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Fundamental Study On The Effect Of Lekhaniya Mahakashaya In Santarpanjanya Vyadhi W.R.T. Sthaulya (Obesity)

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Abstract
Ati Sthula is defined as a person who owing to an inordinate increase of fat and flesh is distinguished with pendulous buttocks, belly, and breasts and whose increased bulk does not match with a corresponding increase in energy. Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have an adverse effect on health. It is defined by body mass index and further evaluated in terms of fat distribution via the waist-hip ratio. Energy consumption in excess of energy expenditure leads to obesity on an individual basis.
Aim- *To assess the effect of Lekhaniya Mahakashaya in the management of Sthaulya*
Method- *probable mode of action of decoction of lekhaniya mahakashay Sthaulya is caused by hypo functioning of Medo Dhatvagni as a result of this Condition Dushta Medo Dhatu is increased in the body. As per Sushruta, the drug which performs Lekhana Karma is the main constituent of Vayu and Agni Mahabhuta hence the properties of Lekhaniya Mahakashaya.*
Result- *Here the ayurvedic medicines like LEKHANIYA MAHAKASHAYA has been proved to be effective and significant*
Conclusion- *The response to treatment was good in each patient, and the data was statistically significant. So, the therapeutic response among the patients included in this study was encouraging. Thus, it can be concluded that Lekhaniya Mahakashaya Kwath is proven to be an effective therapy and this regimen should be tested on large scale for a long duration of the trial with better parameters. Thus, in this study, Null Hypothesis(H_0) is rejected and Alternative Hypothesis(H_1) is accepted.*
Keywords: *Lekhaniya Mahakashaya, Sthaulya, Sushruta, Dushta Medo Dhatu.*

INTRODUCTION

According to *Acharya Charaka, Dalhana, and Ayurvediya Shabdakosa, Santarpana* means to satisfy and nourish the body. According to the above meanings, it is clear that *Santarpanaja* drugs work at both physical and mental levels both. They are restorative in nature and refresh the mind by nourishing the *Dhatus* at a cellular level. So, *Triptikaram, Prinanam* [1] *& Brimhana-hetuka* is *Brimhana* [2] which are responsible for the nourishment of the body. So, *Tarpanaa* and *Brimhana* are the synonyms of *Santarpana.*

- *Tarpanaiya* [3] means to be satisfied.
- *Brimhana* [4] means to make big, or fat or strong, increase or promote the quality of making fat or strong.

Obesity can be defined as "Excessive deposition or distribution of fat in the body". According to Dorland, "Obesity is an increase in body weight beyond the limitation of skeletal and physical requirements as the result of excessive accumulation of body fat".

Obesity is defined by most authorities as occurring when a person's weight is at least 10% over the normal or required weight (Harrison's Principles of Internal Medicine) Obesity has also been defined as body content greater than 25% of total body weight for male, greater than 30% for female.

Increased risk of coronary artery disease in Obesity depends on the effect of excess weight in increasing both blood pressure and total serum cholesterol. However, there seems to be no intrinsic reason why adiposity necessarily increases the risk factors for CHD.

This unwanted and unhealthy change gives momentary happiness but its constant use results in various pathological conditions and people suffer through various chains of disorders. These disorders are caused by two modes[5]-

1. *Santarpanjanya* i.e., disorders due to over nourishment.
2. *Aptarpanjanya* i.e., disorders due to lack of nourishment.

Amongst all *Santarpanjanya Vyadhi*, *Sthaulya* (obesity) is the most burning problem across the world. In the Modern era with continuously changing lifestyles and environments, and changing diet habits, man has become the victim of many diseases caused by unwholesome dietary habits and *Sthaulya* is one of them. In the present day, man has to run with time and he is trying to lead mechanical life. Though he knows the ill effects of such mechanical life, he made himself victim to it by suffering from many disorders, among these *Sthaulya* is a global problem and more common in modernized man and the present era.

