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A CLINICAL EVALUATION OF '*METHI MODAK*' ALONG WITH *UDVARTANA* (*KUTAJ BARK CHURNA*) IN THE MANAGMENT OF *STHAULYA* (OBESITY)

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ABSTRACT

In *Ayurveda*, *Sthaulya* is named as one of eight appalling people (*Ashta Nindita*). They emphasised that a healthy physique is the only way to reach *Chaturvidha Purushartha* when describing the definition of *Swastha Purusha*. The best is *Madhyama Sharira*, while *Ati Sthula* and *Ati Krisha* are always impacted by grievances. Obesity can be considered as *Medodhatu Vraddhi* or *Sthaulyata* which is described under the heading of *Santarpanjanya Vyadhi* due to excessive accumulation of *Medo Dhatu* in body. According to WHO, worldwide the obesity has been increase more than twice fold since 1980. In India, the prevalence of overweight increased from 9.7% near the turn of the century to nearly 20% in studies reported after 2010. In the present clinical trial *Methi Modak given BD* along with *Udvartana* (*Kutaj Bark Churna*) & Control group study plan with scheduled diet and exercise protocol in the management of *Sthaulya.*

KEYWORDS: *Sthaulya*, Obesity, *Methi Modak*, *Udvartana*, *Kutaja bark Churna*, Diet, Exercise.

INTRODUCTION

The equilibrium of various structural and functional units of the body named as *Dosha*, *Dhatu*, *Mala*, *Agni* and also mental well-being, results in health and disequilibrium of these

factors causes disease. The aim of *Ayurvedic* management focuses on correction of disturbances of internal homeostasis.[1] According to WHO "Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity". Obesity is an increasing, global public health issue. Patients with obesity are at major risk for developing a range of comorbid conditions, including cardiovascular disease (CVD), gastrointestinal disorders, type 2 diabetes (T2D), joint and muscular disorders, respiratory problems, and psychological issues, which may significantly affect their daily lives as well as increasing mortality risks.[2] In *Ayurveda, Sthaulya* is named as one of eight appalling people (*Ashtanindita*[3]). Healthy physique is the only way to reach *Chaturvidha Purushartha*. The *Madhyama Sharira* is best, while *Ati Sthula* and *Ati Krisha* are always impacted by grievances.[4] In *Ayurveda* there is effective treatment of obesity. The world's population is turning towards herbal cure. In *Ayurveda Langhana therapy* play important role in the management of *Sthaulya*. In *Shadvidha Upkramas*[5] four types of *Shodhana* are mentioned in *Langhana chikitsa*[6].*"Methi Modaka*[7] " and "*Kutaj bark Udvartana*[8]*"* which are described in "*Bhaisajya Ratnavali*" and "*Charak Samhita*" respectively, have been chosen for research.

AIM AND OBJECTIVE

1. To study the Etio-pathogenesis of *Sthaulya* (Obesity) as per *Ayurveda* and modern point of view.
2. Clinical study of *Methi Modak* along with *Udvartana* (*Kutaj Bark Churna*) & Control group study plan with scheduled diet and exercise protocol in the management of *Sthaulya*.
3. To evaluate the adverse drug reaction of the trial drug.

MATERIALS AND METHODS

A. Selection of the patients

60 diagnosed and clinically confirmed patients of *Sthaulya* selected randomly from OPD of PG department of *Kayachikitsa*, Dr. S. R. Rajasthan Ayurveda University and hospital Jodhpur.

B. Inclusion criteria

- Patient willing to sign the consent form.
- Patients between the age group of 18 to 70 years of either sex presenting with clinical features of *Sthaulya* (obesity) and having BMI above 25kg/m^2

C. Exclusion Criteria

- The Age below 18 and above 70 years.
- Patients with complicated and chronic disorder like Nephrotic syndrome, Hypothyroidism, Jaundice, Hepatitis, Chronic infections, Type 1 Diabetes mellitus and Type 2 Diabetes Mellitus & Uncontrolled Hypertension, Tuberculosis, Carcinoma and Endocrine disorders like Cushing syndrome, Hypothyroidism.
- Patient having BMI below 25, having Obesity due to secondary causes such as drug induced or hormonal imbalance like contraceptive pills.
- Pregnant women and lactating mother.

