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A comparative study of *Shankhapushpyadi Ghana Vati* and *Sarpagandhadi Ghana Vati* in the management of "Essential Hypertension"

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Abstract

Hypertension is a major public health problem of this era. Hypertension related morbidity and mortality rates have dramatically increased over the last 25 years. Stressful life style is one of the leading causes of Hypertension. The treatment of hypertension remains a primary goal in the effort to reduce morbidity and mortality from cardiovascular disease, stroke and kidney disease. In this study, 20 patients were randomly divided in two groups and treated along with restricted diet pattern for 8 weeks. Patients of Group A received poly-herbal compound formulation *Shankhapushpyadi Ghana Vati* (2gm/day). It was found that, relief in overall symptoms (63.93%) elevated blood pressure (8.91% in Systolic blood pressure and 8.44% in diastolic blood pressure). In group-B, with *Sarpagandhadi Ghana Vati* (2gm/day) the percent relief was better on elevated blood pressure (12.00% in Systolic blood pressure and 11.02% in diastolic blood pressure). When data is subjected in between both the groups, it is found that, both drugs are equally effective.

Key words: Diastolic blood pressure, essential hypertension, *Shankhapushpyadi Ghana Vati*, *Sarpagandhadi Ghana Vati*, systolic blood pressure

Introduction

Ayurvedic texts provide no straight reference about essential hypertension, but disease can be explained on the base of Ayurvedic principles.

A number of conceptual studies have been conducted to develop the correlates of hypertension in Ayurveda. Gananath Sen has merely substituted high blood pressure with a new word *Dhamini Prapurnata*. *Dhamini Pratichaya* is defined as *Dhamini Upalepa*[1] by Chakrapani. Certain scholars have attempted to correlate hypertension with *Raktagata Vata*, *Vyana Bala Vikruti*, etc. The term 'hypertension' was coined after the invention of sphygmomanometer but before that about its existence, one can trace the pathway on the tract of symptomatology. Different views have been adopted but no one has denied the fact that hypertension, is result of *Rakta Dushti* with *Tridosha* involvement in which *Vata* and *Pitta Dosha* are prominent. As it is considered as psychosomatic disease, *Mana* also involved in pathology of this disease. Symptoms of essential hypertension can be understood on the base of Ayurvedic concepts as:

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Shiroruka (Headache)

Throbbing pain chiefly in the occipital region usually during early morning.[2] It is suggested due to raised intracranial pressure. Involvement of *Rakta Dhatu*[3] and *Vata Dosha*[4] is considered in all *Shiroroga*.

Bhrama (Giddiness)

It can be compared with whirling sensation. It may due to vitiation of *Raja Dosha* along with *Vata* and *Pitta Dosha*.[5]

Hriddravatva (Palpitation)

Increased viscosity of *Rasa Dhatu* due to *Ama* formation leads to improper functioning of *Vyana Vata*. Palpitation is considered in *Nanatamaj Vata Vyadhi* by Aacharya charaka.[6]

Aayasajanya Swasa Kashtata (Dyspnea)

Elevated pulmonary capillary pressure increases fluid transudation in to pulmonary interstitium. When *Pranavaha Srotas* gets obstructed due to vitiated *Kapha*, the *Patha* of *Vata* become obstructed and *Swasakashtata* gets manifested.

Anidra (Disturbed sleep / Insomnia)
When *Mana* is not able to retract itself from its object *Nidranasha* gets manifested, which is a *Nanatmaja Vata Vyadhi*.[7]

Urahashoola (Chest pain)
All kinds of pain is due to *Vata Dosha*.[8] *Ama* produced due to *Agnimandhya* also obstructs the supply of nutrition to myocardium and produces pain.

Daurbalya (Weakness)
Reduced capillary pressure results improper perfusion of tissue. *Ojakshaya* and *Srotovarodha* due to *Ama* produce impaired nourishment of *Uttarottara Dhatu*.

Tamodarshana (Flashes before eye)
It will manifest due to transient cerebral ischemia[9] in advance stage of disease. *Sroto Avrodha* in *Raktavahini* results this condition of *Tamodarshana*. *Tamodarshana* is also considered in *Rakta Pradoshaja Vikara* by Aacharya Charaka.[10]

Buddhi samoha (Lack of concentration and decision)
This is result of *Vitation* of *Chala Guna* of *Vayu*, and *Sadhaka Pitta* and *Mano Dushti* due to *Raja* and *Tama Guna*.

Krodha prachuryata (Mental irritability)
Krodha is expression of *Pitta Dosha* vitiation.

Vibandha (Constipation)
Vitated *Vata Dosha* causes *Vishamaagni* and produces *Vigunata* of *Apana Vayu*.

Pada Shotha (Pedal edema)
Vitated Kapha, Pitta and *Rasa, Rakta Dhatu* get seated in peripheral vessels and obstruct the path of *Vata* and thus produce *Shotha*.