This *Sthaulya* is considered as *Santarpanajanya Vyadhi* and one among the *Ashta Nidhita Purushas*[6] and also as *Kaphaja Nanatmaja Vyadhi*[7]. Obesity is certainly the mother of dangerous diseases and the most burning problem in the present society. Obesity has become an epidemic in the 21st century. It is a bitter truth to swallow about every 4th person on earth is too fat. Weighty women get six times more diseases. Obesity is fast becoming one of the world's leading reasons why people die.

Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have an adverse effect on health. It is defined by body mass index and further evaluated in terms of fat distribution via the waist-hip ratio. Energy consumption in excess of energy expenditure leads to obesity on an individual basis. It is most commonly caused by a combination of excessive food intake, lack of physical activity, and genetic susceptibility. A few cases are caused primarily by genes, endocrine disorders, medication or mental illness, and insufficient sleep. Today 2.1billion people nearly 30% of the world population are either obese or overweight. According to a new study of its kind analysis of trend data from 188 countries, the rise in global obesity rates over the last three decades has been substantial and widespread presenting a major public health epidemic both in the developed and developing world. Obesity in India has reached epidemic proportions in the 21st century with mortal obesity affecting 5% of the country's population. Obesity is a global problem increasing progressively. Excessive truncal adiposity is very well correlated with risk for diabetes, hypertension, and cardiovascular disease. The changing lifestyle, lack of physical activity, and increasing stress are some of the important contributory factors. To sum up, the marked increase in the intake of energy-dense food with very little or no physical activity and a high level of stress contributes significantly to the progression of epidemics. It is estimated that each kg of weight loss is associated with an approximately 16% reduction in the occurrence of overt diabetes. In the case of overweight individuals, reduction of weight by restricting calories and increasing exercise is of vital importance however it has been observed that it is not necessary to reduce the weight to the level of ideal body weight but a reduction of about 5% to 10% in the body weight give substantial reduction. Weight loss associated with the improvement of gastrointestinal hormones is considered to contribute to reducing the incidence of diabetes. Obese people are 20% more likely to develop pancreatic cancer, and the number of GI disorders and hepatobiliary disorders and BMI>40kg/m^2 appear to have a higher mortality rate when compared to normal-weight individuals. Mostly obesity is primary i.e., no obvious cause exists other than an imbalance in energy intake and energy expenditure. when energy intake is more than energy expenditure, there will be weight gain.

Overall goals of weight loss management are, to prevent further weight gain, to lose weight to achieve a realistic target BMI and to maintain lower body weight over the long term. A realistic BMI rather than an ideal BMI must be aimed in this weight loss program. The initial goal of weight loss therapy is to reduce body weight by approximately 10%from baseline. Importantly modest losses of 5%to 10% of body weight have been shown to reduce health risks such as hyperlipidemia, hypertension, and insulin resistance.

STHAULYA (Obesity) is such a disease, which provides the platform for so many hazards like HTN, C.H.D, D.M, O.A, Infertility, and Impotency as well as psychological disorders like stress, anxiety,

depression, etc. Thus, mortality and morbidity are more in obese persons as compared to others. Obesity is not merely a cosmetic problem but a severe threat to health and longevity. The old saying **'The longer the belt the shorter the life'** is entirely accurate.

The worldwide prevalence of obesity more than doubled between 1980 and 2014. *Sthaulya* is typical obesity involving the *Medo vriddhi* with which this study deals with typical obesity, not with the regional adiposity, which is a reflection of endocrine imbalance.

In *Samprapti* of *Sthaulya*, due to *Meda-Dhatwagni Mandya*, there is excessive accumulation of *Meda* that leads to obstruction of *Medovaha Strotasa*. Due to this, there is *Vimargagamana* of *Dosha Vata*. The *VimargagaVayu* in *Koshta* ultimately increases the *Jatharagni* leading to an increase in appetite. But because of the obstruction created by *Medovaha Strotasa*, all other Dhatus remains malnourished and only *Meda Dhatu* increases.

