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CLINICAL STUDY TO EVALUATE THE EFFECT OF HARITAKI-SHUNTHI IN STHAULYA

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ABSTRACT

In the present era sedentary lifestyle, consumption of highly refined, saturated fat, high-calorie diet, and stressfull mental conditions lead to lifestyle diseases.[1] Obesity is a lifestyle disorder and become public health issue which is rapidly increasing and thus needs to be addressed seriously.[2] Obesity is a medical condition in which excess body fat has accumulated to an extent that it has a negative impact on health. People are generally considered obese when their body mass index (BMI) is over 30kg/m^2 and the range between 25-30kg/m^2 is defined as over-weight. [3] WHO estimates that worldwide obesity has nearly tripled since 1975. In 2016, 39% of adults aged 18 years & over (39% of men & 40% of women) were overweight. Overall, about 13% of the world's population was obese in 2016. [4] In Ayurveda *Acharya Charaka* described *Atisthaulya under ashtanindita purush* which is *santarpanjanya vikara* .[5] While *Acharya Sushruta* described *Sthaulya* as *Rasa dhatuj vikar*a.[6] In *Sthaulya samprapti Kapha dosha* & *Meda dhatu* play an important role. To break down the *samprapti* of *Sthaulya,* the drug should have properties like *kaphaghna, medoghna, deepan, pachana, ruksha* & *laghu guna, katu rasa. Haritaki* & *Shunthi* possess these properties and *Acharya Charaka* described *Shunthi* & *Haritaki* as *pathya* for *Sthaulya* [7] Several research also proved the positive effect of *Haritaki* and *Shunthi* in *Sthaulya.* Thus, for the present study

Haritaki-Shunthi choorna has been selected and a clinical trial was conducted on 40 patients of *Sthaulya*. These patients were divided into 2 groups group A (Haritaki-Shunthi choorna) and group B (control group). After 45 days of a clinical trial, results showed significant weight loss as well as other clinical parameters of *Sthaulya*.

Keywords: BMI, Haritaki-Shunthi Choorna, Obesity, Overweight, Sthaulya

INTRODUCTION

Obesity is one of the global's biggest fitness trouble – one which has shifted from being a trouble in developed countries to one which spans all financial gain. In cutting-edge global with an increasing number of cheap, excessive calorie food, organized ingredients which can be wealthy in salt, sugars, or fat, blended with an increasing sedentary lifestyle, growing urbanization, and converting modes of transportation, it's far no marvel that Obesity has swiftly improved within a previous couple of decades, round the world. According to the latest records around 5-8.8% of faculty youngsters are overweight in India [8] Globally,39% of adults elderly 18 years and older have been overweight in 2016. According to the Global Burden of Disease observation 4.7 million humans died in advance (prematurely) in 2017 due to Obesity.[9] Obesity is normally the end result of an imbalance between energy eaten up and energy expanded. An increase in Obesity international has a critical effect on fitness impairment and decreased quality of life. In particular, Obesity has a crucial contribution to the worldwide incidence of disorders like cardiovascular disease, type 2 Diabetes mellitus, Cancer, Osteoarthritis, work disability and sleep apnea. Increasing numbers of reports have additionally connected Obesity to greater excessive Covid-19 infection and death. [10] Obesity has a greater said effect on morbidity than on mortality. Ayurvedic literature reveals that the ancient Indian physician also had detailed knowledge of *Sthaulya* and explain it under the heading of *Ashtonindita purusha* or *Santarpanjanya vikara*. A person in whom the immoderate accumulation of *meda* (fat/adipose tissue) and mansa (muscle tissue) resulting in flabbiness of hips, abdomen, and breast has been classified as *'Atisthaulya'*. All three *doshas* are concerned with the pathologic process of *Sthaulya*, particularly *Kledaka Kapha, Pachaka Pitta, Samana,* and *Vyana Vayu* are the *doshika* elements accountable for the samprapti of *Sthaulya*. Alleviation of *vata, pitta,* and *kapha* in conjunction with depletion of *medodhatu* by increasing *medodhatvagni* is the main aim of the treatment of *Sthaulya*. For the management of Obesity, one should select drugs, which decrease satiety, correct the functions of *Jathragni* and *Dhatvaagni* (metabolism), and at the same time have a property which reduces *Meda* and *Kapha*. Both *Haritaki* and *Shunthi* have the above-mentioned properties. To establish the above facts in reference to Obesity, the present study was planned to see the effect of *Haritaki -Shunthi Choorna* in *Sthaulya*.

