International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 3 May-June 2024, pp: 494-501 www.ijprajournal.com ISSN: 2456-4494

"A Comparative Clinical Study to Evaluate the Efficacy of Virecana Karma (Trivrt Curna) Followed by Urovasti (Ksirabala Taila) with and Without Matra Vasti (Ksirabala Taila) in the Management of Ucca Raktacapa with Special Reference To Stage I Essential Hypertension."

Dr. S. Supraja[1], Dr. K. Harshavardhana Appaji [2]
[1]*P.G Scholar of Dept. Of Panchakarma, S.V. Ayurvedic college and Hospital, Tirupati.*
[2]*Professor, Dept. Of Panchakarma, S.V. Ayurvedic college and Hospital, Tirupati.*

Date of Submission: 01-05-2024 Date of Acceptance: 10-05-2024

ABSTRACT:
Hypertension, characterized by elevated blood pressure levels, presents a significant health challenge worldwide. Ayurveda offers therapeutic interventions such as Virecana Karma, Urovasti and Matravasti for its management. This comparative clinical study aimed to evaluate the efficacy of these interventions in managing Stage I essential hypertension with Ucca Raktacapa. A total of 60 participants were randomly assigned to two groups: Group A received Virecana Karma followed by Urovasti and Group B received Virecana Karma followed by Urovasti and Matravasti. The primary outcome measure was a reduction in systolic and diastolic blood pressure levels. Secondary outcomes included changes in lipid profile, quality of life, and adverse events. Both groups demonstrated significant reductions in blood pressure levels with Group B showing a greater reduction compared to Group A. These findings suggest that the combination of Virecana Karma, Urovasti, and Matravasti holds promise as an effective therapeutic approach for managing Stage I Essential hypertension.
KEYWORDS: Virecana, Urovasti, Matravasti, Ucca Raktacapa, Essential hypertension.

INTRODUCTION:

Hypertension is a condition characterized by chronically elevated arterial blood pressure. **(1)** It is a leading cause of cardiovascular disease and premature death worldwide. It is a major cardiovascular risk factor and contributes significantly to cardiovascular mortality. The prevalence of hypertension increases with age, affecting >60% of people older than 60 years, and it is a leading cause of cardiovascular disease (CVD) and premature death worldwide.

Based on the aetiology, high blood pressure is classified as either Primary/Essential or secondary hypertension. Primary or "essential" hypertension has no known cause. Secondary Hypertension is caused by some other medical conditions/problems or the use of certain medications. In Ayurveda, there is no direct reference regarding this disease which completely resembles with hypertension. R.R.Desai, correlated hypertension with Ucca raktacapa. Essential hypertension was screened in light of Vata–Pitta Pradhana Rakta Pradoshaja Vikara as mentioned by Acarya Caraka. Acarya Caraka says when Vata is obstructed by Pitta, Kapha, Meda, and Rakta. Virecana should be given in diseases caused by Dushitha Rakta (Ca.Su-24/18)**(2)**. In Essential Hypertension, the chief culprit is Vyana Vayu, and is a disease of Bahya, Madhyama Rogamarga, and Marmagata Vyadhi. In these conditions, Vasti is the main line of treatment for aggravated vata (Ca. Si 1/38-40)**(3)**,hence opted for Urovasti.

AIMS AND OBJECTIVES:

i. To evaluate the efficacy of Virecana Karma (Trivrit churna) followed by Urovasti (Ksirabala taila) in the management of Ucca Raktacapa with special reference to Stage I Essential Hypertension.

ii. To evaluate the efficacy of Virecana karma (Trivrit churna followed by Urovasti and Matra Vasti (Ksirabala taila in the management of Ucca Raktacapa with special reference to Stage I Essential Hypertension.

iii. To compare the efficacy of Virecana karma with Trivrit churna followed by Urovasti (Ksirabala taila with and without Matra vasti in the management of Ucca Raktacapa with special reference to Stage I Essential Hypertension.

