

## A CLINICAL STUDY OF VACHADI CHURNA IN THE MANAGEMENT OF OBESITY

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### Abstract

The incidence of obesity is increasing at alarming rates worldwide and India is no exception. Obesity has now become an important health problem in developing countries particularly in India, which is currently experiencing a rapid epidemiological transition. Obesity has reached epidemic proportions in India in the 21<sup>st</sup> century, affecting 5% of the country's population. In India 12.1% of males and 16% of females are obese. Obesity is gaining more and more attention at globally. In Ayurveda literature many medicines were indicated and one of the medicine is Vachadi churna. Vachadi Churna is a combination of Vacha (*Acorus calamus*), Musta (*Cyperus rotundus*), Devadaru (*Cedrus deodara*), Shunti (*Zingiber officinale*), Ativisha (*Aconitum heterophyllum*) and Haritaki (*Terminalia chebula*) in equal ratio. The 30 obesity patients between 14-50 yrs were selected and the Vachadi churna was administered for 30 days. The result shows that 53.33% improved and 46.67% moderately improved.

**Key words:** Obesity; Vachadi Churna; BMI.

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## INTRODUCTION

Obesity is a global problem and more prevalent in developing countries. Overweight and obesity is the fifth leading risk for global health. At least, 2.8 million adults die each year as a result of being overweight or obese. The International Obesity Task Force (IOTF-2005) stated that more than 300 million people world wide classified as clinically obese; having a BMI >30.<sup>[1]</sup> Obesity and overweight occurs due to imbalance between calories consumed and calories utilized. Globally, there have been two reasons for overweight and obesity: 1) an increased intake of energy-dense foods that are high in fat, salt and sugars but low in vitamins, minerals and other micronutrients; and, 2) a decrease in physical activity due to the increasingly sedentary nature of many forms of work, changing modes of transportation, and increasing urbanization.<sup>[2]</sup> Changes in dietary and physical activity patterns are often results from sedentary lifestyle, not sleeping enough, endocrine disruptors, such as some foods that interfere with lipid metabolism, medications that make patients put on weight.<sup>[3]</sup>

Morbid obesity has reached epidemic proportions in India in the 21<sup>st</sup> century; affecting 5% of the country's population and 12.1% males and 16.0% females are obese or overweight. A large number of medical conditions have been associated with obesity.

Obesity is a state in which there is generalized accumulation of excess fat in the body leading to a body weight of more than 20% of the required weight. A recent National Institute of Health Conesus Conference defined obesity as Body Mass Index greater than 27 kg/m<sup>2</sup>. Now a days obesity is defined at or greater than 25 Kg/m<sup>2</sup> BMI.<sup>[4]</sup> Obesity (sthaulya / medoroga) is defined among the Ashta Nindatiya Purusha (eight despised or undesirable physiques) and categorized this problem under Santarpanjanita Vyadhi in Charak Samhita.<sup>[5]</sup>

Vachadi Churna (powder), an Ayurvedic formulation described in Ashtanga Hridaya and is said to be effective in obesity.<sup>[6]</sup>

## MATERIAL AND METHODS

This study was conducted in the Department of Dravyaguna, M.M.M. Govt. Ayurved College, Udaipur. For the present study 30 patients were selected from O.P.D. of its associated hospital.

### Drug material

For the study the drug, Vachadi Churna was selected from the Ayurvedic literature<sup>[6]</sup> and it is Vachadi gana. In this gana (group), six drugs are mentioned i.e. Rhizome of Vacha (*Acorus calamus* Linn.), Rhizome of Mustaka (*Cyperus rotundus* L.), Heart wood of Devadaru (*Cedrus deodara* (Roxb.) Donf.), Rhizome of Shunti (*Zingiber officinale* Roscoe), Root of Ativisa (*Aconitum heterophyllum* Wall.) and Fruit rind of Haritaki (*Terminalia chebula* (Gaertner) Retz). The drugs of Vachadi Churna were procured from college pharmacy under job card number 184/18-01-08. All these six drugs were taken in same quantity of 1.2 kg each. Devadaru wood was chopped into small pieces by axe and all the contents of Vachadi Churna were mixed. After mixing, all the materials were pulverized and the powder was filtered by a sieve of mesh no. 60.