AIM AND OBJECTIVES

To evaluate the efficacy of *Haritaki-Shunthi Choorna* in the management of *Sthaulya* (Obesity).

MATERIAL AND METHOD

The study was a randomized controlled clinical trial on a total of 40 patients of either sex. Patients those who had attended the OPD of the Department of Swasthavritta, Panchakarma, and Kayachikitsa of Pt. Khushilal Sharma Govt. (Auto.) Ayurveda College and Institute, Bhopal, and fulfilled the criteria after signing the informed consent form were included in the study.

CRITERIA FOR INCLUSION
• Age between 20-50 years.
• Either sex patients

• BMI between 25-34.9
• Patients willing to fill out an informed consent form

CRITERIA FOR EXCLUSION
• Patients having severe Hypertension, DM, hormonal imbalance
• Patients having a history of serious systemic diseases
• Patients with PCOD & other gynaecological complaints.
• Pregnant women & lactating mother.
• Patients taking long-term steroid treatment.
• Patients already taking medicine for the Obesity

Study Design:

This study was designed as a clinical study and the sample was selected by a simple random sampling technique.

Sample Size: Total 40 patients (20 patients in each group). The present study was planned with a total of 60 patients i.e 30 in each group. But due to Covid19 pandemic, the sample size was reduced to 40 with the permission of the ethical committee dated 29 December 2020.

Grouping

Group A: Patients of this group were advised oral administration of 5 gm *Haritaki- Shunthi choorna* (in the ratio of 2:1) BD daily after meals with lukewarm water.

Group B: Control Group, Patients of this group were advised oral administration of roasted Semolina placebo capsule two B.D. daily after meals with lukewarm water.

Duration of study: 45 days

Statistical Analysis

The result has been analyzed by calculating the Wilcoxon matched-pairs signed-ranks test, Mann- Witney U-statistic, paired and unpaired t-test. Graph Pad InStat-3 software was used for statistical analysis.

ETHICAL CLEARANCE

This study was started after the approval of the Institutional Ethical Committee of Pt. Khushilal Sharma Government (Autonomous) Ayurveda college & Hospital, Bhopal. Written consent before the start of the trial with the freedom to withdraw from the study at any time without giving any reason was taken.

INVESTIGATIONS

- The routine haematological investigation was done like; CBP before & after treatment.
- Biochemical test- Lipid profile and Fasting Blood Sugar

ASSESSMENT CRITERIA

- The assessment was done on the basis of subjective and objective parameters before, after treatment, and 15 days after completion of treatment.
- To assess the subjective features of *Sthaulya* the clinical symptoms, which so ever presented by the patients were graded into four grades (0-3) scale on the basis of severity.

SUBJECTIVE ASSESSMENT
1. *Kshudaadhikya* (Polyphagia)
2. *Pipsaaadhikya* (Polydipsia)
3. *Daurbalya* (General debility)
4. *Swedaabadha* (Excessive sweatening)
5. *Kshudra Shwas* (Dyspnoea)
6. *Anga Gaurava* (Heaviness in the body)
7. *Chala Sphika* (Pendulous buttock)
8. *Chala Udara* (Pendulous abdomen)
9. *Chala Stana* (Pendulous breast)
10. *Alasya* (Laziness)
11. *Nidradhikya* (Excessive sleep)
12. *Anga shaithilya* (Flabiness in body)

