Group	Mean		Mean diff.	% Relief	P	S
			BT	AT				
1	Systolic BP	A	146.37	124.81	21.56	14.72%	<0.0001	ES
		B	146.46	122.50	23.96	16.35%	<0.0001	ES
2	Dystolic BP	A	91.520	76.00	15.52	16.95%	<0.0001	ES
		B	91.357	74.286	17.071	18.68%	<0.0001	ES

Table 3: Effect of therapy on systolic blood pressure in both groups:

S.No.	Systolic BP	Mean difference	% Relief	SD	SE	T	P	ΔT	S
1	Group A	21.556	14.72	6.727	1.295	16.649	0.4534	.1248	NS
2	Group B	23.96	16.35	7.574	1.431	16.742			

In Group A the mean score before treatment was 146.37 which lowered down to 124.81 after treatment, which was statistically extremely significant (P<0.0001).

In Group B the mean score before treatment was 146.46 which lowered down to 122.50 after treatment, which was statistically extremely significant (P< 0.0001).

Table 4: Effect of therapy on diastolic blood pressure

S.No.	Dystolic BP	Mean difference	% Relief	SD	SE	T	P	ΔT	S
1	Group A	15.704	17.13	5.532	1.065	14.751	0.4907	.0248	NS
2	Group B	17.071	18.68	4.807	.9084	16.649			

In Group A the mean score before treatment was 91.520 which lowered down to 76.00 after treatment, which was statistically extremely significant (P<0.0001).

In Group B the mean Score before treatment was 91.357 which lowered down to 74.286 after treatment, which was statistically extremely significant (P<0.0001).

On comparing the effect in case of systolic blood pressure among two groups, Unpaired t-test showed t value was .1248 for which p value was 0.4534 which was not quite significant.

On comparing the effect in case of diastolic blood pressure among two groups, Unpaired t-test showed t value was .0248 for which p value was 0.4907 which was not significant.

DISCUSSION

a. Discussion is the basic step in establishment of a proposition & help in reaching to definite conclusion.

b. On clinical effect of treatment:

Group A- (Herbal Formulation)

25 patients of *Uccharaktachapa* were treated in this group. The initial mean systolic blood pressure value of the 25 patients of this group before treatment was 146.37 mm of Hg, that declined to 124.81 mm of Hg after treatment with “t” value 16.649 showing extremely significant result at p<0.0001. Before treatment the mean D.B.P. of the 25 patients of this group was 91.520 mm of Hg and that after treatment was 76.00 mm of Hg. The “t” value was found to be 14.751 which was statistically extremely significant at the level of p<0.0001.

Group B- (Herbal Formulation + Gokshura Kwatha)

27 patients of *Uccharaktachapa* were treated in this group. The initial mean systolic blood pressure value before treatment was 146.46 mm of Hg and which was brought down to 122.50 mm of Hg after treatment. The “t” value was found 16.742 which was extremely significant at the level of (p<0.0001). Before treatment the mean diastolic blood pressure of this group was 91.357mm of Hg which reduced to 74.286 mm of Hg after treatment. The “t” value was found to be 16.649 which was statistically extremely significant at the level of (p<0.0001).

On comparing the effect in case of Systolic Blood pressure among two groups, Unpaired t-test showed t value (.1248) for which p value was 0.4534 which was not significant. However herbal formulation with *Gokshura kwatha* showed better results than herbal formulation alone on comparison.

On comparing the effect in case of Diastolic Blood pressure among two groups, Unpaired t-test showed t value .0248 for which p value was 0.4907 which was not significant. However, on comparison herbal formulation with *Gokshura kwatha* showed better results than herbal formulation alone.

Discussion on Samprapti⁴

According to classical literature of *Ayurveda*, *Vata* is prominent *Dosha* in this disease, circulating *Rakta* (*Rasa-Rakta* complex) is main *Dushya* and *Rasavaha*, *raktavahasrotas* together with *Manovahasrotas* are involved. It's *Samprapti* can be understood by the way that *Vata* is prominent *Dosha* in this disease and circulating *Rakta* (*Rasa-Rakta* complex) is main *Dushya*. *Pitta Lakshans* are also seen because of association of *Rakta* and *pitta* (*Ashraya – Ashriya bhava*). Ageing is one of the main factors for essential hypertension, *Vata* is stated as dominant in old age and signs of premature ageing are mentioned under *pitta Prakriti*. *Agnidushti* is principle source of every disease which results in *Agnimandya* results in *Ama* formation. *Agnimandya* gives *Rasa Raktadushti* as a result more and more *Vikrutakapha* is produced as *kapha* is *mala* of *rasa dhatu*. Excessive production of *Vikrutakapha* increases viscosity gives rise to atherosclerosis or *Dhamni uplepa* which is factor for hypertension and

comes under *kaphajananatmajavikara*. Atherosclerosis and aggravated *Vata* gives repeated spasm resulting in increased peripheral resistance to circulating fluid. Hence hypertension can be assigned as *Tridhoshajvyadhi* with predominance of *Vata* and *Pitta*.⁵