International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 3 May-June 2024, pp: 494-501 www.ijprajournal.com ISSN: 2456-4494

iv. To introduce simple and cost-effective treatment for Ucca Raktacapa.

MATERIALS AND METHODS:

Total 60 Patients were selected from OPD and IPD of S.V.Ayurvedic hospital, Tirupati, Andhra Pradesh and randomly allocated into two groups.

Group A: Consists of 30 patients will be given Virecana karma with Trivṛt cūrṇa followed by Urovasti with Kṣīrabala tailam.

Group B: Consists of 30 patients will be given Virecana karma with Trivṛt cūrṇa followed by Urovasti and Matrāvasti with Kṣīrabala tailam.

MATERIALS REQUIRED:

For Snehapana – Indukantha Ghrita[4]
For Virecana: Trivrit churna [5]
For Urovasti and Matra vasti: Ksirabala tailam[6]

INCLUSIVE CRITERIA

i. Patients with age group of 20 to 60 years.
ii. Patients with signs and symptoms of Ucca Raktacāpa
iii. Patients with signs and symptoms of Stage I Essential Hypertension
iv. Patients who are eligible for Virecana and Urovasti.
v. Patients who are eligible for Virecana, Urovasti and Matravasti.

EXCLUSIVE CRITERIA

i. Patients with age group of below 20years & above 60 years
ii. Patients with HIV, TB and other systemic disorders in which patient is unable to withdraw modern medications.
iii. Patients with uncontrolled Diabetes.
iv. Hypertension in pregnancy.
v. Patients who do not fit into inclusive criteria.

STUDY DESIGN

Method of administration of Virecana

Virecana:

Purva Karma:

i. Deepana and Pacana with Chitrakadi Vati, dosage as well as duration were decided based on the patient's Agni and Koshta.
ii. Duration was around 3 - 5 days depending upon the attainment of Nirama lakshanas.
iii. Then Snehapana was initiated with Indukantha ghrita. Patient was instructed to take Drava, Ushna, Anabhishyandi bhojana the previous day.
iv. Patient was asked to evacuate his urges before administering Snehapana. Dosage was given based on Avarohana matra starting from 30 ml and everyday dose is increased by 30 ml.
v. Total duration of Snehapana varied from patient to patient depending on the respective patient's Agni and Koshta ranging between 3 - 7 days.
vi. Snehapana was administered at 6 AM every day.Patient was advised to have Ushnajalapana and walk a few steps post administration and was advised to take hot water frequently and have light and hot food whenever he feels hungry.
vii. After attaining Samyak Snigdha Lakshanas, 3 days of Abhyanga with Nirgundi Taila and Nadi Sweda were given. Patient was asked to have Amla and Pitta vriddhikara ahara prior to the day of Virecana and have sound sleep.

Pradhana Karma:

On the day of Virecana, patient was asked to evacuate urges. On an empty stomach, patient was administered Trivrit Churna whose dose was fixed based on the patient's Koshta at around 9 AM. The patient was advised to pass stool whenever she gets the urge and meanwhile take rest. Ushnodaka pana was advised. Number of Vegas were counted.

Pascat Karma:

i. Patient was advised to take Ushnodaka snana, follow Samsarjana krama and eat food only when she felt hungry and take rest.
ii. Samsarjana Krama depending on the type of Suddhi.

Urovasti:

Urovasti was performed with Ksirabala tailam for 7days.

PROCEDURE:

The procedure of Urovasti can be divided into three stages such as - Purva Karma, Pradhana Karma and Pascat Karma.

Purva Karma:

Patient should be lie in comfortable supine position. The chest is exposed. Dough of thick consistency is prepared with black gram flour by adding water.[7,8] This is rolled to a long strap, with the height of about three Angulas (two quarters

International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 3 May-June 2024, pp: 494-501 www.ijprajournal.com ISSN: 2456-4494

inch) and width of one inch. The length should be sufficient to form a ring around the area. The ends are fixed such that it forms a loop (paali).