Smrutinasha (Forgetfulness)
Sadhaka Pitta and *Mana* are responsible for memory. *Manodushti* and *Pitta* vitiation cause *Smrutihrasha*.

Aruchi (Anorexia)
Psychological factor and *Ama* production may be responsible for this condition. Psychological factors like grief, etc., are also responsible for this condition of *Aruchi*.[11]

Akshiraaga (Redness of eye)
Vitiation of *Pitta Dosha* and *Rakta Dushti* results in *Akshiraaga*, i.e.; hyperemia of conjunctiva or subconjuctiva.

Klama (Fatigue)
Fatigue is due to combined effect of vasoconstriction and impaired cardiac output. Vitiation of *Vata* (movement) and *Kapha* (*Bala*) may be responsible.

All the above-mentioned features show dominance of *Vata* and *Pitta*. In given pathology, *Vyana Vayu, Sadhaka Pitta, Avalambaka Kapha* are chiefly involved. Psychological problems associated with essential hypertension are treated with long-term use of sedative and anxiolytic drugs which may lead to hazardous effects on mental health and produce drowsiness, impaired motor functions, loss of memory, nonsocial behavior, etc. Moreover these drugs produce drug dependency and drug resistance. Therefore, it is need of time to think from Ayurvedic point of view for the better management of mental health and efforts to reduce morbidity and mortality from cardiovascular disease, stroke, and kidney disease due to advanced stages of disease.

Considering this *Shankhapushpyadi Ghana Vati* (*Anubhoot Yoga*) was formulated which contain Ayurvedic drug *Shankhapushpi* (*Convolvulus pluricaulis*)- 1½ Part, *Brahmi* (*Bacopa monnieri*)- 1½ Part, *Guduchi* (*Tinospora cordifolia*)- 1 Part, *Aaragvadha* (*Cassia fistula*)- 1 Part, *Nimba* (*Azadirachta indica*)- 1 Part, *Kushtha* (*Saussurea lappa*)- 1 Part, *Vacha* (*Acorus calamus*)- 1/4 Part, *Gokshura* (*Tribulus terrestris*)- 3/4 part. In group B, *Sarpagandhadi Ghana Vati (Containing Sarpagandha, Jatamansi, Parseekyavani, Pippalimool)* mentioned by Aacharya Yadavaji Trikamaji in Siddha Yoga Sangraha was selected for comparative study with some modification. As *Bhanga* is socially not ethical to given because of its delirient action, so excluded out from above combination. Considering all these points, the present study was planned with the aim to compare the effect of *Shankhapushpyadi Ghana Vati* and *Sarpagandhadi Ghana Vati* in the management of essential hypertension.

Materials and Methods

1. **Study design:** It is a randomized single blind controlled study. The data obtained after clinical study was analyzed with the help of paired '*t*' test
2. **Selection of cases:** The study was carried out in 20 clinically diagnosed patients of essential hypertension, selected from the OPD and IPD of Govt. Akhandanand Ayurveda College and Hospital, Ahmedabad, as per the selection criteria. Of the 20 patients, no patient was dropped out during the trial period. The cases were randomly selected irrespective of their sex, occupation, socioeconomic status. These patients were randomly divided into two groups.
   a. Patients of Group A were treated with *Shankhapushpyadi Ghana Vati* (2 g/day in divided doses, along with restricted diet pattern for 8 weeks)
   b. Patients of Group B were treated with the *Sarpagandhadi Ghana Vati* (2 g/day in divided doses, along with restricted diet pattern for 8 weeks.).

Follow up was done on every seventh day up to 6 weeks after completion of the therapy in all the patients.

Criteria of diagnosis
Patient having elevated Blood pressure with clinical symptoms as stated in modern medicine.

Category	Systolic (mmHg)	Diastolic (mmHg)
Prehypertensive	120-139	80-89
Hypertension stage 1	140-159	90-99
Hypertension stage 2	160-179	100-110

Exclusion criteria
Irregular and complicated patients with diabetes mellitus, cardiovascular diseases, asthma, renal diseases, severe grade of hypertension [systolic≥180, or diastolic≥110 mmHg], other controversies should be excluded from study.

Investigation
- Blood - Routine hematology investigation, lipid profile, blood urea, serum creatinine (if necessary and possible),

CPK-MB. (if necessary and possible).
- Urine - Routine and microscopic examination.
- ECG and X-ray (if necessary and possible).

These investigations were conducted to exclude any other underlying pathology.

Drug, dose and duration

The patients were treated with *Shankhapushpyadi Ghana Vati* and *Sarpagandhadi Ghana Vati* administered in 1 g dose twice a day and duration of treatment was 60 days.

