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COMPARATIVE CLINICAL EVALUATION OF VAMANA KARMA ALONE AND ALONG WITH PANCHAKOLA PHANTA IN HYPOTHYROIDISM (AGNIMANDYA)

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ABSTRACT

Background: The sedentary lifestyle and stress-filled modern era have led to alterations in the activities of the neuro-endocrine system, causing newer health challenges like thyroid disorder. Hypothyroidism is one of the life-style and endocrinal disorders. There is no direct reference to the thyroid in *Ayurveda* classics, but all the metabolic processes of the body are under the control of *Agni*. *Vamana Karma,* followed by *Panchakola Phanta*, can treat *Agnimandya.* **Aim:** To compare the efficacy of *Vamana Karma* alone and along with *Panchakola Phanta* in Hypothyroidism (*Agnimandya*). **Materials and Methods:** A total of 40 patients of Hypothyroidism in the age group of 20 to 60 years fulfilling the inclusion criteria were selected for trial & randomly distributed in Group A and Group B. **Results:** Statistically, Group B was found more effective than Group A in the management of symptoms of Hypothyroidism (*Agnimandya*). **Discussion:** *Panchakola* having *Ushna*, *Tikshna*, *Laghu*, *Ruksha Guna*, *Katu Rasa*, *Katu Vipaka* and *Ushna Virya*. It has *Kaphavata Shamaka*, *Deepana*, *Pachana*, *Rochana*, *Lekhana*, *Sroto-Vishodhana* and *Shothahara* properties. *Panchakola* is regarded as one of the most effective medications for treating *Mandagni*. In *Agnimandya*, *Panchakola Phanta* is useful for *Amapachana* and to increase the *Agni*.

Keywords: *Agnimandya*, *Ayurveda*, Hypothyroidism, Thyroid, *Panchakola*.

INTRODUCTION

Many diseases that exist today are the result of sedentary lifestyles. Abnormal food habits, lifestyle choices, greed and anger have become a part of life. Modern human's changing lifestyles have led to several biological system imbalances.[1] Numerous lifestyle illnesses and hormonal imbalances in our bodies result from this.[2] Ayurveda is a system of medicine and a way of life. It includes physical, mental, and spiritual well-being.[3] The most prevalent conditions affecting the endocrine glands are thyroid diseases. Hypothyroidism is the most common endocrine disorder observed all over the world at present.[4] Hypothyroidism, also known as an underactive thyroid, is a condition where the thyroid does not create enough thyroid hormones, which decreases basal metabolic rate.[5]Thyroid is an endocrinal gland secret T3 and T4 hormones regulated by TSH, which is secreted by the pituitary gland. These hormones have two significant effects on the body –

1. To increase the overall metabolic rate in the body.
2. To stimulate growth in children.[6]

Thyroid hormone regulates how the body uses energy metabolism; without enough of this hormone, many of the body's functions slow-down.[7] Common symptoms of Hypothyroidism are tiredness, weakness, poor memory, feeling cold, hair loss, constipation, weight gain with poor appetite, hoarse voice, menorrhagia, and impaired hearing.[8] The primary role of the thyroid gland is to maintain oxidative metabolism by increasing body mass ratio (BMR). It accelerates energy production and regulates the metabolism of carbohydrates, proteins, fats, calcium, and phosphorus.[9] Even now, the 200 million population of the world is suffering from thyroid disorders. Amongst them, Hypothyroidism is very common.[10] In India, it is believed that 42 million people have thyroid issues.[11] Hypothyroidism is more common in women than men. The ratio of disease occurrence among females and males is 6:1.[12] It is a common health issue in India. The prevalence of thyroid disorder in National Family Health Survey IV was 2.2% (2015-2016) and 2.9% in NFHS-V (2019-2021). The self-reported prevalence of thyroid disorder was nearly 2% in females and less than 1% in males. NFHS-V states that the number of cases reported in Uttarakhand is 2.4%.[13] Despite many advances, the modern management of Hypothyroidism remains unsatisfactory.[14] The only modern treatment available is the lifelong use of hormonal therapy (Levothyroxine sodium), and only minor changes in levothyroxine dosage are likely observed. Levothyroxine is the drug of choice for Hypothyroidism.[15] Levothyroxine starting dose is 25-50µg daily.[16] Common side effects of Levothyroxine are chest pain, discomfort, tightness, decreased urine output, menstrual changes, difficulty swallowing, extreme fatigue, irregular breathing, sweating, and tremors.[17] According to *Ayurveda*, *Agni* is responsible for the body's metabolism and thermogenesis. The thirteen types of *Agni* (*Jatharagni*-1, *Bhutagni*-5, *Dhatvagni*-7) bring about all the chemical reactions and transformations in the body.[18] When we analyse the pathogenesis of Hypothyroidism, *Agnimandya* seems to be the fundamental cause. The healthy and altered status of *Agni* can be correlated with the normal and abnormal functions of the thyroid gland. Thus, Hypothyroidism can be considered a stage of *Agnimandya* resulting in the formation of *Ama*.[19] *Jatharagni* is the one of prime importance controlling other *Agni*.[20] *Agnimandya* is the vitiated state where *Agni* cannot digest even the meagre quantity of indigested food. Due to improper digestion, *Agnimandya* results in the formation of abnormal *Rasa Dhatu*, i.e., *Ama*.[21] Thus, the etiology of *Agnimandya* can be considered the etiology of *Ama*. Clinical symptoms of *Ama* are *Srotorodha* (Obstruction of body channels), *Gaurava* (Heaviness), *Anil Mudhata* (Abnormal movement of *Vata Dosha*), *Alasya* (Laziness), *Apakti* (Indigestion), *Malasanga* (Obstruction of *Mala*), *Aruchi* (Loss of taste), *Klama* (Lethargy), *Balabrinsha* (Loss of body strength).[22] *Ayurveda* mentioned *Shodhana Chikitsa*, in *Agnimandya* dominancy of *Kapha Dosha* and *Vamana Karma* is the best line of treatment for *Kapha Dosha* for curing disease amongst *Shodhana Chikitsa* thus, it may be

effective for the patient of Hypothyroidism. *Panchakola Phanta* serves the purpose of *Deepan* and *Pachana*, thus eliminating the root cause of the disease and correcting the *Agni* and the digestion of *Ama*.