OBJECTIVE ASSESSMENT
1. Weight
2. BMI
3.Body fat percentage(by skin fold calliper)
4. Lipid profile

OBSERVATION AND RESULTS

In this present study, 40 patients were registered, and this study was continued with 40 patients only. All registered 40 patients completed the course of treatment. (Table no. 1)

Age: In the present study majority of the patients 62.5 % were in the age group of 21 - 30 years followed by 25 % in the age group of 31 - 40 years and 12.5 % in the age group of 41 - 50 years. (Table no.2)

Sex: Maximum patients i.e., 65% were female and the rest were male. This observation indicates that Obesity is more common in females than males. (Table no.3) F. Garawi and K Devries (2014) also found that the prevalence of Obesity across countries shows gendered patterning with a greater prevalence and greater heterogeneity in women than in men.

Agni: In the present study among 40 patients 40% of patients were having *Teekshna agni*, 25% patients were having *Manda agni*, 17.5 % of patients were having *Sama agni* and 17.5 % patients were having *Vishama agni*. It favors the fact that as *Meda dhatu* increases it obstructs the *Srotasa* and vitiates the *Vata dosha*, and that vitiated *Vata dosha* intensifies the *Jatharagni* which in turn increases appetite. Because of increased *Jatharagni*, Obese patients possess *Tikshnagni*. (Table no. 4)

Clinical symptoms: As per the present study majority of the patients i.e 92.5 % were having *Anga gaurava*, 90 % were having *Chala udara*, 85% patients were having *Kshudra Shwasa* and *Nidraadhikya*, 70% patients were having *Pipasadhikya*,67.5% patients were having *Kshudhaadhikya*, 62.5% patients were having *Anga shaithilya*, 57.5% patients were having *Chala Sphika*, 52.5%were having *Aalasya*,50% were having *Chala Stana*, 42.5% were having *Daurbalya*. (Table no.5)

BMI: Maximum of 62.5% of patients were belonging to a BMI ranging between 25 to 29.9 kg/m (Overweight) and 37.5% of patients were in the category of BMI ranging from 30 to 35 kg/m2. (Obesity class I). In the present study, only Overweight & Obesity class I patients were included. (Table no.6)

EFFECT OF THERAPIES

Effect of therapy on subjective parameters i.e.General Signs and symptoms (Table no.7)

Regarding the effect of therapy on clinical symptoms, in group A on the intra-group comparison, a significant reduction was found in all symptoms like

Kshudhaadhikya, Pipasadhikya, Daurbalya, Swedabadha, Kshudra Shwasa, Anga Gaurava, Chala Sphika, Chala Udara, Chala Stana, Aalasya, Nidradhikya, Anga Shaithilya while in group B significant reduction was not found except *Anga gaurava*. On inter-group comparison of group A and group B effect of treatment on *Kshudhaadhikya, Pipasaadhikya, Daurbalya, Kshudra Shwasa, Anga Gaurava, Chala Sphika, Chala Udara, Aalasya, Nidraadhikya*, and *Anga Shaithilya* showed unequal results with statistically significant differences. Comparing the mean difference of these symptoms it is clear that Group A is better than group B. In the case of *Swedadhikya, Chala Stana* Group A and Group B showed statistically insignificant results which inferred that both the groups have almost equal effects on these two symptoms.

Effect of therapy on objective parameters i.e; Body weight, BMI, Body fat % , (Table no.8 & 9)

Considering the effect of therapy on an objective parameter in group A, on the intra-group comparison, a significant reduction was found in all objective parameters like Weight, BMI, and Body fat % while in group B significant reduction was not found. In inter-group comparison of Group A and Group B's effect of treatment on Weight, BMI, and Body fat % both the groups showed unequal results with statistically significant differences. On the basis of the mean difference of above said objective parameters, we can say that Group A is better than Group B. In obesity having excess adipose tissue (fat) results in weight gain, increasesd BMI, and Body fat % and these are common conditions, especially where food supplies are plentiful, and the lifestyle is sedentary. *Haritaki* and *Shunthi* are well-known and authentic herbs bearing *Deepana, Pachana, Anulomana, Lekhana* gunas, etc. Since both medicines are hot (*Ushna veerya*) in nature, the combination effectively metabolises excessive fat and opposes any increment of *Kapha* and *Meda* by the *viliyan* property. Thus *Haritaki- Shunthi Choorna* gives relief in *Kapha* and *Meda*-related ailments like weight gain, BMI, and Body fat %