Assessment of effect of therapy

Diastolic B.P. (mmHg)

Grading	Score
120 < Normal	0
130 – 139 High Normal	1
140-159 Stage 1 Hypertension	2
160–179 Stage 2 Hypertension	3
180 > Stage 3 Hypertension	4

Systolic B.P. (mmHg)

Grading	Score
80 < Normal	0
80 – 89 High Normal	1
90-99 Stage 1 Hypertension	2
100–109 Stage 2 Hypertension	3
110 > Stage 3 Hypertension	4

Signs and symptoms found in disease

Grading	Score
Nil	0
Rarely relieves without medication	1
Frequently occur and relives after some time, does not disturb daily activities	2
Frequently severe presentation of symptoms disturbs daily activities requires medication	3
Continuous presentation of symptoms disturbs sleep and daily activities and also not managed by the medication	4

Assessment on basis of complaints:
1. Controlled 100% relief in complaints
2. Marked relief ≥ 75% relief in complaints
3. Moderate relief ≥ 50—74% relief in complaints
4. Mild relief ≥ 25-49% relief in complaints
5. No relief <25% relief in complaints

Assessment on basis of systolic and diastolic blood pressure level
1. Controlled Patients having blood pressure levels within normal limit.
2. Marked relief Blood pressure level improved by ≥ 75% than before treatment
3. Moderate relief Blood pressure level improved by ≥ 50-74% than before treatment
4. Mild relief Blood pressure level improved by ≥25-49% than before treatment
5. No relief Blood pressure level not improved or improved by< 25% than before treatment

Follow-up study

After completion of 2 months course of therapies, the patients were advised to report weekly up to 6 weeks. During these visit, improvement or deterioration or no change in the signs and symptoms were recorded.

Observations and Results

Maximum patients i.e.; 60% were in the age group of 51-60 years. Fifty-five percent were male, 40% were housewives, and 95% were married, 75% were Hindu, 35% were belonging to upper middle class of the society and 60% nonvegetarian.

Effect of therapies: Twenty patients were selected in the present study, 10 patients in each group. The efficacy of each therapy was adjudging on varied parameters and the results were derived after execution of statistical methodology. The data regarding effect of therapies on systolic and diastolic blood pressure of individual patients of both groups is provided in Table 1.

In group A, 10 patients had completed the treatment with highly significant relief in: *Shiroruka*- Headache (84.61%), *Bhrama*- Giddiness (75%), *Alpanidra*- Insomnia (69.56%), *Daurbalya*- Weakness (56.67%), *Klama*- Fatigue (51.85%), *Buddhisammoha*- lack concentration and decision power (78.26%), *Krodhaprachuryata*-Mental irritability (78.57%), *Malavarodha*-Constipation (74.07%), *Smrutihrasha*-Forgetfulness (84%), *Aruchi*- Anorexia (91.66%), in *Hriddravatva*-Palpitation (66.67%), *Aayaasjanyaswasakashtata*– Dyspnea (52.94%), *Arati*- Uneasiness (57.14%), *Santapa* -Feeling of tension (54.54%), *Akshiraaga* -Redness of eyes (54.54%), and significant relief *Urahashoola* -Chest pain (80%), *Tamodarshana* -Flashing before eyes (33.33%), *Pada Shotha*-Pedal edema (71.42%) [Table 2].

In group B, 10 patients had completed therapy with highly significant improvement on: *Shiroruka* (85%), *Bhrama* (70.96%), *Aayaasjanyaswasakashtata* (68.75%%), *Alpanidra* (75%), *Urahashoola* (75%), *Daurbalya* (54.54%), *Klama* (51.51%), *Tamodarshana* (76.92%), *Krodhaprachuryata* (57.14%), *Malavarodha* (58.33%), *Smrutihrasha* (69.56%), *Arati* (52.38), *Aruchi* (77.77%), *Buddhi Samoha* (69.23%), significant relief in *Hriddravatva* (40%), *Santapa* (40%), *Pada-Shotha* (60%), *Akshiraaga* (50%) [Table 3]. Relief in high blood pressure was observed in 8.91% and 8.44% in systolic and diastolic blood pressure, respectively, treated with *Shankhapushpyadi Ghana Vati* whereas by *Sarpagandhadi Ghana Vati*, better relief was obtained i.e.; 12.00% and 11.02% relief in systolic and diastolic blood pressure, respectively [Table 4]. Both drugs, showed highly significant relief in systolic as well as diastolic blood pressure. Significant relief in pulse pressure were observed in both Group A (8.36%) and Group B (14.74%), while mean arterial blood pressure showed highly significant result in both Group A (8.41%), and Group B (12.43%).

On hematological investigations, hemoglobin of therapeutic groups was insignificantly increased by *Shankhapushpyadi Ghana Vati* (4.88%) and insignificant decreased by *Sarpagandhadi Ghana Vati* (1.68%) and erythrocyte sedimentation rate (ESR) was also reduced by *Shankhapushpyadi Ghana Vati* (41.6%) and improved by *Sarpagandhadi Ghana Vati* (30.02%).