### Selection of patients

The patients of obesity were selected according to the following criteria.

#### A. Inclusion criteria:

1. The patients of age group 14-50yrs were selected.
2. The patients having clinical signs and symptoms of obesity according to Ayurveda and modern science.

3. Patients whose B.M.I. >25 but <45 were considered for the study.

#### **B. Exclusion criteria:**

1. Patients below the age of 14 years and above 50 years.
2. Patients with Hypothyroidism.
3. Patients with long term Steroid treatment.
4. Patients having CHD, IHD and highly obese and evidence of Renal, Hepatic involvement.
5. Patients with Diabetes mellitus.
6. Patients having history of hereditary.
7. The patients having B.M.I.>45 were also excluded.

#### **C. Assessment criteria:**

Assessment includes both objective and subjective criteria –

##### **(I) Objective criteria:**

The assessment criteria were B.M.I., girth measurement of Chest – Abdomen - Hip - Mid thigh - Mid arm & Biochemical test i.e. S. cholesterol and S. triglycerides.

In case of all circumference measurements, the mean values were taken before and after treatment. The body wt. was also taken before and after treatment.

##### **(II) Subjective criteria:**

Most of the symptoms and signs of obesity (sthaulya), described in Ayurveda, are subjective in nature and to give results objectively and for statistical analysis, multidimensional scoring system was adopted. This score was obtained before and after treatment through statistical analysis and percentage relief was taken to assess the efficacy of medicine. The scores were given 0-4 according to severity of signs and

symptoms. (Table 1) Scoring was adopted from the previous study Rajput et al.<sup>[7]</sup>

#### **Dose schedule**

The human dose of Churna (powder) one *Karsha*<sup>[8]</sup> (11.5 g) as practiced traditionally but due to emetic property of Vacha it is decided to reduce to 3g twice daily along with lukewarm water before meal (Pragbhakta)<sup>[9]</sup> for a month.

#### **Diet and exercise**

Patients were advised to - Do's- to take normal diet with increased amount of vegetable salad such as cucumber, cabbage etc and do some exercise like walking, running. Don'ts – avoid fatty diet i.e. fried spicy food, cold drinks, ice creams, chocolate and day sleeping is strictly avoided.

#### **Total effect of the therapy**

Total effect of the therapy was assessed in terms of cured, markedly improved, moderately improved, moderately improved, improved and unchanged with the following accounts.

1. Cured – 100% relief in signs and symptoms.
2. Markedly improved – more than 75% reduction in the score of assessment rating scale.
3. Moderately improved – 50% to 75% reduction in the score of assessment rating scale.
4. Improved – 25% to 50% reduction in the score of assessment rating scale.
5. Unchanged – Less than 25% reduction in the score of assessment rating scale.

#### **Statistical test**

Unpaired t test was used to analyze the results.