According to figures from the WHO at least 2.6 million people die as a result of being overweight or obese. As per WHO overweight and obesity are the 5th leading risk for global death. The prevalence of overweight and obesity is commonly assessed by using **Body mass index** (BMI), defined as weight in kg divided by the square of height in meters (kg/m^2). The WHO definition of BMI is-

1- A BMI greater than or equal to 25 is **overweight**.

2- A BMI greater than or equal to 30 is **obesity.**

Obesity is defined as BMI greater than 30 kg/m^2. Raised BMI is a major risk factor for non-communicable diseases such as cardiovascular diseases (mainly heart diseases), stroke, diabetes, and musculoskeletal disorder specially O.A.

Classification:

In *Ayurvedic* literature, a systematic classification of the disease *Sthaulya* is not available. *Acharya Vagbhata* has mentioned three types of *Sthaulya* while describing the efficacy of *Langhana* therapy[8] this classification is as follows –

1. *Hina Sthaulya* : Mild degree of overweight
2. *Madhyama Sthaulya* : Moderate degree of overweight
3. *Adhika Sthaulya* : Excessive state of overweight.

Although the modern system of medicine has its therapeutic modalities to tackle obesity. They are associated with many adverse effects. Taking into consideration this, the global population is enthusiastically looking toward effective natural remedies. While describing the treatment of *Sthaulya Acharya Charaka* emphasized the use of *Ruksha, Ushna*, and mainly *Kapha-Vata Shamaka* drugs for the management of *Sthaulya*. In *Charak Samhita Sutra Sthana Shadvirechanshatashritiya Adhayaya, Lekhaniya Mahakashaya* is described for *Lekhana Karma-*

मुस्तकुष्ठहरिद्रादारुहरिद्रावचातिविषाकटुरोहिणीचित्रकचिरबिल्वहैमवत्यइति दशेमानि लेखनीयानि भवन्ति | **(Ch.Su. 4/9-3)**

The drugs of *Lekhaniya Mahakashaya* are mainly *Ruksha, Ushna*, and *Kapha-Vata Shamaka*. So, in light of the above references from classics, *Lekhaniya Mahakashaya* was selected for the management of *Sthaulya*(obesity).

• Plan of Study

The study was a Randomized Open Trial Study cleared by the Institutional Ethics Committee. The trial was registered in the Clinical Trial Registry of India with CTRI No 2021/10/037530 dated 25/10/2021. Informed Consent was taken from all the patients before including them in the trial. Single group patients were taken into the study.

• Aims and Objectives:

1. To assess the effect of *Lekhaniya Mahakashaya* in the management of *Sthaulya.*

➢ **Source of Data**

30 patients of either sex male or female from OPD / IPD of Govt. Ayurvedic College & Hospital, Patna were taken, and those who were satisfying the inclusion and exclusion criteria.

➢ **Diagnostic Criteria**

1. Patients were diagnosed based on proforma prepared with signs and symptoms of *Sthaulya*.

2. Uncomplicated Patients with BMI >25 were selected.
3. For diagnosis of obesity, standard height-weight charts were considered as per WHO standards.
4. Measurement of Hip and Waist circumference.

➢ **Inclusion Criteria**

- Patients willing for the trial.
- Patient suffering from *Sthaulya* (obesity).
- Patients between the age group of 16-60 years of either sex.
- Body mass index criteria will be followed for the selection of patients.
- Overweight from 25-29.99 BMI and
- Obese from 30-40 BMI will be included in the study.

➢ **Exclusion Criteria**

- Less than 16 yrs. and more than 60 yrs.
- Obesity due to genetic disorders.
- During Pregnancy.
- Drug-induced obesity.
- Those who were not fulfilling the inclusion criteria.

➢ **Materials Required**

- Informed consent of the patient.
- Case proforma of the patient.
- Raw drugs for medicines.
- Weighing machine.
- Inch-tape.
- Pulse oximeter.
- Sphygmomanometer.
- Stethoscope.
- Thermometer.

➢ **Grouping and Treatment Procedure**

Single group observational study

Patients having signs and symptoms of *Sthaulya* (obesity) were screened and selected for the present study. Patients fulfilling the criteria & attending OPD No.10 (Research unit) & cases referred by other departments of G.A.C.H, Patna were selected randomly irrespective of race, caste, sex, religion, etc.