Changes in lipid profile, in group A, *Vati* serum cholesterol (14.93%) and in group B, serum cholesterol (10.31%) were found insignificant.

Table 1: Effect on systolic and diastolic blood pressure (mmHg) of group A and group B

Pt. no.	Group A		Group B	
	S.B.P/D.B.P before treatment (mmHg)	S.B.P/D.B.P. after treatment (mmHg)	S.B.P/D.B.P before treatment (mmHg)	S.B.P/D.B.P. after treatment (mmHg)
1.	164/96	150/90	130/98	120/94
2.	158/98	150/90	174/106	148/80
3.	162/100	148/90	156/100	142/98
4.	168/108	156/100	158/98	140/84
5.	152/100	144/92	162/100	140/80
6.	154/96	142/90	178/108	152/86
7.	166/110	148/94	170/104	150/90
8.	170/104	144/98	164/98	150/94
9.	168/106	156/94	166/98	142/96
10.	154/100	134/94	174/106	152/102

Table 2: Effect on chief and associated complaints of group A

Chief and associated complains	Mean		Difference	Relief %	S.D.	S.E.	*t*	*P*
	B.T.	A.T.						
Shiroruka (*n* = 10)	2.6	0.4	2.2	84.61	0.42	0.13	16.5	<0.001
Bhrama (*n* = 7)	3.4	0.85	2.5	75	0.97	0.36	6.97	<0.001
Hriddravatva (*n* = 8)	2.25	0.75	1.5	66.67	0.75	0.26	5.31	<0.01
Aayasjanya Swasakrichhata (*n* = 6)	2.83	1.33	1.5	52.94	0.83	0.34	4.39	<0.01
Alpanidra (*n* = 7)	3.2	1	2.28	69.56	0.95	0.35	6.35	<0.001
Urahashoo (*n* = 5)	1.0	0.2	0.8	80.0	0.44	0.20	4.0	<0.05
Daurbalya (*n* = 10)	3	1.3	1.7	56.67	0.94	0.3	5.66	<0.001
Klama (*n* = 10)	2.7	1.3	1.4	51.85	0.84	0.26	5.25	<0.001
Arati (*n* = 8)	2.6	1.12	1.5	57.14	0.75	0.26	5.16	<0.01
Santapa (*n* = 8)	1.37	0.55	0.75	54.54	0.46	0.16	4.58	<0.01
Tamodarshana (*n* = 8)	1.8	1.2	0.62	33.33	0.51	0.18	3.4	<0.05
BuddhiSamoha (*n* = 7)	3.28	0.71	2.57	78.26	0.78	0.29	8.64	<0.001
Krodhaprachurya (*n* = 9)	3.11	0.6	2.4	78.57	0.88	0.29	8.31	<0.001
Malavarodha (*n* = 9)	3.0	0.7	2.2	74.07	0.66	0.22	10	<0.001
PadaShotha (*n* = 3)	2.33	0.66	1.66	71.42	0.57	0.33	5.0	<0.05
Smrutinasha: (*n* = 9)	2.7	0.44	2.33	84	0.70	0.23	9.89	<0.001
Aruchi (*n* = 8)	3.0	0.25	2.75	91.66	0.88	0.31	8.77	<0.001
Akshiraga (*n* = 8)	1.37	0.55	0.75	54.54	0.46	0.16	4.58	<0.01

On renal profile, blood urea (13.23%) were decreased in group-A, and in group-B, (3.96%). The result was statistically insignificant.

On biochemical parameters, postprandial urine sugar (0.20%) was increased and fasting blood sugar (4.64%) was reduced in group A whereas in group B, fasting blood sugar (1.64%) and postprandial blood sugar (3.1%) were decreased and the result was statistically insignificant.

Analyzing the overall effect of therapy, in sign and symptoms of disease, 30% patients were markedly improved, 60% were moderately improved, 10% were mild improved and none patient observed in no response category in Group A, whereas in group B, 20% patients were markedly improved, 80% moderately improved [Table 5].

Overall effect of therapy, in systolic and diastolic blood pressure, 40% and 70% patients were markedly improved, 40% and 10% were moderately improved, 20% and 20% were mild improved respectively, in Group A, whereas in Group B, 60% and 50% patients were markedly improved, 40% and 30% moderately improved, respectively [Tables 6,7].