Effect of therapy on Lipid profile (Table no.10)

In inter group comparison of group A and group B's effect of treatment on Cholesterol, Triglyceride, and LDL these groups showed unequal results with statistically significant differences. The mean difference of Cholesterol, Triglyceride, and LDL in Group A is more than in Group B. So, we can say that Group A is better than group B in reducing Cholesterol, Triglyceride, and LDL level.

The overall effect of Therapy

The overall effect, in Group A, 5 (25%) patients showed marked improvement while 15 (75%) showed moderate improvement, whereas none (0%) of patients showed complete relief, mild improvement, and unchanged result. In Group B, 1(5%) patient showed moderate improvement, 3 (15%) patients showed mild improvement, 16 (80%) showed unchanged results and none (0%) of patients showed complete remission and marked improvement. (Table no. 11)

Table 01: Distribution of Patients of *Sthaulya*

Status of treatment	Group A	Group B	Total
Registered	20	20	40
Discontinued	0	0	0
Completed	20	20	40

Table 02: Age-wise distribution of patients

Age	No. of Patients	Percentage (%)
21-30	25	62.5
31-40	10	25
41-50	5	12.5
Total	40	100

Table 03: Sex-wise distribution of patients

Sex	No of Patients	Percentage (%)
Male	14	35
Female	26	65
Total	40	100

Table 04: *Agni*-wise distribution of patients

Agni	No. of Patients	Percentage (%)
Sama	7	17.5
Vishama	7	17.5
Manda	10	25
Teekshna	16	40
Total	40	100

Table 05: Clinical symptoms-wise distribution of patients

Chief Complaints	No. of Patients	Percentage %
Kshudhaadhikya	27	67.5
Pipasadhikya	28	70
Daurbalya	17	42.5
Swedadhikya	36	90
Kshudra Shwasa	34	85
Anga gaurava	37	92.5
Chala Sphika	23	57.5
Chala Udara	36	90
Chala Stana	20	50
Aalasya	21	52.5
Nidraadhikya	34	85
Angashaithilya	25	62.5

Table 06: BMI-wise distribution of patient

BMI ($kg/m^{2)}$	No. of Patients	Percentage (%)
25 - 29.9	25	62.5
30 – 34.9	15	37.5
35 – 39.9	0	0
>40	0	0
Total	40	100

Table 07: Effect of treatment on Subjective parameter (Clinical Symptoms)

