



**Research Article**

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## A Clinical study to examine the impact of Eranda Patra Kshara on Sthaulya (Obesity)

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### ABSTRACT

**Background:** Overweight and obesity are the commonest lifestyle disorder found in developed countries worldwide. Many a times, obesity causes life threatening complications. Simple remedies for this disease are rare. *Eranda Patra Kshara* is selected from *Bhaishajya Ratnavali* and is prepared as a remedial medicine for treating obesity. **Aims and objectives:** To prepare the *Eranda Patra Kshara* as per the classical literature, *Bhaishajya Ratnavali* and study its efficacy in *Sthaulya* [1]. **Materials and Methods:** Thirty patients were selected for the clinical study. One gram of *Kshara* along with 500 mg of *Suddha Hing* (asafoetida) and 50 ml of *Manda* (rice gruel) was given before breakfast, once daily, for 30 days. No side effects were observed in the treatment period and in follow-up period. **Results:** The reduction in the weight of the raw drug (i.e., original 12 kgs) when compared to that of the final product (i.e., 310 gms) was observed to be 97.42%. Statistically significant change was observed in some of the signs like *nidradhikya* and *angagaurava*. Overall effect of therapy in signs and symptoms was around 70%. *Eranda Patra Kshara* is *Kapha hara*, *Medo hara* and is useful in the treatment of *Sthaulya*.

**Keywords:** Eranda Patra Kshara, Hing, Kapha Medohara, Sthaulya.

### INTRODUCTION

Health is not a matter of chance or simply the absence of disease. It's a matter of obedience to nature's laws and one can add years of happiness to their lives. There is an old but wise saying, "Eat breakfast like king, lunch like a Prince and Supper like a beggar". But now a days, sedentary life, and irregular food habits, is leading to burning problem of modern era, i.e., overweight and obesity [2]. Weight control or weight management is of growing interest in India today. Being overweight (i.e., 10-20% above ideal weight) or obese (20% above ideal weight) is a problem that affects children, teenagers, and adults, and can result in major health problems, which can cause life threatening complications [3].

Charaka defines *sthaulya* as excess deposition of medas and *mamsa dhatu* with pendulous appearance of *sphik*, *stana* and *udara*. This leads to unequal and abnormal distribution of *meda* with reduced zeal [5]. When this disease becomes chronic it leads to many complications and thus becomes difficult for the treatment. The *ashta dosas* like *Ayusho hrasa*, *Javoparodha*, *Krichravavyavaya*, *Dourbalya*, *Swedabadha*, *Dourgandhya*, *Kshut atimatra*, *Pipasatiyoga*, indicates the greater risk of this disease. Various medicinal measures have been described in Ayurveda for weight reduction. A special category of medicines called 'Ksharas' are known for their *Lekhana*[4], *Karshana*, *Kaphahara* and *Medohara* actions [8].

### MATERIALS AND METHODS

**Preparation of Eranda Patra Kshara:** The fresh *eranda patra* (castor plant) leaves with stalk are collected (12 kgs in total), dried completely, burned into ashes, allowed for self-cooling. Ashes are then weighed (i.e., one and a half kg). Six parts of water of the total ash is mixed thoroughly and allowed to settle down for a night. It is then decanted and filtered for 21 times to get a *kshara jala* (alkali water). This, in turn, is heated till the dull white *kshara powder* (alkali) is obtained. It is measured to get the final yield (i.e., 310 gms) [6].

**Dose:** One gram of *Eranda Patra Kshara* with 500 mg of *shuddha hing* (asafoetida) given with *manda* early morning before breakfast for 30 days, was given to patients of either sex, diagnosed as *sthaulya* [1].

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A detailed proforma was prepared considering all the points pertaining to the history, physical signs, symptoms and laboratory investigations.

#### Inclusion Criteria

- Patients with *Pratyatma lakshana* of *sthaulya*
- Adults between the age group of 16-60 years
- Patients with BMI > 25.

#### Exclusion Criteria

- Pregnancy
- Cardiac diseases and hypertension
- Diabetes Mellitus
- Endocrine disorders

#### Design

It's a single blind clinical study with pre-test and post-test design where in thirty (30) patients of either sex was selected for the study.