Pradhana Karma:

The oil is warmed over hot water bath is poured slowly inside the ring bund and the temperature must be maintained by replacing a small quantity of oil after the required rewarming.

Pascat Karma:

After the prescribed time, oil is to be removed off from over the chest with the help of cotton.

Remove the dough. Wipe the surface with cotton or towel. Patient is advised to take rest in the same position for 10-20 min.

Matravasti:

The patients of this group were administered Matra vasti with Ksirabala taila in the dose of 60 ml once a day for 7 days.

Purva Karma:

The patients were instructed to come after taking light diet (neither too Snigdha nor too Ruksha), after elimination of stool and urine. The patients were also advised not to take diet more than 3/4th of routine quantity. The patients were mainly subjected for local Abhyanga and Mridu Svėdana prior to the administration of Matravasti.

Abhyanga: The local Abhyanga over abdomen, buttock and thighs for 5 – 10 minutes was done by lukewarm Nirgundi taila.

Svedana: After Snehana, the patients were subjected for local Mridu Sweda, by using wet towel soaked in hot water. Svedana was done on abdomen, buttocks and on thighs for 5-10 minutes.

Pradhana Karma: After this Purva Karma the patient was advised to lie down on left lateral position on the Vasti (enema) table with left lower extremity straight and right lower extremity flexed on knee and hip joint. The patient was asked to keep his left hand below the head. Ksirabala taila was applied to anus in small amount. 60ml of sukhoshna vasti dravya was taken in enema syringe. Rubber catheter oleated with, Ksirabala taila was attached to enema syringe. After removing the air from enema syringe, rubber catheter was administered into the anus of the patients up to the length of 4 inches. The patient was asked to take deep breath and not to shake his body while introducing the catheter and the drug. The total Taila was not administered in order to avoid entrance of Vayu into the Pakvasaya which may produce pain.

Pascat Karma:

After the administration of Vasti, the patient was advised to lie in supine position with hand and legs freely spread over the table. Thereafter patient's both legs were raised few times so as to raise the waist and gently tapped over the hips. Simultaneously taps were also given on his soles, over elbow and palms, so that the vasti may spread throughout the body and may be retained for the required period.

After sometime patient was advised to get up from the table and take rest in his bed and also not to take day sleep. Vasti Pratyagamana Kala was noted in each case.

Total Number of subjects: 60 (Group A -30, Group B – 30)

Duration of treatment: Group A & Group B: 22 to 30 days.

Type of Study: Comparative clinical study

Criteria for assessment:

- Before treatment- 0^{th} day
- Immediately after treatment-22-30^{th} day

FOLLOW UP

- After treatment – 22-30^{th} day and after one month of completion of treatment.
- Assessment of core symptoms

SUBJECTIVE PARAMETERS:

1. Siroruk (Headache)
2. Bhrama (Dizziness)
3. Klama (Fatigue)
4. Hriddravata (Palpitations)

OBJECTIVE PARAMETERS:

Blood Pressure:

1. Systolic Pressure (130 - 139 mmHg).
2. Diastolic Pressure (80 - 89mmHg).

SUBJECTIVE CRITERIA

Siroruk

No Pain: Grade 1
Mild Pain: Grade 2
Moderate Pain: Grade 3
Severe Pain: Grade 4

Bhrama

International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 3 May-June 2024, pp: 494-501 www.ijprajournal.com ISSN: 2456-4494

No Dizziness: Grade 1
Mild Dizziness: Grade 2
Moderate Dizziness: Grade 3
Extreme Dizziness Grade 4

Klama
No Fatigue: Grade 1
Mild Fatigue: Grade 2
Moderate Fatigue: Grade 3
Severe Fatigue: Grade 4

Hrid dravata
No Palpitations: Grade 1
Mild Palpitations: Grade 2
Moderate Palpitations: Grade 3
Severe Palpitations: Grade 4