AIMS AND OBJECTIVE

➢ To determine *Vamana Karma*'s efficacy in Hypothyroidism (*Agnimandya*).

➢ To find out the efficacy of *Vamana Karma* along with *Panchakola Phanta* in Hypothyroidism (*Agnimandya*).

➢ To compare the efficacy of *Vamana Karma* alone and along with *Panchakola Phanta* in Hypothyroidism (*Agnimandya*).

MATERIALS AND METHODS

The materials used for this study are categorized under the following three headings -

1. **Literary Sources—**For the present Study, Literary data was collected from *Vedic* Scriptures, *Ayurvedic Samhitas*, and *Sanskrit* dictionaries. A retrospective study of database books related to modern Science, research studies published in peer-reviewed journals and conference proceedings, and various web sources like GOOGLE, DHARA, etc., was done to seek information about related research work.
2. **Drug source**—For the preparation of *Vamana Yoga* and *Panchakola Phanta*, Raw drugs were collected from Herbal Automation, Haridwar, and prepared in the pharmacy of Himalayiya *Ayurvedic* Medical College and Hospital, Dehradun.
3. **Assessment tools –** Subjective and Objective parameters include Clinical grading.

PLAN OF STUDY –

1. Selection of Patient
2. Research design
3. Assessment

Selection of patients:

A detailed clinical research performa was prepared incorporating all the points of history taking, physical examination and assessment of the treatment. Approval from the Institutional Ethics Committee was obtained before the recruitment of subjects for a present clinical trial. Ethical clearance was obtained from the Institutional Ethics Committee of Himalayiya *Ayurvedic* (PG) Medical College, Dehradun. This study has also been registered in CTRI (Clinical Trials Registry- India). Patients attending the OPD and IPD of the *Panchakarma* department of Himalayiya *Ayurvedic* (PG) Medical College, Dehradun, who had chief complaints of Hypothyroidism, were selected for the study.

RESEARCH DESIGN:

- **Study design -** Randomized Clinical Comparative Trial
- **Masking** - Open type
- **Randomization -** The patients were randomized using Computer generated randomization.
- **Sample Size and Grouping:** 40 patients with Hypothyroidism were randomly selected and equally divided into two groups.

Group A: 20 patients received *Vamana*.

Group B: 20 patients received *Vamana* and *Panchakola Phanta (Shamana Aushadi)*.

- **Level of Study:** OPD and IPD level
- **Period of Study:** 18 Months
- **Duration of Treatment:** *Vamana* 15 days.
- **Ethical Committee Clearance (Reference No.) -** As this is a clinical study, Institutional Ethical Committee (IEC) approval was taken in before initiation of the study with Reference no. - HAMC/2022/1023
- **CTRI Registration -** This clinical study was registered in the Clinical Trial Registry of India (CTRI) with the registration no. CTRI/2023/10/059092.

Assessment: Improving subjective and objective parameters before and after treatment will be considered.

Drug Review-

The Ayurvedic formulation chosen is *Vamana Yoga* (reference as per *CHARAKA SAMHITA Kalpa Sthana* 1/14), and *Panchakola Churna* (*BHAVA PRAKASH Uttarardha* 26/49) chosen for *Phanta Kalpna* as per *Sharangadhara Samhita*.

Vamana Yoga *– Madanphala, Vacha, Madhuyashti, Saindhava Lavana, Madhu, Kanchanara.*

Panchakola– *Pippali, Pippalimula, Chavya, Chitraka, Sunthi.*

Inclusion Criteria –

1. Patients have general symptoms of Hypothyroidism.
2. Patients with ages of 20 to 60 years.
3. Thyroid stimulating hormone (TSH) level >4.25 IU/mL.
4. *Vamana Yogya* as per classical text.

Exclusion Criteria –

1. Patients ages below 20 years and more than 60 years.
2. Patients having any other primary complicated disease like cardiac disease, Diabetes mellitus, Cancer, AIDS, Tuberculosis, Leprosy, Thyrotoxicosis, Hashimoto's Thyroiditis, and other systemic disorders that lead to fetal conditions for the patient.
3. *Vamana Ayogya*, as per classical text, will be excluded from the study.

DIAGNOSTIC CRITERIA

1. The diagnosis will be made based on the symptomatology of Hypothyroidism and biochemical investigations, including Serum TSH, Free T3, and free T4.
2. Serum TSH Level >4.25 IU/mL and <100 IU/Ml
3. Total serum T4 = 4.5-12.5 mg/dl
4. Total serum T3 = 80-220 ng/dl

Investigations –

1. Complete blood count (CBC)
2. Blood sugar (Fasting, PP)
3. Thyroid profile
4. Kidney function test (KFT) – If needed
5. Lipid profile – If needed

Table No. 1- Intervention Regime

<table>
<tr><th colspan="2" rowspan="2">Intervention Name</th><th colspan="2">Selected Drugs</th><th rowspan="2">Duration</th></tr>
<tr><th>Group A</th><th>Group B</th></tr>
<tr><td rowspan="4">Purva karma</td><td>Deepana, Pachana</td><td>Chitrakadi Vati
(2 Tab, BD)</td><td>Chitrakadi Vati
(2 Tab, BD)</td><td>3-7 days</td></tr>
<tr><td>Snehapana</td><td>Murchita Go Ghrita</td><td>Murchita Go Ghrita</td><td>As per- Kostha and Agni</td></tr>
<tr><td>Abhyanga</td><td>Dashmoola Taila</td><td>Dashmoola Taila</td><td rowspan="2">1 day</td></tr>
<tr><td>Swedana</td><td>Dashmoola Kwatha</td><td>Dashmoola Kwatha</td></tr>
<tr><td rowspan="3">Pradhana Karma</td><td rowspan="3">Vamana Karma</td><td colspan="2">Vamana Yoga</td><td rowspan="2">1 day</td></tr>
<tr><td rowspan="2">1. Madanphala Pippali- 6 gm
2. Vacha Churna- 1 gm
3. Yastimadhu Churna- 4 gm
4. Saindhava- 1.5 gm
5. Madhu – As required
Kanchanara Phanta – 3-4 litre</td><td>1. Madanphala Pippali- 6 gm
2. Vacha Churna- 1 gm
3. Yastimadhu Churna- 4 gm
4. Saindhava- 1.5 gm
5. Madhu – As required
Kanchanara Phanta – 3-4 litre</td></tr>
<tr><td>Samana Aushadi- Panchakola Phanta (40ml, 1cup, BD)</td><td>After Vamana, till 1st follow-up.</td></tr>
<tr><td colspan="2">Pashchat Karma</td><td>Samsarjan Krama</td><td>Samsarjan Krama</td><td>As per Suddhi</td></tr>
</table>

Dose of medicine - 6 *Prastha*

Duration - 15 days

Follow up:

- 1st follow-up - After 15 days of treatment.
- 2nd follow-up - After 1 month of treatment.