The study was carried out after obtaining permission from the institutional ethical committee. Inform consent (IC) of patients was taken before the clinical study. After ethical clearance of the synopsis, the study was registered in CTRI with no. CTRI/2021/10/037530. In this study total of 30 patients with *Sthaulya* (obesity) were registered in a single group. Patients were taken randomly during the trial. The treatment was continued for 8 weeks and patients were advised to follow specific do's and don'ts. After completion of treatment, the data were collected and the efficacy or failure of the medication was decided to depend on the results obtained.

Drugs

○30 patients were given *Lekhaniya Mahakhasaya* as *kwath* to be taken orally for the present study.

Dose : 50 ml in two divided doses.

Diet regimen : Patients of the present study were advised to follow *Pathya-Apathya* and *Aahara-Vihara* according to the principles of *Ayurveda*.

➢ **Preparation of Drugs**

LEKHANIYA MAHAKASHAYA:

मुस्तकुष्ठहरिद्रादारुहरिद्रावचातिविषाकटुरोहिणीचित्रकचिरबिल्वहैमवत्यइति दशेमानि लेखनीयानि भवन्ति | **(Ch.Su. 4/3)**

i. Nagarmotha
ii. Kootha
iii. Haridra
vi. Ativisha
vii. Kutaki
viii. Chitraka

iv. Daruharidra *ix. Karanja*

SR. NO.	HINDI NAME	ENGLISH NAME	BOTANICAL NAME	PART USED
1	*Mustak*	Nutgrass	*Cyperus rotundus*	Bulbous root
2	*Kushtha*	Costus	*Saussurea lappa*	Root
3	*Haridra*	Turmeric	*Curcuma longa*	Dry rhizome
4	*Daruharidra*	Indian Berberri	*Berberis aristata*	Stem wood
5	*Vacha*	Sweet Flag	*Acorus calamus*	Dry rhizome
6	*Ativisha*	Indian Atees	*Aconitum heterophylum*	Root
7	*Katuka*	Picrorhiza	*Picrorhiza kurrao*	Root
8	*Chitrak*	Cyelon leadwort	*Plumbago zelanica*	Bark of Root
9	*Chirbilwa*	Indian Elm	*Holoptelia integrifolia*	Seeds
10	*Haimvati*	Oris root	*Iris ensata*	Root

v. *Vacha* *x. Haimvati vacha*

All drugs of *Lekhaniya Mahakashaya* were taken in equal quantities and made *Yavakuta* (coarse powder). The drug was prepared by Govt. Ayurvedic College Hospital Pharmacy, Patna, and given to the patient for *kwath* preparation.

- **Follow Up**

The total Duration was of 60 days and patient follow-up was done every 15 days.

- **Therapeutic Regimen**

For the present study of *Sthaulya*, 30 patients were selected from OPD no.10(Research unit) of Government Ayurvedic College and Hospital, Patna. Patients were given *Lekhaniya mahakshaya* in *kwath* form 25ml BD orally.

- **Assessment Criteria**

Assessment of the effects of therapy was done based on various subjective and objective criteria. For assessment, a detailed research proforma incorporating various parameters like *Asthavidha Pariksha, Dasvidha Pariksha*, etc. was created. Patients were thoroughly assessed after every 15 days during the entire study period.

A. Subjective Parameters:

For subjective parameters following symptoms will be assessed: -

I.चलस्फिगुदरस्तन (Pendulous buttocks, belly, and breasts):

0 (Nil) : Absence of movement.
1 (Mild) : Little movement after fast activity.
2 (Moderate) : Movement after mild activity.
3 (Severe) : No movement

II.जवोपरोध (Sluggishness in movement):

0 (Nil) : Fully Active.
1 (Mild) : Hesitate to start work but once started completes.
2 (Moderate) : Starts but does not complete it.
3 (Severe) : Doesn't have the drive, works under compulsion.