OBJECTIVE CRITERIA

Systolic Blood Pressure
< 130 mm hg: Grade 1
130 - 131 mm hg: Grade 2
132 - 133 mm hg: Grade 3
134 - 135 mm hg: Grade 4
136 - 137 mm hg: Grade 5
138 - 139 mm hg: Grade 6

Diastolic Blood Pressure
< 80mmhg: Grade 1
80 - 81 mm hg: Grade 2
82 - 83 mm hg: Grade 3
84 - 85 mm hg: Grade 4
86 - 87 mm hg: Grade 5
88 - 89 mm hg: Grade 6

Statistical analysis of Signs and Symptoms:

Effects of Siro ruk (Headache):

The effect of Virecana and Urovasti (Group-A) on Siro ruk is statistically significant (P = 0.0007) immediately after completion of treatment and extremely statistically significant (P < 0.0001) after follow up of treatment. On the other hand, the effect of Virecana, Urovasti and Matravasti (Group-B) on Siro ruk is extremely statistically significant (P < 0.0001) immediately after completion of treatment and extremely statistically significant (P < 0.0001) after follow up of treatment compared to 0th day. Group-B is highly significant in comparison with Group-A.

Table no: 52: Showing PAIRED T- TEST summary of Siro ruk (Headache)

Groups	Mean ± S.D		MD	SED	t value	p value	%
	0th Day	Im Immediately after Treatment					
Group-A	2.50 ± 0.90	2.17 ± 0.65	0.33	0.088	3.8079	P= 0.0007	13.2
Group-B	2.50 ± 0.97	1.60 ± 0.67	0.90	0.147	6.1388	P< 0.0001	36

Groups	Mean ± S.D		MD	SED	t value	p value	%
	0th Day	A after follow up					
Group-A	2.50 ± 0.90	2.00 ± 0.74	0.50	0.104	4.7848	P< 0.0001	20
Group-B	2.50 ± 0.97	1.17 ± 0.38	01.33	0.161	8.2605	P< 0.0001	53.2

Effects on Bhrama: (Dizziness)

The effect of Virecana and Urovasti (Group-A) on Bhrama is very statistically significant (P= 0.0001) immediately after completion of treatment and extremely statistically significant (P < 0.0001) after follow up of treatment. On the other hand, the effect of Virecana, Urovasti and Matravasti (Group-B) on Bhrama is extremely statistically significant (P < 0.0001) immediately after completion of treatment and extremely statistically significant (P < 0.0001) after follow up of treatment compared to 0th day. Group-B is highly significant in comparison with Group-A.

International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 3 May-June 2024, pp: 494-501 www.ijprajournal.com ISSN: 2456-4494

Table no. 53: Showing PAIRED T- TEST summary of Bhrama: (Dizziness)

Groups	Mean ± S.D		MD	SED	t Value	p value	%
	0th Day	Im Immediately after Treatment					
Group-A	2.50±0.86	2.03±0.67	0.47	0.104	4.4737	P= 0.0001	18.8
Group-B	2.60±1.04	1.63±0.67	0.97	0.140	6.9221	P<0.0001	37.3

Groups	Mean ± S.D		MD	SED	t Value	p value	%
	0th Day	Aft After follow up					
Group-A	2.50±0.86	1.77±0.68	0.73	0.159	4.6256	P< 0.0001	29.2
Group-B	2.60±1.04	1.13±0.35	1.40	0.184	7.9694	P<0.0001	56.5

Effects on Klama (fatigue):

The effect of Virecana and Urovasti (Group-A) on klama is very statistically significant (P= 0.0001) immediately after completion of treatment and extremely statistically significant (P < 0.0001) after follow up of treatment. On the other hand, the effect of Virecana, Urovasti and Matravasti (Group-B) on klama is statistically significant (P =0.0008) immediately after completion of treatment and extremely statistically significant (P < 0.0001) after follow up of treatment compared to 0th day. Group-B is highly significant in comparison with Group-A.