Sign & Symptoms	Group	Mean		M.D.	% Relief	SD	SE	Wilcoxon matched-pairs signed & p-value
		BT	AT					
Kshudhaadhikya **(Excessive hunger)**	**A**(n=20)	1.150	0.1000	1.050	91.30	0.9445	0.2112	W=105, N=14, p=0.0001, ES*******
	B(n=20)	1.050	0.9000	0.1500	14.28	0.3663	0.08192	W=6, N=3, p=0.2500, NS
	Mann- Witney U-statistic = 82.50, p = 0.0004, ES***							
Pipasaadhikya **(Excessive thirst)**	**A**(n=20)	1.450	0.6500	0.8000	55.17	0.6959	0.1556	W=91, N=13, p=0.0002, ES***
	B(n=20)	0.800	0.7500	0.0500	6.25	0.2236	0.0500	W=1, N=1, p>0.9999, NS
	Mann- Witney U-statistic = 82.50, p = 0.0004, ES***							
Daurbalya **(Weakness*)***	**A**(n=20)	1.150	0.4000	0.7500	65.22	0.4443	0.09934	W=120, N=15, p<0.0001, ES****
	B(n=20)	1.60	1.400	0.2000	12.5	0.5231	0.1170	W=6, N=3, p=0.2500, NS
	Mann- Witney U-statistic = 116.00 , p = 0.0075 VS**							
Swedadhikya **(Excessive sweatening)**	**A**(n=20)	1.350	1.050	0.3000	22.22	0.4702	0.1051	W=21, N=6, p=0.0313, S*****
	B(n=20)	1.900	1.700	0.2000	10.5	0.4104	0.09177	W=10, N=4, p=0.1250, NS
	Mann- Witney U-statistic = 180.00, p =0.4820 NS							
Kshudrashwasa **(Dyspnoea)**	**A**(n=20)	1.050	0.3000	0.7500	71.43	0.5501	0.1230	W=105, N=14, p=0.0001, ES***
	B(n=20)	1.350	1.200	0.1500	11.11	0.3663	0.08192	W=6, N=3, p=0.2500, NS
	Mann- Witney U-statistic = 82.50, p = 0.0004 E S * **							
Angagaurava **(Heaviness in the body)**	**A**(n=20)	1.550	0.3000	1.250	80.65	0.5501	0.1230	W=210, N=20, p<0.0001, ES****
	B(n=20)	0.9500	0.4000	0.5500	57.89	0.6048	0.1352	W=55, N=10, p=0.0020, VS**
	Mann- Witney U-statistic = 89.500, p = 0.0005 ES***							
Chala Sphika **(Pendulous Buttock)**	**A**(n=20)	0.9000	0.3500	0.5500	61.11	0.6863	0.1535	W=45, N=9, p=0.0039, VS******
	B(n=20)	0.800	0.7000	0.1000	12.5	0.3078	0.06882	W=3, N=2, p=0.5000, NS
	Mann- Witney U-statistic = 128.00, p=0.0131 S*							
Chala Udara **(Pendulous Abdomen*)***	**A**(n=20)	1.300	0.4000	0.9000	69.23	0.4472	0.1000	W=153, N= 17, p<0.0001, ES****
	B(n=20)	1.350	1.250	0.1000	7.41	0.3078	0.06882	W=3, N= 2, p= 0.5000, NS
	Mann- Witney U-statistic = 49, p<0.0001 ES****							
Chala Stana **(Pendulous Breasts)**	**A**(n=20)	0.7000	0.2500	0.4500	64.29	0.6048	0.1352	W=36, N=8, p=0.0078, VS******
	B(n=20)	0.700	0.5500	0.1500	21.42	0.3663	0.08192	W=6, N=3, p=0.2500, N S
	Mann-Witney U-statistic = 148.50, p=0.0759 NS							
Aalasya **(Laziness)**	**A**(n=20)	1.200	0.2500	0.9500	79.16	0.7952	0.1698	W=120, N=15, p<0.0001, ES****
	B(n=20)	0.9500	0.9000	0.05000	5.26	0.2236	0.0500	W=1,N=1 , p>0.9999, NS
	Mann- Witney U-statistic = 58.5 p <0.0001 E S * * * *							
Nidraadhikya **(Excessive**	**A**(n=20)	1.150	0.2500	0.9000	78.26	0.7881	0.1762	W=105, N=14, p=0.0001, ES***

Sleep)	**B**(n=20)	1.150	1.0500	0.1000	8.69	0.3078	0.06882	W=3, N=2, p=0.5000, NS
	Mann- Witney U-statistic = 77.00, p = 0.0001 E S***							
Angashaithilya (Flabiness of body)	**A**(n=20)	0.750	0.2500	0.5000	66.66	0.5130	0.1147	W=55, N=10, p=0.0020, VS**
	B(n=20)	0.900	0.7500	0.1500	16.66	0.3663	0.08192	W=6, N=3, p=0.2500, NS
	Mann- Witney U-statistic = 130.00, p=0.0206 S*							