III.कृच्छ्रव्यवायता (Difficulty in intercourse)

0 (Nil) : Normal sexual performance without exertion.
1 (Mild) : Sexual performance with exertion.
2 (Moderate) : Sexual performance with exertion and breathlessness.
3 (Severe) : Sexual performance occasionally or monthly with exertion and breathlessness.

IV.दौर्बल्यम् (Weakness) :

0 (Nil) : No tiredness

1 (Mild) : Mild fatigue after doing work
2 (Moderate) : Tired after doing work
3 (Severe) : Works with great difficulty

V.दौर्गन्ध्यम् (Bad body odor) :

0 (Nil) : Absence of odour
1 (Mild) : Occasional bad odour
2 (Moderate) : Persistent bad odour
3 (Severe) : Persistent bad odor intolerable to the patient

VI.स्वेदाबाध : (Excessive Sweating) :

0 (Nil) : Normal perspiration
1 (Mild) : Mild perspiration after doing exertion
2 (Moderate) : Heavy perspiration after doing little exertion
3 (Severe) : Perspiration without exertion

VII.क्षुदातिमात्रम् (Excessive Hunger) :

0 (Nil) : Normal appetite
1 (Mild) : Intake of food in excess amount
2 (Moderate) : Feels hungry even after taking meals 3 times a day 3
(Severe) : Feels hungry even after taking meals 4 times a day.

VIII.पिपासातियोग (Excessive Thirst) :

0 (Nil) : Normal intake (about 2.5 lt./day of fluid
1 (Mild) : 2.5 - 3.5 lt./day of fluid
2 (Moderate) : 3.5 - 4.5 lt./day of fluid
3 (Severe) : > 5 lt./day of fluid

B. Objective Parameters:

For objective parameters following examinations will be done: -

I.B.M.I. (Body Mass Index):

0 (Nil) : B.M.I. is less than 30
1 (Mild) : B.M.I. is between 30-35
2 (Moderate) : B.M.I. is between 35-40
3 (Severe) : B.M.I. is between 40-45 or > 45

- **Body weight** : According to height.
- **W.H.R. (Waist Hip Ratio)** : WHR i.e., > 1.0 in men and > 0.85 in women indicates abdominal fat accumulation

C. Laboratory Investigations:

i) Routine Blood Investigation

- CBC

ii) Blood Sugar : a) Fasting
b) Random

iii) Lipid profile -

- Sr. Total Cholesterol
- Sr. Triglycerides
- Sr. LDL
- Sr. VLDL
- Sr. HDL

iv) Thyroid function test :For exclusion
v) Liver function test : For exclusion
vi) Renal function test : For exclusion

- **Assessment of Result:**

The result will be assessed based on symptom relief and improvement in terms of laboratory investigations. The result of the present clinical trial will be grouped in the following categories:

- **Relieved:**

i. Patients having >75% relief in terms of clinical symptoms.
ii. B.M.I. is 25 or less.
iii. Markedly change in Waist & hip circumference.

- **Improved:**

i. Patients having improvement between 45-75% in clinical symptoms
ii. B.M.I. is between 25 to 30.
iii. Slight changes in Waist & hip circumference.

- **No Improvement:**

i. Patients have an improvement of less than 40% in clinical symptoms.
ii. No change in B.M.I.
iii. No change in Waist & hip circumference.

- **Worse (Adverse Effect):**

i. No changes or increased clinical symptoms.
ii. If the patient has developed complications.
iii. No change or increased waist and hip circumference.

STATISTICAL METHODS:

The information gathered on the basis of observations made about various parameters was subjected to statistical analysis in terms of Mean, Standard Deviation (SD), and Standard Error (SE). Paired "t-test" was carried out at $p > 0.05$, $p<0.05$, $p<0.01$, $p<0.001$.