Table no. 54: Showing PAIRED T- TEST summary of Klama (fatigue):

Groups	Mean ± S.D		MD	SED	t Value	p value	%
	0th Day	Im Immediately after Treatment					
Group-A	3.17±0.87	2.77±0.73	0.40	0.091	4.3970	P=0.0001	10.4
Group-B	2.77±1.07	1.47±0.68	1.30	0.160	8.1199	P<0.0001	46.9

Groups	Mean ± S.D		MD	SED	t Value	p value	%
	0th Day	Aft After follow up					
Group-A	3.17±0.87	2.63±0.85	0.53	0.142	3.7640	P= 0.0008	17
Group-B	2.77±1.07	1.13± 0.43	1.63	0.195	8.3907	P<0.0001	59.2

Effects on Hrid dravata(palpitations) :

The effect of Virecana and Urovasti (Group-A) on Hrid dravata is very statistically significant (P= 0.0003) immediately after completion of treatment and very statistically significant (P =0.0002) after follow up of treatment. On the other hand, the effect of Virecana, Urovasti and Matravasti (Group-B) on Hrid dravata is extremely statistically significant (P < 0.0001) immediately after completion of treatment and extremely statistically significant (P < 0.0001) after follow up of treatment compared to 0th day. Group-B is highly significant in comparison with Group-A.

International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 3 May-June 2024, pp: 494-501 www.ijprajournal.com ISSN: 2456-4494

Table no.55: Showing PAIRED T- TEST summary of Hrid dravata (palpitations)

Groups	Mean ± S.D		MD	SED	t Value	p value	%
	0th Day	Im Immediately after Treatment					
Group-A	3.73±0.91	3.23±0.63	0.50	0.142	3.5254	P=0.0014	13.4
Group-B	4.07±1.36	2.20±1.19	1.87	0.313	5.9556	P<0.0001	45.9

Groups	Mean ± S.D		MD	SED	t Value	p value	%
	0th Day	Aft After follow up					
Group-A	2.97±0.89	2.43±0.86	0.53	0.124	4.2868	P=0.0002	18.1
Group-B	2.33±1.06	1.40±0.62	0.93	0.159	5.8872	P<0.0001	39.9

Effects on Systolic Blood Pressure:

The effect of Virecana and Urovasti (Group-A) on Systolic Blood Pressure is very statistically significant (P=0.0014) immediately after completion of treatment and very statistically significant (P =0.0006) after follow up of treatment. On the other hand, the effect of Virecana, Urovasti and Matravasti (Group-B) on Systolic Blood Pressure is extremely statistically significant (P<0.0001) immediately after completion of treatment and extremely statistically significant (P < 0.0001) after follow up of treatment compared to 0th day. Group-B is highly significant in comparison with Group-A.

Table no.56: Showing PAIRED T- TEST summary of Systolic Blood Pressure:

Groups	Mean ± S.D		MD	SED	t Value	p value	%
	0th Day	Im Immediately after Treatment					
Group-A	3.73±0.91	3.23±0.63	0.50	0.142	3.5254	P=0.0014	13.4
Group-B	4.07±1.36	2.20±1.19	1.87	0.313	5.9556	P<0.0001	45.9

Groups	Mean ± S.D		MD	SED	t Value	p value	%
	0th Day	Aft After follow up					
Group-A	3.73±0.91	3.00±0.87	0.73	0.191	3.8317	P=0.0006	19.5
Group-B	4.07±1.36	1.13±0.35	2.93	0.262	11.1822	P<0.0001	72

Effects on Diastolic Blood Pressure:

The effect of Virecana and Urovasti (Group-A) on Diastolic Blood Pressure is very statistically significant (P= 0.0087) immediately after completion of treatment and very statistically significant (P =0.0037) after follow up of treatment. On the other hand, the effect of Virecana, Urovasti and Matravasti (Group-B) on Diastolic Blood Pressure is extremely statistically significant (P < 0.0001) immediately after completion of treatment and extremely statistically significant (P < 0.0001) after follow up of treatment compared to 0th day. Group-B is highly significant in comparison with Group-A.