A. Discussion on Mode Probable of Action of Combination

Prominent *Rasa* of *Sarpagandha*⁶, *Jatamansi*⁷ and *Ashwagandha*⁸ is *Tikta* which will act on *Rakta*, *Rasa Dhatu* and their *Srotas*. It reduces the *ama* and thereby viscosity of *rasa* decreases which results in proper *Rasa Rakta Vikshepana* process. Their *Ushna Veerya* property causes *Amapachan* and *Vatashamak karma*. Both (*Sarpagandha* and *Jatamansi*) have effect of *Nidrajanan* and *Raktabharshamak*.

Whereas *Sankhpushpi*⁹ possess *Tikta rasa* which has *Aampachana* and *Shroto shodhana* property which decreases blood viscosity and check atherosclerotic changes. Prominent *Snighda Guna* in *Sankhpushpi* has *Vata Shamak* property and normal *Rakt rasa Samvahana*. Prominent *Madhura Vipaka* and *Sheet Veerya* possess *Pitta Shamaka* property and check *Raktadushti* due to *Aashrayaashriya bhava*. *Sankhpushpi* has *Rasayana*, *Medhya*, *Sangyasthpana*, *Bastishodhaka* and *Mridurechaka* property that helps in vasodilation and lowers the BP.

*Arjuna*¹⁰ *Twak* has *kashaya rasa*, *Rukshaguna*, *Sheetaveerya* and *Katuvipaka*. Due to *kashaya*, *Ruksha* and *Laghuguna*, *Kaphanashan karma* is done.

Rasayana, *Shleshma upshoshaka* and *Lekhana* property of drugs are helpful to check the atherosclerotic changes. Hence *Samprapti Vighatana* by a combination of *Rasayana*, *Medhya*, *Hridiya*. *Raktashodhaka* and *Shleshmaupshoshaka* property may be helpful in finding management of the HTN without any hazard to body that rises in long duration of modern therapy.

• On effect of Gokshura¹¹ on EHT:

Gokshaura is having *Madhura Rasa* and *Madhura Vipaka* in addition with *Rasayana* and *Balyaprabhav* seem to alleviate all signs & symptoms. Its *Mutra Virechayya Prabhav* and *Basti Shodhak karma* causes elimination of *kleda* from the body, by there it might

have helped to reduce the raised blood pressure. It's *Madhura Rasa* and *Vipaka, Snigdha, Guru Guna* may reduce hyperactivity of *Vata* and thus probably reduced *Sankocha* and *kathinya* of *Srotas*, along with its diuretic properties the reduction in inflammation might have resulted.

CONCLUSION

- Hypertension is a multifactorial cardiovascular disorder occurring particularly at middle and senile age.
- Herbal formulation contains combination of 5 drugs that possess *Aampachana, Vaatshamak Rasayana, Medhya, Hridaya. Raktashodhaka, Shleshma upshoshaka* and *Lekhana* property which are helpful to check the atherosclerotic changes by decreasing viscosity of blood and also works on *Rasarakta Samvahan* by their ayurvedic properties. As Essential hypertension can be considered as a *Tridoshaj Vyadhi* with predominance of *Vata* and *pitta* therefore this combination mainly works on regulating movement of *Vata* by its *Anulomana* action, by checking *Rasarakta Dushti* and also by removing *Margavrodha* that helps to reduce blood pressure.
- *Sarpagandha* and *Jatamansi* possess *Nidrajanan* and *Raktabharshamak* property that helps in vasodilation and lowers the BP.
- *Gokshura* is having *Rasayna, Balya, Mutra Virechaiya Prabhav* and *Basti Shodhak karma* causes elimination of *kleda* from the body, by which it might have helped to reduce the raised blood pressure.

At the end of the study it can be concluded that overall (Herbal formulation along with *Gokshurakwatha*) was found to be more effective than Herbal formulation alone in the management of EHT.

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ABBREVIATIONS

- HTN : Hypertension
SBP : Systolic blood pressure
DSP : Diastolic blood pressure
AT : After treatment
BT : Before treatment
SD : Standard deviation
MD : Mean difference
SE : Standard error
CI : Confidence interval

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