D. Assessment Criteria

Subjective parameter

Chala Sfika Udara Stana	***Alasya (Letharginess)***	***Kshudraswasa / Ayasenaswasa***
Daurbalya (Alpa Vyayam)	*Nidradhikya*	*Swedadhikya (At normal temperature in normal condition*
Daurgandhya	*Anga Gaurava*	*Atipipasa*
Ati Kshudha,	*Alpa Vyavaya*	*Gatra sad*
Sandhishool		

Objective parameter

The methods of assessment of Obesity are BMI (Basal Metabolic Rate), Waist Circumference, Waist hip ratio, Skin fold thickness.

Trial drug and group

Group-A

Methi Modak in the dose of 11gm in 2 divided dose with *Ushna Jala* for 45 days along with *Udvartana* for 14 days including scheduled diet and exercise protocol.

Group -B

Scheduled Diet and Exercise protocol to be followed for 45 days.

1. Ingredient of *Methi Modaka*

*Sunthi, Marich Pipali, Haritaki, Vibhitaki, Amalki, Nagarmotha, Shweta jeera, Krishna jeera, Dhanya, Kay phal, Pokharmul, Kakdasingi, Ajwain, Sendhanamak, Vid namak, Talis patra, Nagkesar, Tejpat, Dalchini, Elaechi, Jayphala, Javitri, Loung, Muramasi, Karpura, Safed Chandan (Each 1 part) Methi Churna (*27 part*), Gud (*As per requirement*), Ghrit* (As per requirement), *Sahad* (As per requirement).

2. ***Kutaj Bark Churna Udvartana***

3. **Exercise**

Head and neck rotation	**Clock wise and anti-clock wise rotation**	**10 counts, daily 2 times**
Elbow	Flexion and extension	10 counts, daily 2 times
Wrist	Clock wise and anti-clock wise rotation	10 counts, daily 2 times
Fingers	Flexion and extension	10 counts, daily 2 times
Hip joint/Abdomen	Clock wise and anti-clock wise rotation	10 counts, daily 2 times
Knee	Flexion and extension	10 counts, daily 2 times
Ankle	Clock wise and anti-clock wise rotation	10 counts, daily 2 times
Leg	Flexion and extension	10 counts, daily 2 times
Whole body	Walking	1-hour Morning and evening
Whole body	Cycling	1-hour Morning and evening

4. **Diet**

TIME	**FOOD ITEM**	**QYANTITY**
6:30AM	*Amla juice* (Indian Gooseberry)	20 ml +100 ml water
9:00 AM	*Mudgayusha* (Green gram soup)	200ml
1 PM	*Yava* roti + boiled vegetable	2 roti (60gm) + 250gm boiled vegetable
5 PM	*Papaya juice*	200 ml
6:30PM	*Amla juice*	20ml +100 ml water
8:30 PM	*Yava* roti + boiled vegetable	2 roti(60gm) +250gm boiled vegetable

OBSERVATION

Intra Group Comparison

1. For subjective parameter, Wilcoxon Signed Rank Test used to test efficacy in Group A and Group B. P-Value for Group A and Group B is less than 0.05. Hence, effect observed in Group A and Group B is significant.
2. For Objective parameter, Paired t-test is carried out to test significance in Group A and Group B. P-Value for all parameters is less than 0.05. Hence there is significant change observed in Weight, BMI, Circumference & Skin fold thickness in Group A and Group B.
3. For Biochemical parameter, Paired t-test is carried out to test significance in Group A and Group B. P-Value for all parameters is greater than 0.05. Hence, there is no significant change observed in lipid profile in Group A and Group B.

Inter Group Comparison

1. For comparing Subjective parameter between Group A and Group B, Mann Whitney U Test is carried out. P-Value for almost parameters is less than 0.05. Hence, there is

significant difference observed in Group A and Group B. Mean rank for Group A is greater than Group B. Hence effect observed in Group A is better than Group B.