The obtained results were interpreted as:

Insignificant : $p>0.05$
Significant : $p<0.01$ and $p<0.05$

A. Therapeutic Observations

Assessment of the result of a clinical trial is based on the following criteria: -

- Response in Initial *Lakshanas* of *Sthaulya.*
- Effect on Body Weight.
- Effect on Body Mass Index.
- Effect on Waist Circumference.
- Effect on Hip Circumference.
- Changes in Biochemical and Haematological Parameters

Response in Initial *Lakshanas* of *Sthaulya:*

In the present study 8 *Lakshanas* (signs and symptoms) of *Sthaulya* were marked out. On the basis of their intensity, *Lakshanas* are divided into four categories i.e.; absent, mild, moderate, and severe. The efficacy of the trial drug was noted on the 15th, 30th, 45th, and 60thday.

Table no.28 Shows the effects of the trial drug on various signs and symptoms of *Sthaulya-*

S.N.	Signs & Symptoms	MEAN		%Relief	S. D	S. E	't' value	'p' value
		B. T	A. T					
1.	***Chala sphik, Udara, Stana*** (Pendulous buttocks, belly & breasts)	2.70	1.44	46.57%	0.44	0.08	14.65	P<0.01 Significant
2.	***Javoparodha*** (Sluggishness in movements)	2.925	1.111	62.02%	0.395	0.076	23.822	P<0.01 Significant
3.	***Swedabadha*** (Excessive Sweat)	2.550	1.070	57.97%	0.579	0.111	13.276	P<0.01 Significant

4.	***Krichhavyavayata*** (Difficulty in Intercourse)	2.642	1.357	48.65%	0.468	0.125	10.26	P<0.01 Significant
5.	***Kshudatimatrama*** (Excessive Appetite)	1.962	0.296	84.90%	0.480	0.092	18.02	P<0.01 Significant
6.	***Daurbalyam*** (Weakness)	2.880	1.074	62.82%	0.395	0.076	23.00	P<0.01 Significant
7.	***Pipasatiyogam*** (Excessive Thirst)	2.777	1.185	54.66%	0.579	0.111	13.60	P<0.01 Significant
8.	***Daurgandhyam*** (Foul Smell)	2.030	0.880	56.60%	0.540	0.106	10.82	P<0.01 Significant

- **Effect on Body Weight.**

S. N.	**Signs & Symptom**	**MEAN**		**M.D.**	**%Relief**	**S. D**	**S. E**	**'t'value**	**'p' value**
		B. T	**A. T**						
1.	Weight	86.648	79.222	7.4259	8.5702%	2.247	0.432	17.167	P<0.01*

*Significant

- **Effect on Body Mass Index.**

S. N.	**Signs & Symptoms**	**MEAN**		**M.D.**	**%Relief**	**S.D.**	**S. E**	**'t'value**	**'p' value**
		B. T	**A. T**						
1.	**B.M.I.**	34.38	31.40	2.88	8.38%	1.18	0.22	12.83	P<0.01*

*Significant

- **Effect on Waist Circumference**

S. N.	**Signs & Symptoms**	**MEAN**		**M.D**	**%Relief**	**S.D.**	**S. E**	**'t'value**	**'p' value**
		B. T	**A. T**						
1.	**Waist Circumference**	113.11	111.33	1.77	1.57%	1.18	0.22	7.77	P<0.01*

*Significant

- **Effect on Hip Circumference -**

S. N	**Signs & Symptoms**	**MEAN**		**M. D**	**%Relief**	**S.D**	**S.E**	**'t' value**	**'p' value**
		B. T	**A. T**						
1.	**Hip Circumference**	120.62	118.88	1.77	1.47%	1.08	0.20	8.50	P<0.01*

*Significant

- **Changes in Biochemical and Haematological Parameters**

1. Lipid Profile:

S. N.	**Signs & Symptoms**	**MEAN**		**M.D**	**%Relief**	**S. D**	**S.E**	**'t' value**	**'p' value**
		B. T	**A. T**						
1.	**TOTAL CHOLESTEROL**	237.74	202.37	35.37	14.72%	11.64	2.24	15.62	P<0.01*

*Significant

In this trial, 24 patients (88.88%) had moderate improvement (i.e.,50-74% relief) and 03 patients (11.11%) were improved (i.e.,25-49% relief) by administration of the trial drugs. This showed that the trial drug is effective in the management of *Santarpanjanya Vyadhi* w.s.r to *Sthaulya*.