Table No. 2- Gradings:

SUBJECTIVE PARAMETERS

SL.No.	Subjective Parameters	Grades	Results	BT	AT
1.	**Muscle cramps**	0	Not present		
		1	Once in a week		
		2	Twice / Thrice a week		
		3	Continuously present		
2.	**Dryness of skin**	0	No dryness		
		1	Dryness after bath only		
		2	Dryness for the whole day but relieved after oil application		
		3	Dryness is not even relieved after oil application.		
3.	**Puffiness**	0	Absent		
		1	Occasional		
		2	Daily periorbital edema/puffiness in the morning is relieved later in the day.		
		3	Continuously present		
4.	**Edema**	0	Absent		
		1	Oedema over lower / upper extremities		
		2	Edema over both extremities		
		3	Edema all over the body		
5.	**Constipation (Frequency)**	0	Once in a day		
		1	Once in two days		
		2	Once in three days		
		3	Once in <3 day		
	Constipation (Consistency)	0	*Shithila*		
		1	*Madhyama*		
		2	*Kathina*		
		3	*Granthil*		
	Constipation (Straining)	0	No		
		1	Occasionally bearable		
		2	Frequently severe		

6. *Agni Bala* assessment

a. *Abhyavarana Shakti*

	Abhyavarana Shakti	0	Good quantity thrice a day		
		1	Reduction up to 25%		
		2	Reduction up to 50%		
		3	Reduction up to 75%		

b. *Jarana Shakti* (*Utsaha, Laghuta, Udgara shuddhi, Kshut, Trushna, Yathochitakale Malapravruthi*)

	Jarana Shakti	0	Presence of all symptoms		
		1	Presence of 4 symptoms		
		2	Presence of 3 symptoms		
		3	Presence of 2 symptoms		
		4	Presence of 1 symptom		

OBJECTIVE PARAMETERS –

				BT	**AT**
1.	**TSH**	0	0.5 - 5.00		
		1	5.00 – 8.00		
		2	8.00 – 11.00		
		3	>11.00		
2.	**T3**	0	<80		
		1	80 - 220		
		2	>220		
3.	**T4**	0	<4.5		
		1	4.5 – 12.5		
		2	>12.5		
4.	**BMI**	0	Normal BMI		
		1	BMI between 25 to 30		
		2	BMI between 31 to 34		
		3	BMI of more than 35		
5.	**Weight**				
6.	**Abdominal circumference**				

Statistical Analysis

Parameters	**Intragroup result**	**Intergroup comparison**
Subjective parameter	Wilcoxon Signed rank test	Mann Whitney U test
Objective parameter	Wilcoxon Signed rank test Paired t-test	Mann Whitney U test Unpaired t-test

Table No.3- RESULT

INTRA-GROUP COMPARISON

Effect of Therapy on (Group A) Subjective parameter

Group A (Subjective)	**Mean**		**Median**		**SD**		Wilcoxon W	P-Value	% Effect	Result
	BT	**AT**	**BT**	**AT**	**BT**	**AT**				

Muscle Cramps	2.21	1.74	2.00	2.00	0.61	0.70	-4.025[b]	0.000057	21.43	Sig
Dryness Of Skin	2.79	1.58	3.00	1.00	0.51	0.76	-3.946[b]	0.000079	43.40	Sig
Puffiness	2.21	1.16	2.00	1.00	0.61	0.58	-4.001[b]	0.000063	47.62	Sig
Edema	2.79	1.84	3.00	2.00	0.51	0.48	-3.690[b]	0.000224	33.96	Sig
Constipation (Frequency)	1.58	0.79	1.00	0.00	1.12	0.77	-3.317[b]	0.000911	50.00	Sig
Constipation (Consistency)	1.74	0.47	2.00	1.00	1.31	0.91	-2.887[b]	0.003892	72.73	Sig
Constipation (Straining)	0.36	0.36	0.00	0.00	0.48	0.37	-1.732[b]	0.083265	0.00	NS
Abhyavarana Shakti	0.44	0.43	0.00	0.00	0.51	0.60	-.707[b]	0.479500	2.29	NS
Jarana Shakti	1.59	0.79	2.00	0.00	0.90	0.77	-3.416[b]	0.000636	50.33	Sig

Effect of Therapy on (Group B) Subjective parameter

Group B (Subjective)	Mean		Median		SD		Wilcoxon W	P-Value	% Effect	Result
	BT	AT	BT	AT	BT	AT				
MUSCLE CRAMPS	2.37	0.44	3.00	0.00	0.45	0.70	-4.018[b]	0.000059	81.56	Sig
DRYNESS OF SKIN	2.84	0.77	3.00	1.00	0.48	0.45	-4.233[b]	0.000023	72.96	Sig
PUFFINESS	2.74	0.59	3.00	1.00	0.61	0.51	-4.300[b]	0.000017	78.46	Sig
EDEMA	2.79	0.59	3.00	1.00	0.51	0.51	-4.379[b]	0.000012	78.87	Sig
CONSTIPATION (FREQUENCY)	2.79	0.44	3.00	1.00	0.51	0.51	-4.300[b]	0.000017	84.34	Sig
CONSTIPATION (CONSISTENCY)	2.21	0.56	2.00	1.00	0.61	0.51	-4.177[b]	0.000030	74.52	Sig
CONSTIPATION (STRAINING)	1.21	0.00	1.00	0.00	0.51	0.00	-4.053[b]	0.000051	100.00	Sig
ABHYAVAHARANA SHAKTI	2.32	0.18	3.00	0.00	0.50	0.37	-4.041[b]	0.000053	92.27	Sig
JARANA SHAKTI	3.16	0.23	3.00	0.00	0.48	0.45	-4.233[b]	0.000023	92.67	Sig