NOTE : p <0.0001 ES ****, p = 0.0001 to 0.001 ES ***, p = 0.001 to 0.01 VS **, P= 0.01 to 0.05 S*, p >0.05 NS

Table No. 8 Effect of treatment on Body Weight and BMI

Parameter	Group	Mean		M.D.	SD	SE	Paired t-test	p-value
		BT	AT					
Body Weight	**A**(n=20)	77.15	73.075	4.075	2.341	0.5235	t =7.784	p <0.0001, ES****
	B(n=20)	76.70	76.550	0.1500	0.3663	0.08192	t =1.831	p = 0.0828, NS
	Unpaired t-test p<0.0001 , t = 7.408 ES****							
BMI	**A**(n=20)	29.08	27.175	1.905	1.711	0.3825	t =4.980	p <0.0001, ES****
	B(n=20)	29.135	29.070	0.065000.	0.1599	0.03574	t = 1.811	p = 0.0848, NS
	Unpaired t test p<0.0001 , t = 4.788 ES******							

Table 09: Effect of treatment on Body fat %.

Body fat %	Mean		MD	SD	SE	Paired t	p-value
	BT	AT					
Group A(n=20)	33.570	31.460	2.110	1.952	0.4365	t=4.834	p=0.0001(p = 0.0001 to 0.001) , ES***
Group B(n=20)	33.585	33.505	0.0800	0.1963	0.04389	t=1.823	p=0.0841 (p> 0.05), NS
Unpaired t test p<0.0001 , t =4.627 ES******							

Table 10: Effect of treatment on Lipid profile

Lipid profile	Group	Mean		MD	SD	SE	Paired t -test	p-value
		BT	AT					
Cholesterol	**A**(n=20)	213.14	193.14	20.804	26.296	5.880	t=3.538	p=0.0002, ES***
	B(n=20)	197.32	191.93	5.390	17.475	3.907	t=3.907	p=0.1838, NS
	Unpaired t test p=0.0353 t=2.183 S*							
Triglyceride	**A**(n=20)	125.20	110.70	14.494	19.854	4.439	t=3.265	p=0.0041,VS**
	B(n=20)	124.03	121.35	2.675	7.376	1.649	t=1.622	p=0.1213 , NS
	Unpaired t-test p=0.0170, t=2.496 S*							
HDL	**A**(n=20)	45.330	46.438	1.108	2.850	0.6373	t=1.739	p=0.0983 , NS
	B(n=20)	44.935	44.155	0.7800	4.521	1.011	t=0.7716	p=0.449 , NS
	Unpaired t-test p=0.7852, t= 0.2745 NS							
	A(n=20)	143.55	124.17	19.376	23.528	5.261	t=3.683	p=0.0016, VS**

LDL	**B**(n=20)	133.48	128.77	4.705	14.563	3.256	t=1.445	p=0.1648, NS
	Unpaired t test p=0.0229, t= 2.371 S*							
VLDL	**A**(n=20)	25.039	23.079	1.960	4.634	1.036	t=1.891	p=0.0739, NS
	B(n=20)	28.127	27.371	0.7560	2.010	0.4495	t=1.682	p=0.1090, NS
	Unpaired t test p=0.2932, t=1.066 NS							

NOTE : p <0.0001 ES ****, p = 0.0001 to 0.001 ES ***, p = 0.001 to 0.01 VS **, P= 0.01 to 0.05 S*, p >0.05 NS

Table 11: Overall effect of therapy

Effects	Group A		Group B	
	No. of pts.	%	No. of pts.	%
Control (100%)	0	0	0	0
Marked Improvement (75% to <100% relief)	5	25	0	0
Moderate Improvement (50% to <75% relief	15	75	1	5
Mild Improvement (25 % to <50 % relief)	0	0	3	15
Unchanged (0-<25%)	0	0	16	80
Total	20	100	20	100

DISCUSSION

Obesity is a burning and challenging problem in today's era because of its long-term complications and life-threatening disorders. Various therapeutic modalities have been described for *Sthaulya* in our classics. The concept of *Guru Cha Aptarpana* is recommended by *Acharya Charaka*. This is in close proximity to modern medicines. *Guru dravya* is appetite supressent and *Aptarpana* provides an added benefit over modern medicines because this property helps to do *Medo kshaya*. After all, these types of diets are totally devoid of fat.