Discussion

Although there is no difficulty in understanding the disease of hypertension from modern point of view there is some difficulty in identifying the disease entity of Ayurveda. The *Adhishthana* (seat) of hypertension is whole body and *Mana*, particularly *Hridaya* (heart) and *Sira-Dhamani* (blood vessels), which indicates Essential Hypertension (EHT) is a psychosomatic disease. As stated by Aacharya Charaka, physician should try to understand the nature of the disease *(Dosha)*, the site of manifestation and etiological factors and then initiate the treatment. There is no need to give a definite name to each and every disease. Thus in case of hypertension, it is essential to understand the nature of the disease rather

Table 3: Effect on chief and associated complaints of group B

Chief and associated complains	Mean		Difference	Relief %	S.D.	S.E.	*t*	*P*
	B.T.	A.T.						
Shiroruka (*n* = 9)	2.2	0.33	1.8	85.0	0.78	0.26	7.24	<0.001
Bhrama (*n* = 9)	3.4	1.0	1.0	70.96	1.01	0.33	7.23	<0.001
Hriddravatva (*n* = 5)	2.0	1.2	0.8	40	0.44	0.20	4.0	<0.05
Aayasjanya Swasakrichhata (*n* = 6)	2.6	0.83	1.83	68.75	0.40	0.16	11	<0.001
Alpanidra (*n* = 9)	2.6	0.6	2.0	75	1.11	0.37	5.36	<0.001
Urahashool (*n* = 7)	1.14	0.28	0.85	75	0.37	0.14	6.0	<0.001
Daurbalya (*n* = 10)	3.3	1.5	1.8	54.54	1.13	0.35	5.01	<0.001
Klama (*n* = 10)	3.3	1.6	1.7	51.51	0.94	0.30	5.66	<0.001
Arati (*n* = 8)	2.62	1.25	1.37	52.38	0.74	0.26	5.22	<0.01
Santapa (*n* = 6)	1.6	0.8	0.80	40	0.44	0.20	4.0	<0.05
Tamodarshana (*n* = 9)	1.4	0.3	1.1	76.92	0.60	0.20	5.54	<0.001
BuddhiSamoha (*n* = 9)	2.8	0.8	2.0	69.23	1.5	0.50	4.0	<0.01
Krodhaprachurya (*n* = 7)	3.0	1.28	1.71	57.14	0.75	0.28	6	<0.001
Malavarodha (*n* = 9)	3.42	1.42	2.0	58.33	0.57	0.21	9.16	<0.001
PadaShotha (*n* = 3)	2.5	1.0	1.5	60	0.70	0.50	3.0	<0.05
Smrutinasha: (*n* = 9)	2.5	0.77	1.73	69.56	0.66	0.22	8.0	<0.001
Aruchi (*n* = 7)	2.57	0.57	2	77.77	1.29	0.48	4.09	<0.001
Akshiraga (*n* = 8)	1.6	0.8	0.80	50	0.44	0.20	4.0	<0.05

Table 4: Effect of therapies on systolic and diastolic blood pressure before and after treatment

Group	B.P.	Mean		Difference	% Relief	S.D.	S.E.	T	*P*
		B.T	A.T.						
A (*n* = 10)	S.B.P.	161.6	147.2	14.4	8.91	5.56	1.75	8.18	<0.001
	D.B.P.	101.8	93.2	8.6	8.44	3.27	1.03	8.30	<0.001
B (*n* = 10)	S.B.P.	163.2	143.6	19.6	12.00	5.48	1.73	11.30	<0.001
	D.B.P.	101.6	90.4	11.2	11.02	9.15	2.89	3.87	<0.01

Table 5: Estimation of overall response on chief and associated complains of each Group

Assessment (%)	Group A		Group B	
	No. of patients	%	No. of patients	%
Excellent response (100)	00	00.00	00	00.00
Marked responses (>75)	03	30.00	02	20.00
Moderate response (50-75)	06	60.00	08	80.00
Mild improvement (25-50)	01	10.00	00	00.00
No response (<25)	00	00.00	00	00.00

Table 6: Estimation of overall response on systolic blood pressure of each group

Assessment in systolic blood pressure (%)	Group A		Group B	
	No. of patients	%	No. of patients	%
Controlled (100)	00	00.00	00	00.00
Marked responses (>75)	04	40.00	06	60.00
Moderate response (50-75)	04	40.00	04	40.00
Mild improvement (25-50)	02	20.00	00	00.00
No response (<25)	00	00.00	00	00.00

Table 7: Estimation of overall response on diastolic blood pressure of each group

Assessment in diastolic blood pressure (%)	Group A		Group B	
	No. of patients	%	No. of patients	%
Controlled (100)	00	00.00	00	00.00
Marked responses (>75)	07	70.00	05	50.00
Moderate response (50-75)	01	10.00	03	30.00
Mild improvement (25-50)	02	20.00	01	10.00
No response (<25)	00	00.00	01	10.00

Comparision of efficacy of modalities

than to give name. Therefore, depending upon the symptoms, *Samprapti* (pathogenesis) and complication of the disease a compound preparation named as *Shankhapushpyadi Ghana Vati (Anubhoota Yoga)* was formulated to provide a cost effective and safe remedy as compared to *Sarpagandhadi Ghana Vati*.[12]