INTER-GROUP COMPARISON

Variable	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	P-Value	P-Value
Muscle Cramps	Group A	18	11.24	213.50	23.500	0.000001	Sig
	Group B	15	28.33	566.50			
	Total	33					
Dryness Of Skin	Group A	18	15.00	285.00	95.000	0.001421	Sig
	Group B	15	24.75	495.00			
	Total	33					
Puffiness	Group A	18	12.53	238.00	48.000	0.000005	Sig
	Group B	15	27.10	542.00			
	Total	33					
Edema	Group A	18	11.45	217.50	27.500	0.000000	Sig
	Group B	15	28.13	562.50			
	Total	33					
Constipation (Frequency)	Group A	18	10.00	190.00	0.000	0.000000	Sig
	Group B	15	29.50	590.00			
	Total	33					
Constipation (Con-	Group A	18	11.21	213.00	23.000	0.000001	Sig

sistency)	Group B	15	28.35	567.00			
	Total	33					
Constipation (Straining)	Group A	18	10.95	208.00	18.000	0.000000	Sig
	Group B	15	28.60	572.00			
	Total	33					
Abhyavarana Shakti	Group A	18	10.00	190.00	0.000	0.000000	Sig
	Group B	15	29.50	590.00			
	Total	33					
Jarana Shakti	Group A	18	10.13	192.50	2.500	0.000000	Sig
	Group B	15	29.38	587.50			
	Total	33					

INTRA-GROUP COMPARISON

Effect of Therapy on (Group A) objective parameter

Group A (Objective)	Mean		Median		SD		Wilcoxon W	P-Value	% Effect	Result
	BT	AT	BT	AT	BT	AT				
TSH	2.79	1.37	3.00	2.00	0.51	0.45	-4.000[b]	0.000063	50.94	Sig
T3	1.00	1.00	1.00	1.00	0.00	0.00	.000[c]	1.000000	0.00	NS
T4	0.95	1.00	1.00	1.00	0.32	0.00	-1.414[d]	0.157299	-5.56	NS
BMI	0.74	0.21	0.00	0.00	0.51	0.51	-2.887[b]	0.003892	71.43	Sig

Objective (Group A)		Mean		N	SD	SE	t-Value	P-Value	% Change	Result
Weight	BT	65.79		18	8.02	1.84	3.483	0.00265360	1.23	Sig
	AT	64.98		18	8.17	1.88				
Abdominal Circumference	BT	81.13		18	6.82	1.57	3.130	0.00578314	0.53	Sig
	AT	80.70		18	6.83	1.57				

Effect of Therapy on (Group B) objective parameter

Group B (Objective)	Mean		Median		SD		Wilcoxon W	P-Value	% Effect	Result
	BT	AT	BT	AT	BT	AT				
TSH	2.05	0.56	2.00	1.00	0.66	0.51	-4.053[b]	0.000051	72.56	Sig
T3	1.00	1.00	1.00	1.00	0.00	0.00	.000[c]	1.000000	0.00	NS
T4	0.82	1.00	1.00	1.00	0.37	0.00	-1.732[d]	0.083265	-21.79	NS
BMI	0.79	0.18	1.00	1.00	0.63	0.65	-4.001[b]	0.000063	77.35	Sig

Objective (Group B)		Mean	N	SD	SE	t-Value	P-Value	% Change	Result
Weight	BT	69.05	15	6.25	1.40	6.374	0.00000410	1.67	Sig
	AT	67.90	15	6.20	1.39				
Abdominal Circumference	BT	82.30	15	6.83	1.53	4.682	0.00016231	0.91	Sig
	AT	81.55	15	6.86	1.53				

INTER-GROUP COMPARISON

Variable	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	P-Value	P-Value
TSH	Group A	18	13.37	254.00	64.000	0.000038	Sig
	Group B	15	26.30	526.00			
	Total	33					
T3	Group A	18	20.00	380.00	190.000	1.000000	NS
	Group B	15	20.00	400.00			
	Total	33					
T4	Group A	18	20.45	388.50	181.500	0.680112	NS
	Group B	15	19.58	391.50			
	Total	33					
BMI	Group A	18	20.03	380.50	189.500	0.970676	NS
	Group B	15	19.98	399.50			
	Total	33					

Variable	Group	N	Mean	SD	SE	t-Value	P-Value	Result
Weight	Group A	18	0.81	1.01	0.23	2.330	0.025	Sig
	Group B	15	1.15	0.81	0.18			
Abdominal Circumference	Group A	18	0.43	0.60	0.14	2.573	0.014	Sig
	Group B	15	0.75	0.72	0.16			

Improvement of subjective parameters in each group –

Parameter	% Effect	
	Group A	Group B
Muscle Cramps	21.43	81.56
Dryness Of Skin	43.40	72.96
Puffiness	47.62	78.46
Edema	33.96	78.87
Constipation (Frequency)	50.00	84.34
Constipation (Consistency)	72.73	74.52
Constipation (Straining)	0.00	100.00
Abhyavarana Shakti	2.29	92.27
Jarana Shakti	50.33	92.67
Average % Effect	35.75	83.96