Possible Justification for the Effect of Therapy

In *Sthaulya Medodhatu* obstructs the *Marga* of *Vata Dosha*, which leads to the Vitiation of *Vata*. *Samana Vayu* blows the *Agni* in the *Koshtha* which leads to a symptom like *kshudhadhikya*. *Haritaki* and *Shunthi* with their properties can do the function of *Strotovibandhanasana* and thus relieves the symptom of *Kshudhadhikya*.

Sweda is said to be the mala of *Meda dhatu*, in *Sthaulya* due to *Dhatwagni mandya* production of *meda dhatu* increased increases the the *swedapravritti* also and this increased *swedapravratti* might be the reason behind *atipipasa*. Since *Haritaki* and *Shunthi* both have *medokshaya* property so relieve the symptoms of *Swedadhikya* and *Atipipasa*.

In classics, it is evidenced that *Medodhatu* causes obstruction in the nourishing path-way due to which maximum of *Ahara Rasa* leads to the production of *Medodhatu* and nourishment of further *Dhatus* is hampered. As all the *Dhatus* do not get proper nourishment it produces symptoms like *Angadaurbalya*. Due to *Tikta-Katu Rasa, Ruksha-Laghu Guna, and Ushna Veerya* properties *Shunthi* clears the obstruction. *Haritaki* being a *Rasayana* drug regulates the *dhatudushti* and promotes the anabolism of healthy *dhatu*. Thus *Haritaki- Shunthi Choorna* relieves the *Daurbalya* symptoms.

100% of patients were found to be suffering from *Angagauravata*. The reason behind this is, *Medodhatu* is having *Prithvi* and *Aap Mahabhuta* dominance, so abundant growth of *Medodhatu* in *Sharira* leads to an increase of *Gunas* like *Guru, Seeta, Snigdha* in the body, which ultimately leads to *Angagauravata*. Opposite this *guna, Haritaki* has *Laghu, Ushna, and Ruksha guna* which help to subside the *Angagauravata*. It is also said in classics that *Medodhatu* produced in *Sthaulya* condition is in *Aama-vastha* which causes *Angagauravata* and *Shunthi* and *Ushnodaka* both are good for *aampachan* therefore H*aritaki-Shunthi choorna* is effective but in Group B also got positive effect because of *Ushnodaka* that is also good for *aampachana*.

Sthaulya Patient shows the symptoms of *Alasya, Nidradhikya,* and *Angashaithilya* which are the results of *Rasavriddhi (Rasagata Snehansa)* and *Kapha Vriddhi*. These symptoms get relieved by *Haritaki –Shunthi Choorna* as they do the *Shoshan* of *drava padartha, kleda*, and *kapha.*

Meda Dhatu gets a clinical increase, and this increase of *Meda* reflects in various physical signs like *Chala Sphika – Udara – Stana*. Due to increased *bharvraddhi* patients' complaints of difficulty in breathing *(Kshudrashwasa).* According to modern science also extra fat gets deposited in the belly, buttocks, and breast area. By possessing *lekhana* property *Haritaki* and *Shunthi* help to cut off extra fat (increased *Meda*)

The high amount of saponins, phytosterols, chebulinic acid, and corilagin present in *Haritaki* may be responsible for the hypolipidemic effect.[11] Tannins have been reported to increase faecal bile acid excretion, thereby leading to a reduction in cholesterol levels. Chemical constituents in ginger inhibit the absorption of dietary fat by inhibiting its hydrolysis, it also stimulates the activity of hepatic enzyme cholesterol 7- alpha-hydroxylase, which in turn stimulates the excretion of cholesterol from the body. [12] Thus *Haritaki-Shunthi Choorna* helps to reduce cholesterol.