❖ **Probable Mode of Action of Decoction of Lekhaniya Mahakashaya:**

Sthaulya is caused by hypo functioning of *Medo Dhatvagni* as a result of this Condition *Dushta Medo Dhatu* is increased in the body. As per *Sushruta*, the drug which performs *Lekhana Karma* is the main constituent of *Vayu* and Agni *Mahabhuta* hence the properties of *Lekhaniya Mahakashaya*.

Rasa - Katu, Tikta
Vipaka - Katu
Virya - Ushna
Guna - Laghu, Tikshna, Ruksha

All these properties of *Lekhaniya Mahakashaya* render it a *Medo Dhatu* depleting formulation because these properties are opposite to the properties of *Medo Dhatu.* Secondly, the properties of *Lekhaniya Mahakashaya* make it a *Jatharaagni* promoting formulation. *Jatharaagni* stimulation corrects hypo functioning of *Medo-Dhatvagni* and checks increase in the quantity and subsequent de-Position of *Medo Dhatu* in the body.

❖ **Characteristic and Action of Content of Lekhaniya Mahakashaya-**

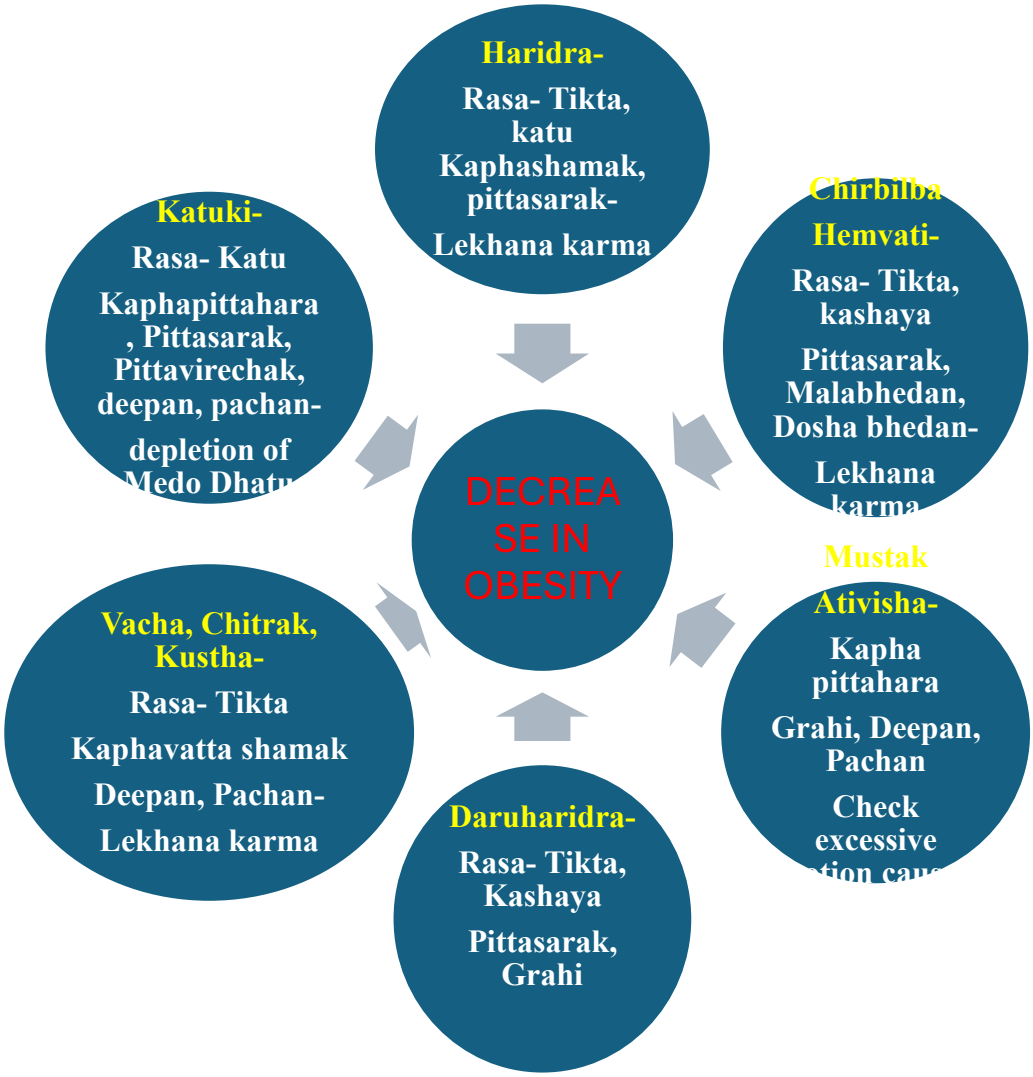
1) ***KATUKA***- *Pitta Rechak* and *Pitta Virechaka*, this drug excretes *Pitta* which is required for *Aahara Paka* this result in depletion of *Dhatu* mainly *Medo* and *Mamsa Dhatu* by inducing *Virechan*. It performs *Sodhana Karma* reducing *Medo Dhatu* in the body.