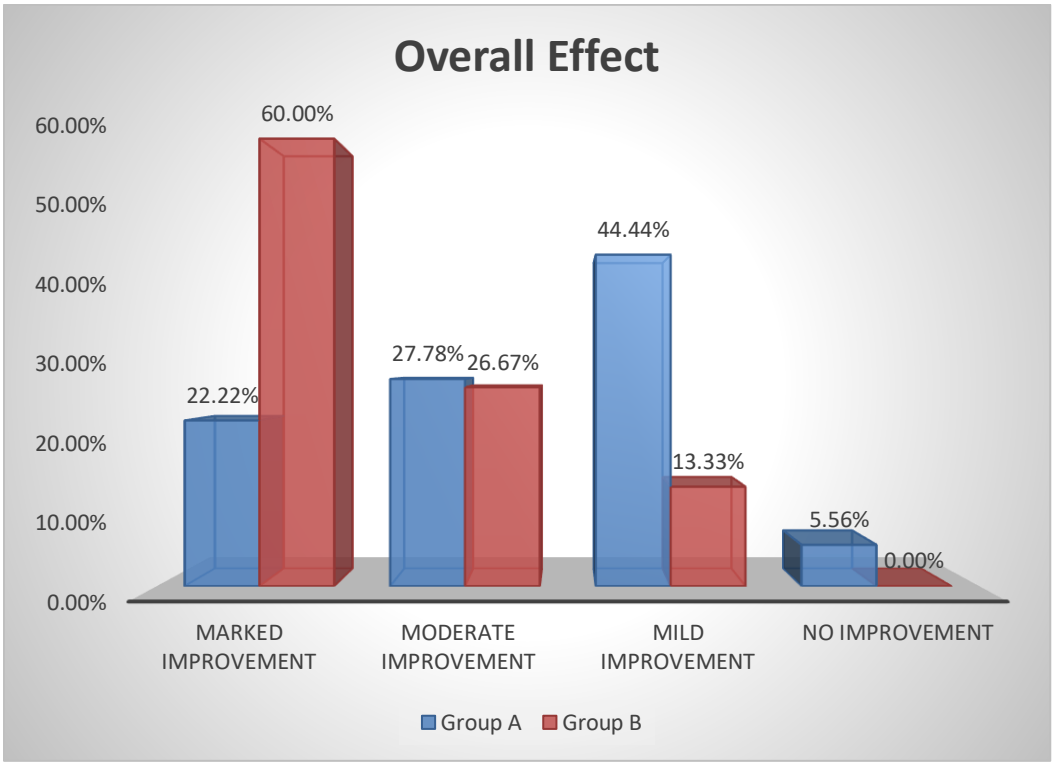
Improvement of objective parameters in each group –

Parameter	% Effect	
	Group A	Group B
TSH	50.94	72.56
T3	0.00	0.00

T4	5.56	21.79
BMI	71.43	77.35
Weight	1.23	0.53
Abdominal Circumference	1.67	0.91
AVERAGE % EFFECT	21.80	28.86

The overall effect of therapy-

Overall Effect	Group A		Group B	
	N	%	N	%
Marked Improvement	4	22.22%	9	60.00%
Moderate Improvement	5	27.78%	4	26.67%
Mild Improvement	8	44.44%	2	13.33%
No Improvement	1	5.56%	0	0.00%
TOTAL	18	100.00%	15	100.00%



DISCUSSION

- **Effect of Therapy on Muscle Cramps:** Group B had better results, with an Average % of relief of 81.56% and a significant p-value ($p<0.05$). *Rasavaha Srotodushti* is seen in this disease. *Angamarda* is one of the symptoms of *Rasavaha Srotodushti*. *Langhana* is one of the treatments of *Rasavaha Stroto Dushti*. *Vamana* as a type of *Langhana.*
- **Effect of Therapy on Dryness of skin:** Group B had better results, with an Average % of relief of 72.96% and a significant p-value ($p<0.05$). Dry

and coarse skin is due to the decreased secretion of the eccrine gland (ordinary sweat gland). Cutaneous vasoconstriction leads to reduced blood supply and myxedematous infiltration, i.e., hyaluronic acid or dermal mucopolysaccharides will hamper skin nourishment, making skin dry and pale. *Srothoshodhana* helps to increase blood supply to the skin, remove *Srotorodha* of mucopolysaccharides, regularise movement of *Vayu* and *Rasa Dhatu*, and properly nourish *Rakta Dhatu.*

- **Effect of Therapy on Puffiness:** Group B had better results, with an Average % of relief of 78.46% and a significant p-value ($p<0.05$). Puffiness and peripheral edema are due to the accumulation of hyaluronic acid in the tissues, which is related to the loss of the inhibitory effect of thyroid hormones on hyaluronate, fibronectin, and collagen. It can be correlated with *Kapha Dushti*. *Vamana Karma* leads to the elimination of *Kapha Dosha* and *Kayagni Dipti* (increasing metabolism).
- **Effect of Therapy on Edema:** Group B had better results, with an Average % of relief of 78.87% and a significant p-value ($p<0.05$). Edema has multiple causes, including increased capillary permeability, impaired lymphatic flow, sodium retention, accumulation of hydrophilic glycosaminoglycans in the interstitial space, and extravascular accumulation of albumin and other proteins. Deficiency of thyroid hormones leads to decreased degradation of hyaluronic acid. It can be correlated with *Kapha Vriddhi and Agnimandya. Vamana* will remove *Dosha Sanchaya* from the microchannels. Also, it will increase metabolism.
- **Effect of Therapy on Constipation (Frequency):** Group B was found to have better results, with an Average % of relief of 84.34% and a significant p-value ($p<0.05$). Deficiency of thyroid hormones leads to intestinal hypomotility. Sluggish, slower, or weaker colon contractions and fluid retention can be characteristic of Hypothyroidism and are contributing factors to chronic constipation. Also, myxedematous infiltration of the intestine's mucosa will lead to hypomotility. *Samshodhana* will remove *Srotorodha* and regularise the movement of *Vayu.*
- **Effect of Therapy on Constipation (Consistency):** Group B was found to have better results, with an Average % of relief of 74.52% and a significant p-value ($p<0.05$).
- **Effect of Therapy on Constipation (Straining):** Group B was found to have better results, with an Average % of relief of 100% and a significant p-value ($p<0.05$).
- **Effect of Therapy on *Abhyavarana Shakti*:** Group B had better results, with an Average % of relief of 92.27% and a significant p-value ($p<0.05$). It should depend upon the quantity and quality of food taken, so it varies from person to person.
- **Effect of Therapy on *Jarana Shakti*:** Group B had the better result, with an Average % of relief of 92.67% and a significant p-value ($p<0.05$). *Jirna Ahara Lakshana* is *Utsaha*, *Laghuta, Udgara Suddhi*, *Kshudha*, *Trishna,* and *Yathochita Malotsarga* are the symptoms of proper digestion.
- **Effect of Therapy on TSH:** Group B had better results, with an Average % of relief of 72.56% and a significant p-value ($p<0.05$). This may be because *Vamana* might have helped by *Srothoshodhana*, *Malasanchaya Nirharana* might have helped by regulation of immunity and by decreasing inflammations, which are the root causes of the disease, and thus thyroxine secretion and absorption of thyroxine might have improved.
- **Effect of Therapy on T3:** The result was found in neither in both groups with Average % of relief 0.00% and non-Significant p value ($p>0.05$). Because T3 is in the normal range, there is no effect on the result.
- **Effect of Therapy on T4:** Group A was found to have a better result, with an Average percentage of relief of 5.56% and a non-significant p-value ($p>0.05$).