International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 3 May-June 2024, pp: 494-501 www.ijprajournal.com ISSN: 2456-4494

Table no. 57: Showing PAIRED T- TEST summary of Diastolic Blood Pressure

Groups	Mean ± S.D		MD	SED	t Value	p value	%
	0th Day	Im Immediately after Treatment					
Group-A	3.23±0.94	2.73±0.64	0.50	0.192	2.8123	P=0.0087	15.4
Group-B	3.53±1.41	2.10±1.35	1.43	0.270	5.3110	P<0.0001	40

Groups	Mean ± S.D		MD	SED	t Value	p value	%
	0th Day	Aft After follow up					
Group-A	3.23±0.94	2.60±0.67	0.63	0.200	3.1591	P=0.0037	19.5
Group-B	3.53±1.41	1.20±0.48	2.33	0.216	10.7924	P<0.0001	66

Discussion on Procedure

Probable Mode of action of Virecana:

The Virecana Karma clears Margavarodha (obstruction), eliminates the morbid Doshas from Rakta, and regulates the activity and movement of Vata. Thus, it controls the high BP. According to the modern point of view, during Virecana process, the inflammation of intestinal mucosa leads to hyperemia and exudation resulting into increased passage of protein-rich fluids through vessel walls to intestinal lumen. Increase in fluid volume also results in the dilution of toxic material. Evacuation of the fluid from Rasa-Rakta by Virecana is the direct process that leads to decrease in fluid volume.

Probable Mode of action of Uro Vasti:

- After the application of the oil, penetration of heat through the skin started, which not only dilate the blood vessel (aorta) but also stimulates the receptor of vagus nerve (intrinsic nervous system) through heart – brain communication & mind become calm.
- Generalized metabolic reaction of drug is also occurs at that area. Finally gives the result as proper Rasa Samvahana (circulation), calm effect on brain & also strengthen the cardiac muscles.
- According to Ayurveda it maintains the flow of Rasa Dhatu enhances the Hridaya Sthana Gata Pitta Karma & regulates the Vyana Vata.
- Proper Rasa Samvahana nourishes the Shira Pradesh which gives soothing effect in stress condition & Prasadana of Manovaha srotas.

Probable mode of action of Vasti:

It can be understood in the following ways: (1) By absorption mechanism, (2) by system biology concept, and (3) by neural stimulation mechanism.

By absorption mechanism

Ksirabala Taila Matra Vasti, after reaching the rectum and colon, causes secretion of bile from gall bladder, which leads to the formation of conjugate micelles which are absorbed through passive diffusion. Especially the middle-chain fatty acid present in Ksirabala Taila Matra Vasti can get absorbed from colon and large intestine part gastrointestinal tract (GIT) and break the pathology of disease.

By system biology concept

The latest concept of system biology makes it clearer how Vasti can act on the organ systems. This theory believes that all the organs are interconnected at molecular level. Any molecular incident is transformed at cellular level, then at tissue level and ultimately at organ level. Thus, the effects of Vasti on gastrointestinal system will definitely affect another system and help to get the bodily internal homeostasis.

By neural stimulation mechanism

BP is regulated by the feedback of the neural tissue of Vaso-Motor Center (VMC). VMC activity in turn depends upon reflexes from periphery (neural and chemical) and from higher centre. Sympathetic stimulation causes activation of pressure area of VMC, which in turn causes vasoconstriction and leads to rise in BP, while parasympathetic stimulation causes activation of

International Journal of Pharmaceutical Research and Applications
Volume 9, Issue 3 May-June 2024, pp: 494-501 www.ijprajournal.com ISSN: 2456-4494

depressor area of VMC, which in turn results in vasodilatation and precipitates decrease in BP

The long-term regulation of BP occurs through Renin-Angiotensin-Aldosterone (RAA) axis of endocrine mechanisms. Lower part of GIT is richly supplied with parasympathetic nerves which on stimulation with Vasti (either by chemical or mechanical receptor) may cause decrease in secretion of RAA complex, and by activating depressor area of VMC which causes vasodilatation and results in decrease in BP.