**Table 1: Subjective criteria for assessment**

Sl.No.	Criteria	Assessment criteria	Scoring
		Absence of chalatva	0
1.	Chalaspika (pendulous buttock)	Little visible movement after fast movement.	1
		Little visible movement even after moderate movement.	2
		Movement after mild movement.	3
		Movement even after changing posture	4
		Absence of chalatva	0
2.	Chaladarastana (pendulous abdomen)	Little visible movement after fast movement.	1
		Little visible movement even after moderate movement.	2
		Movement after mild movement.	3
		Movement even after changing posture	4
		No alasya	0
3.	Javoparodha / alasya (laziness)	Doing work satisfactory with initiation late in time	1
		Doing work unsatisfactory with lot of mental pressure & late in time	2
		Not starting any work in his own responsibility, doing little work very slow	3
		Does not have any initiation & not wants to work even after pressure	4
		Unimpaired libido and sexual performance	0
4.	Krchchrvyavayata (loss of libido)	Decrease in libido but can perform sexual act	1
		Decrease in libido but can perform sexual act with difficulty	2
		Loss of libido and can't perform sexual act	3
		Normal sleep 6-7 hrs/ day	0
		Sleep up to 8hrs / day with Anga Gaurava	1
5.	Nindradhikya (excessive sleep)	Sleep up to 8hrs / day with Anga Gaurava & Jrimbha	2
		Sleep up to 10hrs / day with tandra	3
		Sleep up to 10hrs / day with Tandra & Klama	4
		Absence of bad smell	0
		Occasionally bad smell limited to close areas difficult to suppress with deodorants	1
6.	Daurgandhya (bad smell)	Persistent bad smell felt from long distance is not suppressed by deodorant	2
		Persistent bad smell felt from long distance even intolerable to the patient himself	3
		Sweating after heavy work	0
7.	Swedadhikya (excessive sweating)	Sweating after little work	1
		Profuse sweating after heavy work	2
		Profuse sweating after minimum work	3
		Sweating even in resting condition	4
		Person not at all taking food	0
8.	Kshudadhikya (excessive hunger)	Person taking food in less quantity once a day	1
		Person taking food in less quantity twice in a day	2
		Person taking food in moderate quantity twice in a day	3
		Person taking food in excessive quantity twice or thrice in a day	4
		Normal thirst	0
9.	Trishadhikya (excessive thirst)	Up to 1 lit. excess intake of water	1
		1 to 2 lit. excess intake of water	2
		2 to 3 lit. excess intake of water	3
		More than 3 lit. intake of water	4
10.	Shaithilya (fatigue)	No fatigue	0
		Little fatigue in doing hard work	1
		Moderate fatigue in doing routine work	2
		Excessive fatigue in doing routine work	3
		Excessive fatigue even in doing little work	4
11.	Guruta / Anga gaurava (heaviness)	No heaviness in the body	0
		Feels heaviness in the body but it does not hamper routine work	1
		Feels heaviness in the body which hamper daily routine work	2
		Feels heaviness in the body which hamper movement of the body	3
		Feels heaviness with flabbiness in all over body which cause distress to the	4

		person	
		Dyspnoea after heavy work (movement) but relieved soon and up to tolerance	0
12.	Kshudra Svasa (dyspnoea)	Dyspnoea after moderate work but relived later and up to tolerance	1
		Dyspnoea after little work but relieved later and up to tolerance	2
		Dyspnoea after little work but relieved later and beyond tolerance	3
		Dyspnoea in resting condition	4
		Normal snigdghata	0
		Oily luster of body in summer season	1
13.	Snigdha Gatra (oiliness)	Oily luster of body in dry season	2
		Excessive oily luster of body in dry season which can be removed with difficulty	3
		Persistence and profuse stickiness all over body	4
		Can do routine exercise	0
14.	Vyayama Asahatva (intolerance)	Can do moderate exercise without difficulty	1
		Can do only mild exercise	2
		Can do only mild exercise with very difficulty	3
		Can do even mild exercise	4

## RESULTS

Totally 30 patients were treated with Vachadi Churna and completed the full course of one month of treatment duration. The data related to the improvement in the signs and symptoms were individually summarized in the Table 2 and the percentage of relief is shown in the Graph 1. The analysis of objective measurements and biochemical test are shown in Table 3 – 5. Results of therapy were assessed mainly on the basis of adopted score. Statistically highly significant improvement can be noticed in excessive sleep (62.27%), heaviness in body (61.25%), fatigue (60.80%) and excessive hunger (58.06%). Reduction in weight is statistically highly significant ( $P < 0.001$ ). The effect of Vachadi churna was 53.33% of patients improved and 46.67% of moderately improved and is shown in the Graph 2.