- **Effect of Therapy on BMI:** Group B was found to have better results, with an Average % of relief of 77.35% and a significant p-value ($p<0.05$). Gain in weight occurs due to fluid retention and large extravascular accumulation of albumin and other proteins. Also, weight gain may be due to lethargy, which makes the patients avoid physical activities. *Samshodhana* helped to void *Malasanchaya*, *Srothoshodhana*, and *Agnideepana*. Also, patients were advised to have a light and controlled diet during the treatment course. This may be the reason for weight loss.
- **Effect of Therapy on Weight:** Group B was found to have better results, with an Average % of relief of 1.67% and a significant p-value ($p<0.05$).
- **Effect of Therapy on Abdominal circumference:** Group B was found to have better results, with an Average % of relief of 0.91% and a significant p-value ($p<0.05$).

OVERALL EFFECT OF THERAPY-

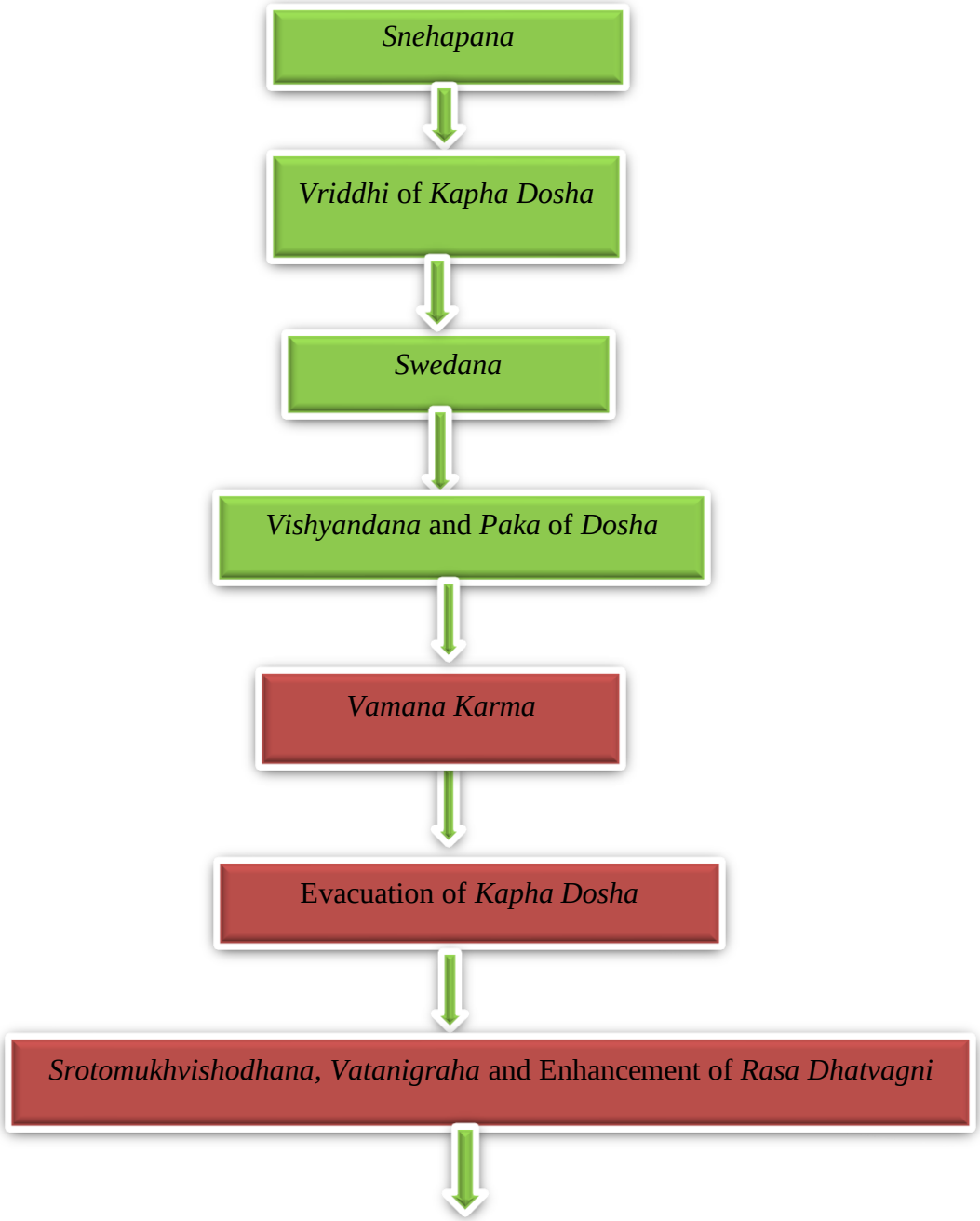
- In the present study, 60.00% of patients reported marked improvement, 27.78% reported moderate improvement, 44.44% reported mild improvement, and 5.56% reported no improvement.
- The average % of relief was higher in Group B, i.e., 60.00%, followed by Group A, i.e., 44.44%.
- Overall, Group B had a higher percentage of individuals achieving marked improvement. On the other hand, Group A had a higher rate of individuals experiencing mild improvement. Both groups had a relatively small number of individuals showing no improvement.