Probable Mode of Action of Therapy

- *Harirtaki- Shunthi Choorna* According to Ayurvedic classics *Sthaulya* is *Vata kapha* predominant metabolic disorder. Excessive accumulation of *Kapha* and *Meda* with other factors eventually leads to *Sthaulya Haritaki* and *Shunthi* on the basis of their pharmacological properties.
- The drug *Haritaki* and *Shunthi* possesses *Katu, and Tikta rasa* and cause *Upashoshana* of *Kleda* and *Meda*.
- *Teekshna, Laghu, gunas,* and *Ushna veerya,* help in clearing the *srotas,* and also acts on *Kapha* and *Vayu* to break the *Sthaulya samprapti.*
- *Katu, Tikta Rasa* present in *Haritaki* and *Shunthi* improve *Jatharagni* and correct digestion and metabolism.
- Because of *deepana pachana* properties, *Shunthi* is useful in *ampachana*.
- The high amount of saponins, phytosterols, chebulinic acid, and corilagin present in *Haritaki* is responsible for the hypolipidemic effect
- Gingerenone A, 6-shogaol, and 6-gingerol are bioactive components of ginger that show an antiobesity effect, through adipogenesis inhibition and the enhancement of fatty acid catabolism.
- Various studies proved Antioxidant, Antibacterial activity, Antiviral activity, Antifungal activity, Anti-inflammatory, Hepatoprotective activity, Cardioprotective activity, Hypolipidemic, and hypocholesterolemic acivity, Gastrointestinal motility improving, and anti-ulcerogenic activity of Terminalia chebula and Zingiber officinale

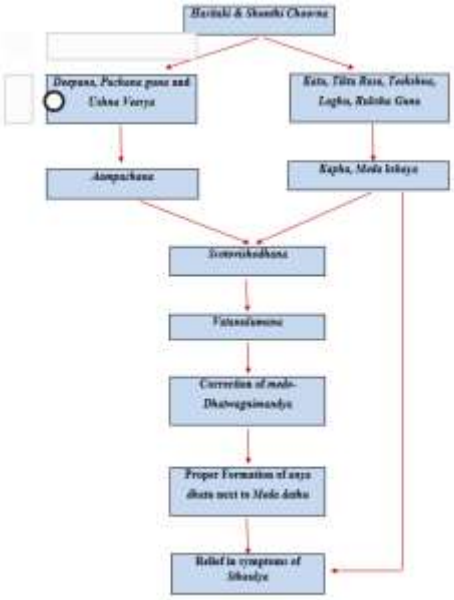

Fig. No.13 Samprapti ghatana through Haritaki Shunthi

CONCLUSION

Conclusions were made out on discussion, various observations, and results obtained during the study. *Sthaulya*, a *santarpanjanya vyadhi* occurs mainly due to the vitiation of *Kapha dosha* and *Meda dhatu*.In various texts overnutrition increased fast food consumption, intake of *guru, snigdha, madhur rasa aahara,* sedentary work nature, less physical activity, and excessive sleep are described as etiological factors for *Sthaulya roga*, in the present study also these are found as responsible for *Sthaulya. Haritaki-Shunthi Choorna* had shown significant improvement in Objective parameters like weight, BMI, Body fat %, total cholesterol, triglyceride, and LDL levels. Also, clinical symptoms like *Kshudhaadhikya, Pipasaadhikya, Daurbalya, Kshudra Shwasa, Anga Gaurava, Chala Sphika, Chala Udara, Aalasya, Nidraadhikya*, and *Anga Shaithilya* were relieved by *Haritaki-Shinthi Choorna*. *Katu, Tikta Rasa*, and *Ushna veerya Haritaki*, and *Shunthi* improve Jatharagni, correct digestion, metabolism, and thus relieve the symptoms of Obesity. It is observed that these selected interventions don't have any side effects thus *Haritaki* and *Shunthi* were recommended for the management of *Sthaulya* (Obesity).

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