#### In Assessment Criteria

- Clinical parameters (i.e., *Chala spik stana udara, Alasya, Kshudra swasa, Dourbalya, Nidra adikyata, Sweda adikyata, Dourgandhya, Snigda angada, Pipasa atimatra, Kshut atimatra, Anga gaurava, Alpa vyavayata, Gatra sada, Anga shaitilya*)<sup>[10]</sup>.
- Body weight, Body measurements (i.e., BMI- Body Mass Index, Chest measurement, Waist measurement, Abdominal girth measurement, Buttocks measurement, Mid-thigh measurement, Mid-arm measurement, Biceps- Skin fold thickness, Triceps- Skin fold thickness)<sup>[7]</sup>.
- Bio-chemical parameters (i.e., Lipid profile).
- Subjective Criteria: Most of the symptoms and signs of *Medoroga*, described in Ayurveda, are subjective in nature. To give results objectively and for statistical analysis, multidimensional scoring pattern was adopted. This score was obtained before and after the treatment through statistical analysis and percentage relief was taken out to assess the efficacy of therapy.

#### OBSERVATIONS AND RESULTS

A total of 30 patients suffering from *Sthaulya* were taken for the study. Considering the descriptive part of obesity, the age incidence was seen more in middle age group. Also, more commonly in females and in housewives who usually leads a sedentary life. With respect to their education, approx. 46.66% of them were graduates, 53.33% belonged to middle class and 30% were of upper class indicating that the patients are intaking a good nutritional diet every day. Also, 60.00% are from urban domicile. As our classical literature tells, excess intake of non-veg is one of the *nidana* for *sthaulya*, 50% of them belonged to mixed diet group.

Analyzing the *prakruti pareeksha*, the *kapha pitta prakruti* patients were 50% of them and as such these people are more prone to get obesity. *Pravara Satwa* (strong minded) generally can overcome and bare the pain and stress. Medium to *awara satwa* people tend to eat

more to combat stress and thus puts on weight easily. *Mamsa* and *Medosara purusha* (Muscle and fat tissue) will have more tendency to become obese. Definitely compactness and measurement will not be maintained in obese people. Digestion, exercise and suitability will be quiet medium to less in such people. Above 55% of them were not having *samhanana sharira* due to accumulation of fat. The maximum number of patients belonged to *anoopa desha* which is *kapha* predominant place (*desha*).

#### DISCUSSION

Excessive body weight and obesity not only causes cosmetic problem but also leads to many life-threatening diseases. The ancient books of Ayurveda have given the details regarding the same. Many formulations are mentioned to check the disease. *Eranda Patra Kshara* is selected for the study. It is prepared according to the classical literature, *Bhaishajya Ratnavali*. 97.42% loss in weight was observed when compared to the fresh drug taken in the preparation of *Kshara*. *Eranda patra kshara* is given in the dosage of 1g along with 500mg of *Hing* (purified asafoetida powder) and 50 ml of *Manda* before breakfast in the morning, once daily, for 30 days, with no diet restriction as well as no physical exercise was advised.

The formulation, in liquid form (mild *paneeya kshara*) acted well and observed a statistically significant result on the symptoms like *nidradhikya* and *anga gaurava*. As these two symptoms are the *kapha prakopaka lakshanas*, *Kshara* and *Hing* which are *ushna, teekshna* in *guna* are given, it starts *vilayana* and *vidharana* of accumulated *kapha*. Hence, it can be useful to relieve these two symptoms. Though there was no change observed in signs and symptoms like *Swedadhikya, Dourgandhya, Kshut atimatra, Anga Chalatra, Anga shaitilya, Snigdhagata* and *Kshudra swasa*. As these symptoms are found in over obese patients, it requires more time for reduction of fat and in turn to reduce these symptoms. As a suggestion, in these patients along with the medicine, exercise therapy to burn the accumulated fat and diet restriction play an important role, too.

As far as the body weight is concerned, 1.2 kg of difference in mean score was observed. In the same way, 0.5 kg/m<sup>2</sup> of difference was observed in BMI (Body Mass Index). A statistically significant change was seen in Waist measurement, Abdominal girth measurement, Buttocks measurement, Mid-thigh measurement and Mid-arm measurement. But there was no change in Triceps and Biceps skin fold thickness. There is also a statistically significant change in the reduction of serum cholesterol and serum triglycerides indicating the *lekhana* action of *Kshara*.