Enteric Nervous System (ENS) works in synergism with the CNS on stimulation with Basti (either by chemo or mechano receptors) and may lead to activation of depressor area of VMC, which finally causes decrease in BP. It is not mandatory for a drug to remain in contact with the receptor for long time e.g. in proton pump inhibitor mechanism, the drug interacts with receptor and gets flushed out from circulation, it is known as "hit and run module" of kinetics. The same module of kinetics can be hypothesized for Niruha Basti.

CONCLUSION:

On objecting the cardinal sign and symptomatology of the disease to Ayurvedic fundamentals, it is evident that there is predominance of Vata Pitta and kapha as anubandha doṣa accompanied with Rasa Rakta dushṭi. Dhamani upalepa is one of the main incidences in Ucca Raktacapa. Hence Ucca Raktacapa can be assigned as Tridoṣaja vyādhi with predominance of Vāta and Pitta. The aim of present study was to compare the efficacy of Virecana karma with Trivrit churna followed by Urovasti (Ksirabala taila with and without Matra vasti in the management of Ucca Raktacapa with special reference to Stage I Essential Hypertension.

The observations and results were analysed statistically and extremely significant p value was found immediately after treatment and after follow up in both Group A and Group B. Better improvement is seen in symptoms percentage of relief was seen in Group B than Group A.

These findings suggest that the combination of Virecana Karma, Urovasti, and Matravasti holds promise as an effective therapeutic approach for managing Stage I essential hypertension.

REFERENCES:

[1]. Harrison"s Principles of Internal medicine, Edited by Dennis L. kasper, Anthony S. fauci, Dan L. Longo, Stephen L. Hauser, J. Larry Jameson, Joseph Loscalzo18 th edition, The McGraw-Hill Medical publishing division, 2005, Chapter – 247 Hypertensive Vascular Disease, pp-2042

[2]. Bhagawan Dash and Sharma RK, Caraka Saṃhitā text with English translation, Āyurveda Dīpikā‟‟ Commentary of Cakrapānidatta, vol -1 Sutra sthana – 24/18, Chaukambha series studies, Varnasi-2015 edition, pp-406

[3]. Bhagawan Dash and Sharma RK, Caraka Saṃhitā text with English translation, Āyurveda Dīpikā‟‟ Commentary of Cakrapānidatta,vol -6 Siddhi sthana – 1/38-40, Chaukambha series studies, Varnasi-2015 edition, pp-163.

[4]. Nishteshwar K and Vidyanath R, Sahasrayogam text with English Translation Ghrita prakarana-4, Chaukhambha Sanskrit Series office, Varnasi, pp-62.

[5]. Bhagawan Dash and Sharma RK Āgniveśa, Caraka Saṃhitā text with English translation, Āyurveda Dīpikā ‟‟Commentary of Cakrapānidatta,vol -1 Sutra sthana – 2/9-10 Chaukambha series studies, Varnasi-2015 edition, pp-65

[6]. Nishteshwar K and Vidyanath R, Sahasrayogam text with English Translation Taila prakarana- 3, Chaukhambha Sanskrit Series office, Varnasi, pp-110.

[7]. Prasad KSR, Deogade MS (2018) Technoayurveda, Practical SOP Panchkarma (according to NABH needs).1st (Edn.), Chapter 2.10, COAR Publication, Wardha,Telangana, India, pp: 202-203

[8]. Neelakandhan Moose ET, A Practical Handbook of Panchkarma and associated kerala speciality therapies.Chapter 31, Vaidyaratnam books, thaikkattutussery,Thrisusur Kerala, pp: 125