## DISCUSSION

In the present study, the anti obesity (Medohara) effect of Vachadi Churna was studied. Obesity is considered to be a disorder of energy balance, occurring when energy expenditure is no longer in equilibrium with daily energy intake, so as to ensure body weight homostasis. Although the etiology of

obesity is complex, dietary factors, particularly the consumption of an atherogenic diet, is considered a risk factor for its development.<sup>[10]</sup> It is well known that obesity is associate with increased adipose tissues accumulation in the body. In Ayurveda the role of Agni (digestive fire) is quite relevant to life and responsible factor for maintenance of health, digestion and metabolism from gross to subtle level. Diminished function of Agni is responsible for formation of Ama, i.e. an unwanted metabolic waste product at respective level. Ama has tendency to block the micro-channels (srotorodha), i.e. Medovaha srotasa, and increases Ama Meda resulting to obesity.<sup>[11]</sup> The action of Ayurvedic drugs is proportionate to the Panchabhautika composition which in turn is responsible for Rasa (taste), Guna (properties), Virya (potency), Vipaka (post digestive) and Prabhava (specific action) of the respective drugs. Vachadi Churna consists of six drugs. Properties of this formulation in combined form is bitter and pungent in Rasa, Ushna Virya (hot potency), Katu Vipaka, Laghu (light), Tikshana (pebeterating nature) and Ruksha Guna (dryness) and Medohara properties<sup>[6]</sup> and exhibit the Kapha-Vata shamaka, Lekhaniya (scraping), Amapachana, Dhatushoshana properties which decrease the excessive Kapha, improves the digestion and

**Table 2: Statistical Analysis of improvement in subjective criteria**

Sign and symptoms	Mean		Mean difference	SD	SE	t	p	% Relief
	BT	AT						
Chalaspika	2.73	1.93	0.80	0.41	0.07	10.76	< 0.001	29.30
Chalaudarastana	2.67	1.93	0.73	0.45	0.08	8.92	< 0.001	27.34
Javoparodha	2.67	1.20	1.47	0.68	0.12	11.77	< 0.001	55.05
Krchchhrvyavayata	0.33	0.23	0.13	0.35	0.06	2.11	> 0.050	39.39
Nindradhikya	2.73	1.03	1.70	0.88	0.16	10.60	< 0.001	62.27
Daurgandhya	1.93	0.96	0.97	0.72	0.13	7.36	< 0.001	50.25
Swedadhikya	2.2	1.07	1.13	0.63	0.11	9.86	< 0.001	51.36
Kshudadhikya	3.1	1.3	1.8	0.48	0.09	20.33	< 0.001	58.06
Trishadhikya	2.8	1.3	1.5	0.57	0.10	14.34	< 0.001	53.57
Shaithilya	2.73	1.07	1.66	0.84	0.15	10.80	< 0.001	60.80
Guruta	2.4	0.93	1.47	0.82	0.15	9.79	< 0.001	61.25
Kshudra Svasa	1.97	0.90	1.07	0.74	0.14	7.89	< 0.001	54.31
Snigdha Gatra	0.4	0.3	0.1	0.31	0.06	1.79	< 0.050	25.00
Vyayama Asahatva	2.93	1.53	1.40	0.62	0.11	12.32	< 0.001	47.78

**Table 3: Effect of Vachadi Churna on Weight and B.M.I.**

Objective	Mean		Mean difference	SD	SE	t	p
	BT	AT					
Weight (Kg)	2.74	2.65	0.09	1.07	0.20	14	<0.001
BMI (Kg/M <sup>2</sup> )	1.11	1.07	0.04	0.53	0.10	11.49	<0.001

**Table 4: Effect of Vachadi Churna on girth measurement**

Girth measurement	Mean		Mean difference	SD	SE	t	p
	BT	AT					
Mid Arm	1.10	1.03	0.07	0.96	0.17	11.14	<0.001
Chest	3.44	3.35	0.09	1.03	0.18	13.69	<0.001
Abdomen	3.50	3.41	0.09	0.87	0.16	17.17	<0.001
Hip	3.64	3.56	0.08	0.87	0.15	14.23	<0.001
Mid Thigh	1.84	1.76	0.08	0.98	0.17	13.71	<0.001