Probable mode of action of *Shankhapushpyadi Ghana Vati*

It is potent herbs like *Shankhapushpi* (*Rasayana* and *Medhya*),[13] *Brahmi* (*Rasayana* and *Medhya*),[14] *Guduchi* (*Rasayana* and *Medhya*),[15] *Aaragvadha* (*Hridya* and *Mriduvirechaka*),[16] *Nimba* (*Raktashodhaka*),[17] *Kushtha*,[18] *Vacha* (*Sleshmaupshoshaka and Lekhana*),[19] *Gokshura* (*Rasayana and Mutrala*).[20]

The trial drug is able to correct provoked *Dosha*, vitiated *Dushya*, hampered *Agni* and affected *Srotas* (channels) involved in the pathophysiology of essential hypertension by its potent ingredients.

Rasayana property of *Shankhapushpi*, *Brahmi*, *Guduchi* and *Gokshura* check degenerative changes in affected organ (as arteriosclerosis in *Dhamani* or vessels) due to pathological changes and also provide nourishment at cellular level. *Medhya* property of *Shankhapushpi*, *Brahmi*, and *Guduchi* calms the mind and maintain equilibrium of autonomous nervous system which acts on vasomotor canter which creates vasodilatation and may helpful to decrease the blood pressure. *Sangyasthapaka* property of *Vacha* and *Kushtha* may also maintain equilibrium of autonomous nervous system. *Bastishodhaka* and *Rasayana* property of *Gokshura* acts as diuretic and also regulate renin angiotensin pathway. *Mridu Rechaka*, property of *Aaragvadha* purify *Rakta Dushti* and removes *Margavarodha* and eliminates the morbid *Doshas* from *Rakta*, and regulates the proper function of *Vata*. Action of *Gokshura* as diuretic and *Aragvadha* as *Mriduvirechaka* may helpful to decrease blood volume which decrease blood pressure.

Shankhapushpi with its *Snigdha Guna*, *Tikta*, *Kashaya Rasa*, *Madhura Vipaka* decrease excess *Vata* and *Pitta* and dominant *Dushya-Rakta*. *Brahmi* with its *Tikta Rasa* and *Ushna Virya* reduces increased *Meda*, *Kapha* and pacify *Vata*. *Guduchi* with its *Tikta*, *Kashaya Rasa*, *Ushna Virya* declines *Ama* and *Srotorodha*. *Aragvadha* with its *Madhura Rasa* and *Madhura Vipaka* may control the aggravation of *Vata* while *Shita virya* may pacify *Pitta Prakopa*. Owing to its *Recaka* property it eliminates *Koshtha gata Kapha* and *Pitta*. *Nimba* with its *Tikta-Kashaya Rasa* and *Sheeta Virya* property diminishes excessive *Pitta* and *Rakta* (*Raktashodhaka* property). *Kushtha* with its *Katu Rasa* and *Ushna Virya* of drug helpful in checking *Vata*, It becomes beneficial in symptomatic hypertensive patient having exertional dyspnea due to saussurine alkaloid. *Katu-Tikta Rasa* and *Laghu- Tikshna* property of *Vacha* decreases not only *Ama* and *Kapha* but also improves atherosclerotic changes. *Gokshura* having *Madhura Rasa* and *Madhura Vipaka*, *Snigdha* and *Guru Guna* may reduce hyperactivity of *Vata*. The *Rasayana* effect of *Shankhapushpi*, *Brahmi*, *Guduchi*, *Gokshura*, improves all *Dhatus* and provide relief in *Dhatukshayatva* and *Ojoskshayatva* of disease by giving nourishing effect on cellular level. The *Medhya* effect of *Shankhpushpi*, *Brahmi*, *Guduchi and Vacha* (*Sangyasthapaka*) pacifies the disturbed *Manasika Bhavas* gives calm the mind and relaxed the entire pathology as having *Medhya* property also hence significant relief was obtained by *Shankhapushpyadi Ghana Vati*. Hypertension being a psychosomatic disease, both *Sharirika* and *Manasika Dosha* are vitiated and they affect each other mutually as sorrow and fear provoke *Vata* and anger provoke *Pitta*. *Medhya* drug calms the mind and normalizes vitiated *Manasa Dosha*, which subsequently improves vitiation of *Sharirika Dosha* and related symptoms. Therefore, therapy *Shankhapushpyadi Ghana Vati* provided relief in symptoms of hypertensive patients.

Probable mode of action of *Sarpagandhadi Ghana Vati*

Prominent *Rasa* of *Sarpagandhadi Ghana Vati* is *Tikta*, which will it act on *Rasa*, *Rakta Dhatu* along with their *Srotas*. It reduces the *Ama* and there by viscosity of *Rasa* decreases which results proper *Rasa Rakta Vikshepana*. *Rakta Shodhaka* property of *Tikta Rasa* makes equilibrium of substances of *Rakta* by removing the toxic material those responsible for with pathogenesis of disease. *Ushna Virya* results *Vatashamaka* and *Amapachaka*. Combined effect of *Nidrajanana*, *Raktabharashamaka* property of *Sarpagandha and Jatamansi*, *Vedanahara* property of *Parseek-Yavani* and *Amapachana* property of *Pippali-Mool* may helpful to regulate the stress-induced factors and check the pathological changes of disease.