**Table 1:** Demographic profile of the patients

Characteristics	n (%)
<b>Age</b>	
20-30	8 (26.66%)
31-40	12 (40.00%)
41-50	5 (16.67%)
51-60	5 (16.67%)
<b>Gender</b>	
Male	10 (33.33%)
Female	20 (66.67%)
<b>Education</b>	
High School/ Intermediate	8 (26.67%)
Graduate	14 (46.66%)
Post Graduate	8 (26.67%)
<b>Occupation</b>	
Student	5 (16.67%)
Housewife	14 (46.66%)
Business	6 (20.00%)
Service	5 (16.67%)
<b>Marital Status</b>	
Married	20 (66.67%)
Unmarried	10 (33.33%)
<b>Socio-Economic Status</b>	
Lower Class	5 (16.67%)
Middle Class	16 (53.33%)
Upper Class	9 (30.00%)
<b>Domicile</b>	
Urban	18 (60.00%)
Rural	12 (40.00%)
<b>Dietary Habits</b>	
Vegetarian	15 (50.00%)
Mixed	15 (50.00%)
<b>Religion</b>	
Hindu	16 (53.33%)
Muslim	9 (30.00%)
Christian	5 (16.67%)

**Table 2:** Analysis of Dashavidha Pariksha (Tenfold of Investigation)

Characteristics	n (%)
<b>Prakruti (Constitution of Body)</b>	
Vata Kaphala	6 (20.00%)
Pitta Kaphala	9 (30.00%)
Kapha Pittala	15 (50.00%)
<b>Satwa (Examination of Mental Constitution)</b>	
Pravara	7 (23.33%)
Madhyama	17 (56.67%)
Avara	6 (20.00%)
<b>Sara (Examination of Elemental Tissue &amp; Mind)</b>	
Pravara	18 (60.00%)
Madhyama	9 (30.00%)
Avara	3 (10.00%)
<b>Samhanana (Examination of Compactness of Body)</b>	
Pravara	17 (13.33%)
Madhyama	9 (30.00%)
Avara	4 (56.67%)
<b>Satmya (Suitability)</b>	
Pravara	20 (66.66%)
Madhyama	5 (16.67%)
Avara	5 (16.67%)
<b>Pramana (Measurement)</b>	
Pravara	9 (30.00%)
Madhyama	18 (60.00%)
Avara	3 (10.00%)
<b>Ahara Shakti (Examination of Digestive Power)</b>	
Pravara	8 (26.67%)
Madhyama	19 (63.33%)
Avara	3 (10.00%)
<b>Vyayama Shakti (Examination of Strength by Exercise)</b>	
Pravara	2 (6.67%)
Madhyama	9 (63.33%)

Avara	19 (30.00%)
<b>Vayah (Examination of Age)</b> Balya (20 – 30) Madhyama (30 – 50) Praudha vasta (50 – 60)	6 (20.00%) 20 (66.67%) 4 (13.33%)
<b>Desha (Habitat)</b> Anoopa Jangala Sadharana	18 (60.00%) 2 (6.67%) 10 (33.33%)

**Table 3:** Statistical Results of the Clinical Parameters

Parameter	Mean Score		Difference in means	S. D.	S. E. M.	t-test	p-value
	Before Treatment	After Treatment					
Angachalatva	1.300 ± 0.675	1.300 ± 0.675	0.000	0.000	0.000	0.000	1.000
Dourbalya	1.400 ± 0.966	1.300 ± 0.823	0.100	0.316	0.100	1.000	0.343
Swedadhikya	1.300 ± 0.823	1.300 ± 0.823	0.000	0.000	0.000	0.000	1.000
Daurgandhya	0.300 ± 0.483	0.300 ± 0.483	0.000	0.000	0.000	0.000	1.000
Kshut atimatra	0.400 ± 0.699	0.400 ± 0.699	0.000	0.000	0.000	0.000	1.000
Pipasatimatra	0.600 ± 1.075	0.500 ± 0.850	0.100	0.316	0.100	1.000	0.343
Alpa vyavaya	0.000 ± 0.000	0.000 ± 0.000	0.000	0.000	0.000	0.000	0.000
Nidradhikya	0.600 ± 0.699	0.100 ± 0.316	0.500	0.527	0.167	3.000	0.015
Alasya	0.500 ± 0.527	0.300 ± 0.483	0.200	0.422	0.133	1.500	0.168
Snigdangata	0.100 ± 0.316	0.100 ± 0.316	0.000	0.000	0.000	0.000	1.000
Anga gaurava	1.100 ± 0.738	0.600 ± 0.516	0.500	0.707	0.224	2.236	0.052
Gatra sada	1.200 ± 0.632	0.900 ± 0.738	0.300	0.483	0.153	1.964	0.081
Kshudra swasa	0.900 ± 0.568	0.800 ± 0.632	0.100	0.316	0.100	1.000	0.343
Anga shaitilya	0.600 ± 0.699	0.600 ± 0.699	0.000	0.000	0.000	0.000	1.000