DISCUSSION ON DRUG –

- ✓ The drug *Chitrakadi Vati* was used in *Deepana-Pachana* because it pacifies *Kapha* and improves *Mandagni*.
- ✓ In Sehana Go Ghrita is used because it is best among all *Snehas*, and its *Sukshma*, *Ushna*, *Tikshna*, and *Deepana* properties will reach small channels and help improve metabolism. According to Modern Science, *Sneha* is Lipophilic in nature. Thus, it diffuses rapidly across the cell membrane, which is also composed of a bimolecular lipid matrix, and *Sneha* can cross the blood-brain barrier and act on the CNS, i.e., the Hypothalamus and Pituitary gland may correct hormonal imbalance.
- ✓ The *Vamana Yoga* is *Madanaphala Pippali Churna* with *Vacha, Saindhava, Madhu,* and *Yashtimadhu.*
- ✓ By *Ushna Virya, Katu Vipaka, Tikta* and *Katu Rasa, Laghu, Ruksha Guna* of *Madanaphala,* it clears the *Srotosanga* and Stimulates the *Srotas*, thus making the proper function of *Agni*. *Madanaphala* is the best drug among *Vamana* drugs as it does not cause any harm to the body, so it was selected.
- ✓ *Yashtimadhu* roots are emetic, and its *Kaphanissaraka* property helps in *Vamana.*
- ✓ *Vacha* has *Vata-Kapha Shamaka* and *Lekhana* property. It helps with *Vamana*.
- ✓ By *Kashaya Rasa, Ruksha Guna, Katu Vipaka*, and *Vamaka* property of *Kachanara,* it helps in *Vamana* by clearing the *Srotosanga.*
- ✓ Majority of the drugs having *Vata-Kapha Shamaka*, *Deepana-Pachana*, *Vatanulomaka*, *Shothahara.* These may remove *Avarana* of *Kapha* and might have restored the normal functioning of *Vata.*
- ✓ *Saindhava Lavana* and *Sukshma Guna* penetrate the body's microchannels. *Tikshna Guna* breaks down the morbid *Mala* and *Dosha Sanghata*, whereas *Snigdha Guna* liquefies the *Doshas*. Irritating properties eliminate the *Dosha*. *Madhu* has a *Chedana* property, which helps eliminate *Kapha*. Rock salt and Honey are added to facilitate the liquefaction and disintegration of *Kapha.*
- ✓ *Panchakola* drugs like *Pippali*, *pippalimoola*, *Chavya*, *Chitraka*, and *Sunthi* have *Deepana-Pachana* and *Ama-Dosha Nashaka* properties, so they regulate *Jatharagni*, *Dhatwagni*, and *Bhutagni*. This corrects metabolism at the cellular level, resulting in the proper formation of *Dhatus*, *Upadhatu*, and *Srotoshodhana* by removing *Ama*.

DISCUSSION ON PROBABLE MODE OF ACTION OF *VAMANA* IN HYPOTHYROIDISM-

In this present study, *Vamana* was administered by *Madanphala*, *Vacha*, *Yashtimadhu*, *Saindhava*, *Madhu*, and *Kachanara*. The primary pathogenesis of Hypothyroidism occurs due to the *Kapha Vridhi* and may be due to *Srotoavarodha* by *Kapha*. Due to *Srotoavarodha*, *Prakopa* of *Vata* (*Vata Nigraha*) occurs and causes *Rasa Dhatwagni Mandya*. So, the line of treatment for this could be that type which eliminates *Mala Rupa Kapha.* It is comparable to the phases of the entire *Vamana Karma* process. i.e., *Snehana* may cause *Vriddhi*, and *Swedana* may cause the *Vishyandana* and *Paka* of the *Doshas*. The *Vamana Karma* may evacuate *Kapha Dosha*, which may lead the *Srotomukhvishodhana*. By all the above *Karma*, the *Gati* of *Vata* is corrected (*Vata Nigraha*). Thus, *Vamana karma* may act on the disease by the five steps above.