Complications occur as a sequel following and resulting from the main disease. It may be in the nature of a major or minor ailment. In view of growing incidence of hypertension and increasing risk of complication and risk of life extended, efforts have been made to study the nature of disease and its management. Because the common cause of death with hypertension are cardiac problem, stroke and renal disease;[21] hence combination of drugs were selected those were *Rasayana*, *Medhya*, *Hridya*, *Bastishodhka* and *Raktashodhaka* in nature will be beneficial. The drug may be helpful not only to pacify the symptoms of disease but also to protect the adverse effects of disease and check had the pathological changes occurres due to disease.

In the series some patients were with previous medication either allopathic or Ayurvedic and other were without any previous treatment. The therapy provided significant relief of both type of patients.

Hemoglobin and erythrocyte sedimentation rate (ESR) were within the normal limits in both groups before treatment and remained normal after completion of therapy. Little rise was noted in hemoglobin due to hemoglobin increasing effect of *Guduchi*. The ESR came down slightly due to anti-infective activities of *Nimba*. In patients of both therapeutic groups, the mean scores of lipid profile were decreased better in Group A due to *Sleshmaupshoshaka* and *Lekhana* property of *Vacha*.

In nutshell, *Shankhapushpyadi Ghana Vati* improved symptoms and elevated blood pressure, it provided better improvement on total health including relief in symptoms (group-A = 63.93%, group-B = 63.09%), decrease in high systolic blood pressure (group-A = 8.91%, group-B = 12.00%) and decrease in high diastolic blood pressure (group-A = 8.44%, group-B = 11.02%)

On overall effect of therapy observed in combined signs and symptoms of disease, more patients were markedly (group-A = 30%, group-B = 20%) or moderately improved (group-A = 60%, group-B = 80%) whereas less patients were under the category of mild improvement (group-A = 20%, group-B = 00%). None patient was reported in no response category (group-A = 00%, group-B = 00%) [Table 5].

On overall effect of therapy observed in combined systolic blood pressure of disease, more patients were markedly (group-A = 40%, group-B = 60%) or moderately improved (group-A = 40%, group-B = 40%) whereas less patients were under the category of mild improvement (group-A = 20%, group-B = 00%). None patient was reported in no response category (group-A = 00%, group-B = 00%) [Table 6].

On overall effect of therapy observed in diastolic blood pressure of disease, more patients were markedly (group-A = 70%,

Table 8: Comparison of results of complaints (by unpaired *t*-test)

Sign and symptoms	Mean ± SEM		Df N1+N2-2	't'	P
	Group A	Group B			
Shiroruk	2.200±0.233	1.889±0.278	17	–1.096	>0.05
Bhrama	2.571±0.369	2.444±0.338	14	0.253	>0.05
Hriddravatva	1.500±0.267	0.800±0.200	11	–1.859	>0.05
Aayaasjanya shwas	1.500±0.342	1.833±0.167	10	0.877	>0.05
Alpanidra	2.286±0.360	2.000±0.373	14	–0.540	>0.05
Urahashoola	0.800±0.200	0.875±0.143	10	–0.240	>0.05
Daurbalya	1.700±0.300	1.800±0.359	18	0.214	>0.05
Klama	1.400±0.267	1.700±0.300	18	–0.747	>0.05
Arati	1.500±0.267	1.375±0.263	14	0.333	>0.05
Santapa	0.875±0.125	0.667±0.221	12	–0.899	>0.05
Tamodarshana	0.625±0.813	1.111±0.200	15	–1.775	>0.05
Buddhisamoha	2.571±0.297	2.000±0.500	14	0.910	>0.05
Krodhaprachurya	2.444±0.294	1.714±0.286	14	1.740	>0.05
Malavarodha	2.222±0.222	2.000±0.218	14	0.700	>0.05
Shotha	1.667±0.333	1.500±0.500	03	0.293	>0.05
Smrutinasha	2.333±0.236	1.778±0.222	16	–1.715	>0.05
Aruchi	2.750±0.313	2.000±0.488	13	1.375	>0.05
Akshiraag	0.875±0.125	0.667±0.221	12	–0.899	>0.05

Table 9: Comparison of results on blood pressure in both groups (by unpaired *t*-test)

Blood pressure	Mean ± SEM		Df N1+N2-2	't'	P
	Group A	Group B			
Systolic	14.4± 1.759	19.6± 2.207	18	0.621	>0.05
Diastolic	8.600± 1.035	11.2± 2.736	18	-0.889	>0.05

None of features showed statistically significant difference in improvement in Group A- *Shankhapushpyadi Ghana Vati* and Group B- *Sarpagandhadi Ghana Vati*

group-B = 50%) or moderately improved (group-A = 20%, group-B = 30%) whereas less patients were under the category of mild improvement (group-A = 10%, group-B = 10%) or no response (group-A = 00%, group-B = 10%) [Table 7].