2. P-Value for weight, BMI, Skin fold thickness of Biceps and triceps muscles is less than 0.05. Hence, effect observed in Group A for Weight, BMI, Skin fold thickness of the biceps muscle(mm), Skin fold thickness of the Triceps muscle(mm) is better than Group B.
3. Un-paired t-test is carried out for comparing Biochemical parameter between Group A and Group B, P-Value for almost parameters is greater than 0.05. Hence effect observed in both the group for biochemical parameter in not significant

% Relief In Subjective Perameter

Variable	**% Relief**	
	Group A	**Group B**
1. Chala Sfika Udara Stana	60.26	44.05
2. Alasya	45.71	40.00
3. Ksudra Shwasa	50.82	38.46
4. Dourbalya	56.36	40.91
5. Nidradhikya	58.70	40.00
6. Swedadhikya	51.02	39.47
7. Daurgandha	54.17	41.38
8. Anga Gaurava	52.46	40.35
9. Ati Pipasa	51.02	35.14
10. Ati Ksudha	65.85	41.18
11. Alpa Vyavaya	51.22	39.39
12. Gatra Sad	51.56	40.98
13. Sandhishool	64.00	41.03
Average % Relief	54.86	40.18

Showing the overall efficacy of Therapy

In Group A, out of 27 patients, 7 (25.93%) patients achieved mild relief, 20 (74.07%) patients achieved moderate relief. In Group B, out of 28 patients, 17 (60.71%) patients achieved mild relief, 11 (39.29%) patients achieved moderate relief, no any patient achieved complete relief.

DISCUSSION

Probable mode of action of *Methi Modak*

Methi Modak contain 30 drugs and maximum drugs in it have *Katu-Tikta-Kashaya Rasa, Laghu-Ruksha-Tikshna Guna, Ushna Virya* and *Kapha Vata Shamaka* properties. All have opposite action on *Kapha Dosha* as well as *Meda Dhatu*. Dominant *rasa* in *Methi Modak* are *Katu* and *Tikta* with *Ruksha, Laghu, Ushna and Vishada* properties, which are opposite to

Snigdha, Guru, Sheeta and Picchila Guna of *Kapha Dosha*. The drug is dominant in *Ushna Virya* and *Kapha Vata Doshaghnata*, each has opposite action in *Kapha Dosha*. In *Sthaulya, Meda dhatu* is main *Dushya*. *Katu Rasa* has *Meda Sneha-Kleda Shoshana Karma, Tikta Rasa* is *Medohara, Kashaya Rasa* has *Vishada* and *Ruksha Guna*. All the ingredient of *Methi Modak* have *Dipana, Lekhana, Pachana, Anulomana, Aampachana, Kaphaghna karma* So they are being able to improve *Medodhatvagni mandhya* as well as *Jatharagnimandhya.*[9] In *Sthaulya*, there is *Sanga* type *Srotodushti* produced by *vitiate Kapha* and *Meda*. Contents of *Methi Modak* clear this *Sanga* by their S*rotovishodhana Karma* and regulate the function of *Medovahashrotasa.*

Probable mode of action of *Udvartana*

The main study was conducted on 30 patients. The patients were selected randomly and allotted in a single group. They were treated with standard procedure of *Udavartana* for 14 days and assessment was done on basis of various subjective and objective criteria mentioned earlier. The standard procedure for *Udavartana* was time – 30min, particle size- 100, pressure applied was in hip region - strong pressure, in abdomen- heavy lotioning, in upper and lower limbs, and back medium pressure is used. Strokes applied were *Pratiloma Gati* with tapping, in abdomen anticlockwise circular massage was done. The data obtained from the study was analysed statistically and inferences were drawn and put forward hereby.[10]

Probable mode of action of diet

***Amla* juice**

Amla fruits have *Laghu, Ruksha and Sheetaguna*. *Amla* fruits possesses *Yukrituttejak-plihahita, Hridaya-shoirasthapana, Kaphagna* properties. *Amla* is good cardiac and liver tonic which result in lowering down increased cholesterol and increased fat in body. Various research results show that aqueous E.officinalis extract possess significant anti-obesity potential.[11]