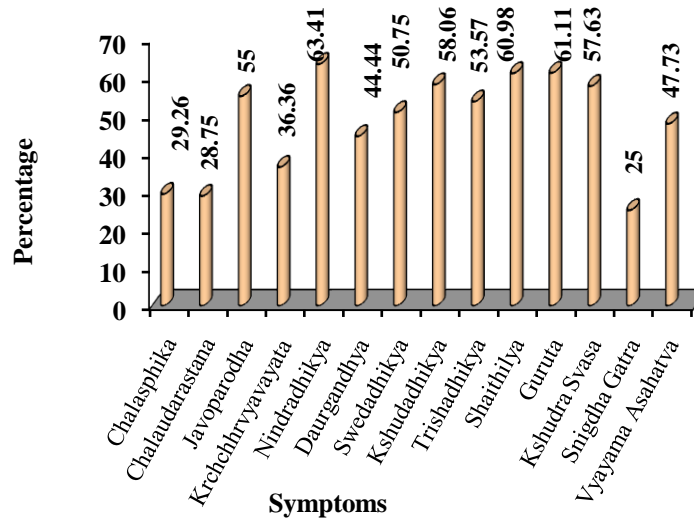
**Table 5: Effect of Vachadi Churna on Biochemical test**

Biochemical test	Mean		Mean difference	SD	SE	t	P
	BT	AT					
S. Cholesterol	199.11	192.10	7.01	3.50	0.64	5.47	<0.001
S. Triglyceride	202.32	193.04	9.28	1.20	2.05	4.53	<0.001

clears the obstruction in fat deposition and reduces the excessive fat<sup>[12]</sup>. A study on  $\beta$ -asaron, a chemical constituent of Vacha (*Acorus calamus*) exerts anti adipogenic activity by suppressing the expression of adipogenic transcription factors.<sup>[13]</sup> The alcoholic extract of the tubers of Mustak (*Cyperus rotundus*) possesses lypolytic activity and reduce the obesity by releasing enhanced concentration of *Biogenic amines*

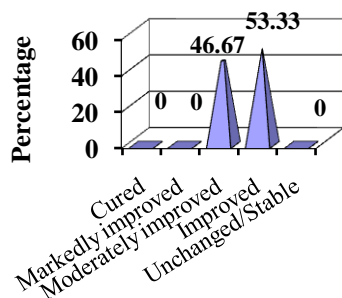
from nerve terminals of brain which suppresses the appetite centre<sup>[14]</sup> no feelings for hunger that's why to check for intake of excessive food. An animal study shows that aqueous extract of *Cyperus rotundus* tuber influence the energy balance and shifts the balance towards increased break down of fats and mobilization of fats from adipocyte tissue and thus reduces the adiposity.<sup>[15]</sup> The efficacy of most herbal remedies is attributed to the

Graph 1: Showing effects in individual symptoms



combination of various active principles. The observed pharmacological action of Vachadi Churna may be due to the presence of phytochemicals Ascorbic acid, Limonene, Pectine, Zinc, Shogaol and Zingiberine. A study shows that pectin delays gastric emptying and induces satiety in obese patients and it may be useful adjuvant in the treatment of obesity<sup>[16]</sup> and an animal study shows that Pectin inhibits lipids accumulation in the adipocytes.<sup>[17]</sup> Shunti inhibits the bad cholesterol or LDL and helps lower cholesterol by reducing serum and hepatic cholesterol levels. It slows cholesterol absorption by stimulating the conversion of cholesterol to bile acids. 6-Shogaol, an active constituent of *Zingiber officinale* exhibit anti obesity activity.<sup>[18]</sup> So, it is concluded that Vachadi Churna is effective remedy in obesity.

Graph 2: Overall effect of therapy observed



## CONCLUSION

From the present study it can be concluded that Vachadi Churna has got anti obesity effect. Treatment modality like shamana therapy with Vachadi Churna show good efficacy in relieving both subjective and objective parameters. These can be attributed to fact that most of the drugs of this combination are mainly Ushna virya with

Katu vipaka and predominantly Ushna and Tikshnaa Gunas and possessing Lekhana, Karshana and Rukshana properties. By virtue of these properties, this combination is Kapha-Vata shamakata as well as Medohara.

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