**Table 4:** Statistical Results of the Physical Parameters (Body Measurements)

Parameter	Mean Score		Difference in means	S. D.	S. E. M.	t-test	p-value
	Before Treatment	After Treatment					
Weight	81.500 ± 9.846	80.300 ± 10.199	1.200	1.135	0.359	3.343	0.009
BMI	33.677 ± 4.662	33.179 ± 4.728	0.498	0.485	0.153	3.248	0.010
Chest Measurement	41.800 ± 3.251	41.400 ± 3.534	0.400	0.658	0.208	1.922	0.087
Waist Measurement	39.700 ± 4.138	39.350 ± 4.321	0.350	0.474	0.150	2.333	0.045
Abdominal Girth meas.	42.450 ± 5.112	41.800 ± 4.849	0.650	0.474	0.150	4.333	0.002
Buttocks	44.900 ± 3.784	44.200 ± 3.393	0.700	0.675	0.213	3.280	0.010
Mid-Thigh Measurement	23.300 ± 2.124	22.800 ± 1.975	0.500	0.471	0.149	3.354	0.008
Mid-Arm Measurement	13.650 ± 1.375	13.300 ± 1.398	0.350	0.337	0.107	3.280	0.010
Biceps Skin Fold Thickness	2.200 ± 0.216	2.200 ± 0.216	0.000	0.000	0.000	0.000	1.000
Triceps Skin Fold Thickness	2.780 ± 0.286	2.780 ± 0.286	0.000	0.000	0.000	0.000	1.000

**Table 5:** Statistical Results of the Bio-Chemical Parameters (Lipid Profile)

Parameter	Mean Score		Difference in means	S. D.	S. E. M.	t-test	p-value
	Before Treatment	After Treatment					
Serum Cholesterol	183.300 ± 26.081	174.100 ± 21.450	9.200	11.144	3.524	2.611	0.028
Serum Triglycerides	121.900 ± 70.223	106.700 ± 68.467	15.200	8.189	2.590	5.869	<0.001
HDL	40.000 ± 9.809	44.400 ± 7.230	- 4.400	5.835	1.845	- 2.385	0.041
LDL	109.300 ± 16.159	104.800 ± 14.665	4.500	12.721	4.023	1.119	0.292
VLDL	23.100 ± 14.525	20.000 ± 12.632	3.100	2.378	0.752	4.122	0.003

## CONCLUSION

The formulation of *Eranda Patra Kshara* is easy to prepare and economical (since, raw drug availability is easy). The reduction in the weight of the raw drug when compared to that of the final product was observed to be 97.42%. The improvement seen in the parameters *nidradhikya* was 83.33% and *anga gaurava* was 58.33%. Statistically significant change in the result was observed in body weight and also in BMI (Body Mass Index). Measurement of waist, abdominal girth, buttocks, mid-thigh and mid-arm also saw statistically significant changes. The lipid profile of serum cholesterol and serum triglycerides showed the statistically significant improvement. Though the formulation did not show any change in *Swedadhikya*, *Dourgandhya*, *Kshut atimatra*, *Anga chalatva*, *Anga shaitilya*, *Snigdhangata* and *Kshudra swasa*. Thus, it can be inferred that overall effect on signs and symptoms is seen in 70% of the patients. Further research in analytical study of *kshara* and clinical study as an anti-hyper- lipidemic drug action is recommended.

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## Conflict of interest

There is no conflict of interest regarding this manuscript.

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