Mung Yush

Mung have *Laghu* and *Ruksha* properties. In *Ayurvedic* text karma of *Mung* described in *Aruchi-Agnimandya, Deepana, Pachana, Medohara.* In a research it was found that both of WMB (Whole Mung Bean) and DMB (Decorticated Mung Bean) supplementation can effectively alleviate HFD-induced lipid metabolic disorders, which was accompanied by a reduction in hepatic steatosis. However, the only supplementation with WMB significantly

reduced HFD-induced body weight gain, fat accumulation, and adipocyte size, and ameliorated the glucose tolerance and insulin resistance by sensitizing insulin action.[12]

Yava Roti

Yava have *Ruksha* and *Laghu Guna*. In various text books *Karma* of *Yava* described as *Medohara* and *Lekhaniya.* It is very useful in *Sthaulya.* In Charak Samhita it is mentioned as

यावमलकेचूर्णश्चप्रयोग:श्रेष्ठेउच्चते | (च.सू.२१/)

***Papaya* Juice**

Histological observations of epididymal adipose tissue provided evidence for the lipid-lowering effects of papaya. The results of the present study demonstrate that papaya has the potential to reduce the risk of obesity associated with adiposity, anti-inflammation and anti-oxidation.[13]

Probable mode of action of exercise

Reducing adipose tissue is one of the ways to reduce weight in individuals with obesity, and is necessary to mitigate negative cardio-metabolic co-morbidities in obesity. Two methods exist that can effectively decrease adipose tissue and include:

- Dietary modification
- Energy expenditure modification (i.e., exercise)

Thus, increasing energy expenditure can help reduce excess adipose tissue and obesity.

The current guidelines put out by the American College of Sports Medicine (ACSM) include either aerobic or anaerobic exercise. Aerobic exercise (i.e., running, cycling, rowing, etc.) is an exercise that exhausts the oxygen in the muscles, but oxygen consumption is sufficient to supply the energy demands placed on the muscles and does not need to derive energy from another source. On the other hand, anaerobic exercise (or resistance exercise, i.e., weight lifting) is oxygen consumption that is not sufficient to supply the energy demands placed on the muscles, and muscles must break down other energy supplies, such as sugars, to produce energy and lactic acid. Physical activity (PA), is included in the exercise, although it does not necessarily include structured exercise plans/sessions.[14]

Walking As Exercise

In general, walking at a brisk pace burn between 240 and 723 calories per hour. Caloric burn walking depends on body weight and walking pace or intensity, according to Harvard Health Publishing.[15]

Cycling As Exercise

Steady, moderate cycling burns about 300 calories in 60 minutes, but can burn more if the intensity is increased. According to the Harvard Health Letter, a 155-pound person can burn as many as 298 calories in a 30-minute bike ride, if pedal at a 12-to-13.9 mile-per-hour pace.[16]

The current findings suggest that walking exercise can provide a safe and effective lifestyle strategy against abdominal obesity and serum insulin resistance markers in obese women.

Dietary modification and energy expenditure play important role in reducing weight loss.

CONCLUSION

Comparison of the effect of Therapies shows that reduction in Subjective parameter, Objective Parameter and Bio-chemical parameters was best in Group A (*Methi Modak* and *Udvartana* with *Kutaja bark Churna* with scheduled diet and Exercise) as compared to Group B which includes Scheduled Diet and Exercise. In nutshell, results of these study showed, that the intervention like *Methi Modak*, *Udvartana*, Diet and Exercise combinedly very beneficial in treating Obesity.

On the basis of finding of present clinical trial, it can be concluded that beside internal medication, external process like *Udvartana* along with Diet and Exercise combinedly gives frequent result while giving Diet and Exercise intervention gives gradual results.

In group A result was satisfactory (50%-75%) and in group B result was good (25%-50%). Hence we can conclude that two or more intervention for treating Obesity gives satisfactory results in short duration.

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