Conclusions

Lifestyle changes are the main origin of psychosomatic disorder. Factors responsible for anxiety, worry, tension and *Srotorodha* (obstructed channels of microcirculation) in the blood vessels induce hypertension. *Vata* is prominent *Dosha* in this disease and circulating *Rakta* (*Ras-Rakta* complex or blood) is main *Dushya* and *Srotasa- Rasavaha* (Chyle-channels), *Raktavaha* (Blood-channels), together with *Manovaha Srotasa* (Mind-channels), are involved. *Pitta Lakshana* are also seen because of association of *Rakta* with *Pitta* (*Ashraya- Aashriya Bhava*). All these changes lead to disturbed equilibrium state of physiological state of blood pressure and converted it into pathological condition of hypertension. *Sampraptivightana* by a combination of *Rasayana, Medhya, Hridaya, Bastishodhaka, Raktapurifier* and *Sleshmaupshoshka* property may have a possibility of finding a cure of disease, and can be given for long time duration in *Yapya* (chronic) disease- Hypertension without any hazard to body as arise in long duration of modern therapy. *Rasayana* property of trial drug check the degenerative changes and not only pacify the symptoms arises due to disease but also provide nourishment to the damaged or effected cells result from disease. *Trimarma* (heart, brain and kidney) are the organ mainly affected in advance stage of disease. *Medhya* (Brain tonic), *Hridya* (heart tonic) and *Bastishodhaka* (diuretic) property along with *Rasayana* (antioxidant and immunomodulator) property may provide protection against complication of advance stage of disease.

Shankhapushpyadi Ghana Vati better results in pacifying the entire range of symptomatology and mainly the cardinal signs in comparison to *Sarpaghandhadi Ghana vati* alone. It is a humble noting that when data is subjected to unpaired 't' test is unable to provide any clue regarding the suprimacy of the drug of group A upon group B [Tables 8,9]. It means the significancy difference within the both group is very less. On other hand it is concluded that both drugs are equally effective.

During follow-up, blood pressure tended to rise after some week of discontinuation of treatment. Thus it is proposed that the medicines should be administered for longer duration.

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हिन्दी सारांश

उच्च रक्तचाप की चिकित्सा में शंखपुष्पयादि घन वटी एवं सर्पगन्धादि घन वटी के प्रभाव का तुलनात्मक अध्ययन

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उच्च रक्तचाप आधुनिक युग की एक बड़ी समस्या है । उच्च रक्तचाप से सम्बन्धित मृत्युदर में पिछले कई वर्षों में आश्चर्यजनक बढ़ोत्तरी देखी गयी है । मानसिक कारणों की इस रोग में प्रमुख भूमिका है । इस व्याधि की चिकित्सा का प्रमुख उद्देश्य व्याधि के उपद्रव स्वरुप होने वाली मृत्युदर को कम करना है । इस शोधकार्य में उच्चरक्तचाप के २० रोगियों को २ वर्गों में विभाजित किया गया । प्रथम वर्ग के १० रोगियों को शंखपुष्पयादि घन वटी (शंखपुष्पी, ब्राह्मी, गुडूची, आरग्वध, निम्ब, कुष्ठ, वचा तथा गोक्षुर) मात्रा –२ ग्राम प्रति दिन दो मास तक सेवन करायी गयी । रक्तचाप में शंखपुष्पयादि घन वटी द्वारा चिकित्सित रोगियों के सिस्टोलिक ब्लड प्रेशर में ८.९१% तथा डायस्टोलिक ब्लड प्रेशर में ८.४४% का निर्देशात्मक सुधार मिला । दूसरे वर्ग में सर्पगन्धादि घन वटी २ ग्राम प्रतिदिन २ मास तक रोगियों को सेवन करायी गई । चिकित्सा के पश्चात रोगियों में १२.००% सिस्टोलिक ब्लड प्रेशर में तथा ११.०२% डायस्टोलिक ब्लड प्रेशर में लाभ प्राप्त हुआ । किन्तु उच्चरक्तचापजनित लक्षणों यथाः भ्रम,हृदद्रावता, उरःशूल, अरति, संताप में शंखपुष्पयादि घन वटी चिकित्सा द्वारा अधिक लाभ प्राप्त हुआ । उक्त दोनों वर्गों के परिणामों का सांख्यिकीय विश्लेषण करने पर पाया गया कि दोनो वर्गों के तुलनात्मक प्रभाव में अन्तर नहीं है ।