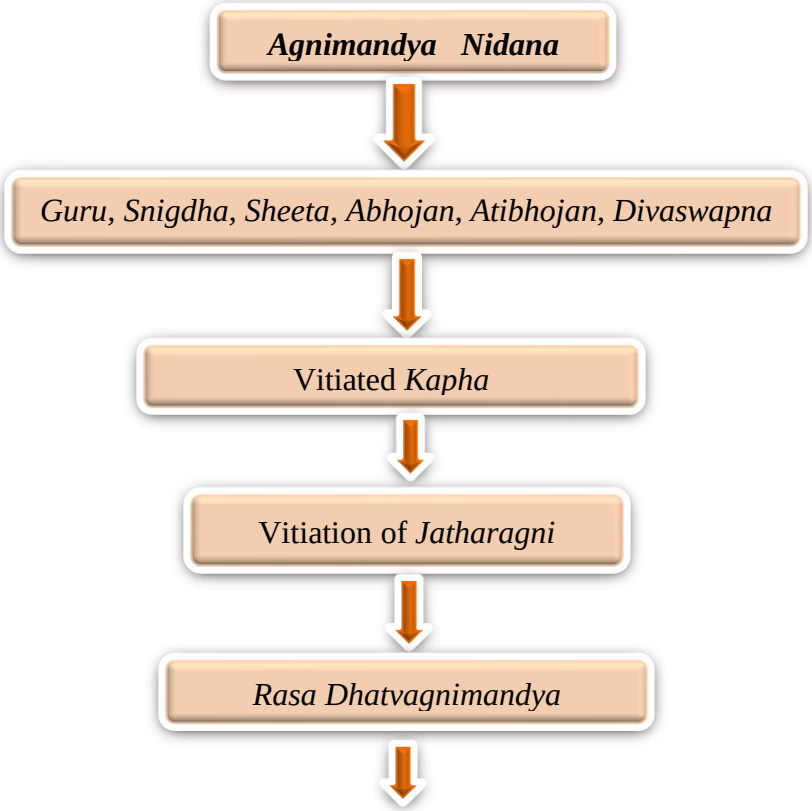


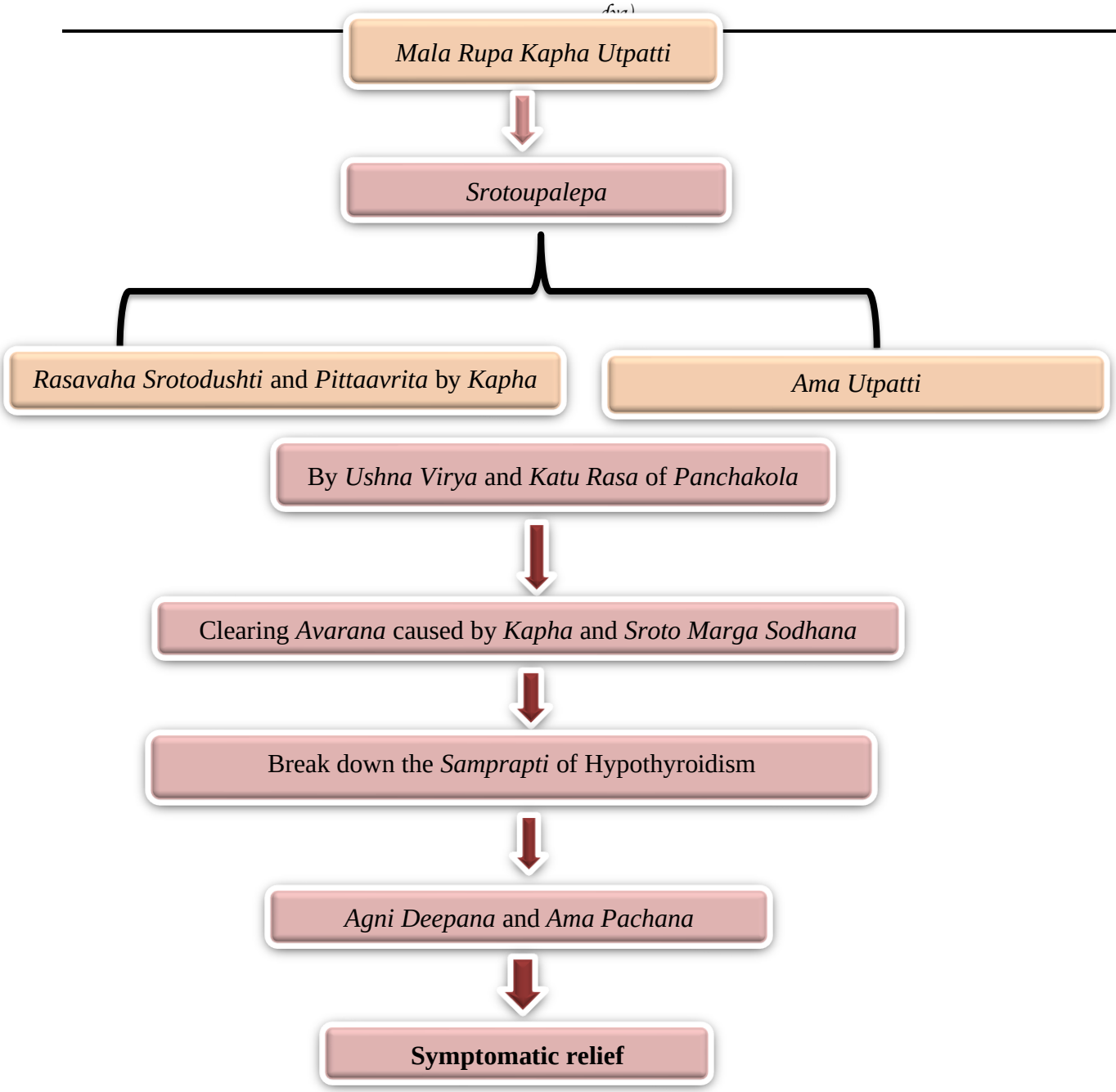
Relief in *Lakshana* of Hypothyroidism

Vamana is the best treatment for vitiated *Kapha*. Hypothyroidism is a *Srotorodha Pradhana Vyadhi*; *Srotovishodhana* is done by the property of *Sroto Vishyandana* by *Vamana Aushadh*. *Vamana* helps *Vatanulomana,* which will also help normalize the *Pratiloma Gati* of *Vata*, which relieves the general symptoms, e.g., Muscular pain and dry and coarse skin. In Hypothyroidism, *Rasadhatu dushti* also occurs. *Langhan* is a line of treatment of *Rasaj Vikara*, and *Vamana* is a type of *Langhan*; therefore, *Vamana* pacifies the symptoms related to *Rasa Dhatudushti*. *Vamana* drugs, due to their *Ushna*, *Tikshna*, and *Sukshma Guna*, reach the heart by their potency and thereby circulate all over the body. They liquefy the morbid *Dosha* and bring them up to the *Amashaya*. From here, the morbid *Dosha*, through the oral route, is expelled out, called *Vamana*. It directly affects *Agnisthana* and is thus also helpful to improve *Agni*. Therefore, *Vamana* helps in the *Vighatana* of the *Samprapti* of the disease Hypothyroidism by clearing the channels full of morbid *Doshas*, which creates *Khavaigunya* in *Srotas*.

DISCUSSION ON PROBABLE MODE OF ACTION OF *PANCHKOLA PHANTA* IN HYPOTHYROIDISM (*AGNIMANDYA*)

Panchakola has *Ushna*, *Tikshna*, *Laghu*, *Ruksha Guna*, *Katu Rasa*, *Katu Vipaka* and *Ushna Virya*. It has *Kaphavata Shamaka*, *Dipana*, *Pachana*, *Rochana*, *Lekhana*, *Srotovishodhana*, and *Shothahara* properties. *Panchakola* is regarded as one of the most effective medications for the treatment of *Mandagni*. *Panchakola Phanta* serves the purpose of *Deepana* and *Pachana*, thus eliminating the root cause of the disease, correcting the *Agni*, and digesting *Ama*. In *Agnimandya*, *Panchakola Phanta* is useful for *Amapachana* and to increase the *Agni*.





CONCLUSION

In all the assessment parameters, both the treatment modalities, i.e., *Vamana* and *Vamana* along with *Panchakola phanta*, are equally effective except for constipation (Straining). But overall, *Vamana* along with *Panchakola Phanta*, was more effective in correcting *Agnimandya* due to its effect on *Agni*.

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