2) ***HARIDRA*** **AND** ***DARUHARIDRA*** - Stimulates *Agni* and performs *Lekhana Karma* because of their *Katu-Tikta* taste, *Katu Vipaka*, *Ushna Virya* and *Laghu Ruksha Guna*.

3) ***VACHA, CHITRAKA,*** **AND** ***KUSTHA*** - *Tikshna Guna* of *Vacha, Chitraka*, and *Kustha* along with the above-mentioned characteristics aids more edge to *Lekhana karma.*

CHIRBILVA **AND** ***HEMVATI***- Mainly perform *Lekhana Karma* on *Dhatu* and body because of their *Lekhana* properties. *Karanja* has been taken as *Pratinidhi dravya* of *Chirbilva* and *Swet Vacha* as that of *Hemvati* by *Chakrapani.*

4) ***MUSTAK*** **AND** ***ATIVISHA*** -Performs *Grahi Karma* hence they check the excessive motion caused by *Katuka. Grahi Karma* also helps re-absorption of water in the large intestine reducing the risk of a patient getting dehydrated because of loose motion.



❖ **Mode of Action as Per Modern View**

Constituent of *Lekhaniya Mahakashaya* has choleretic and purgative action since bile salt is required for the absorption of fat and lipid from the gut, their excretion would lead to decreased absorption of fat and lipids in the gut increasing fecal fat and bile salt content leading to decrease in obesity.

CONCLUSION

- *Sthaulya* is a *Dushya*-dominant *Vyadhi*.
- *Meda* is the main *Dushya* and *Kapha* is the main *Dosha* of *Sthaulya*.
- *Acharya Charaka* considered *Atisthaulya Purusha* as one out of the *Ashtanindtiya Purusha* which is correlated with obesity in modern medical science. W.H.O. has undertaken obesity in 10 selected risks to the health in "The World Health Report - 2002".
- On basis of the Etiopathogenesis and literary meaning *Sthaulya* can be correlated with Obesity
- Obesity is widespread in almost all socioeconomic classes.
- *Sthaulya* is a very prevalent disease in today's world that is causing a physical, mental and social impact on the suffering individual.
- Excessive indulgence in oily and fatty food, sedentary lifestyle, *Divaswapna, Manasika* factors like- *Harshanitya, Manasonivrita*, etc. along with genetic predisposition play a major role in the aetiopathogenesis of *Sthaulya*.
- *Acharya Charaka* has specially mentioned *Beejadosha* as the *nidana* for *Sthaulya*.

- *Nidanas* of *Sthaulya* mentioned in classics are now changing. Increasing stress, faulty dietary habits, and decreased awareness regarding exercise are becoming the prominent causative factors for *Sthaulya*
- *Acharya Sushruta,* in *Sushruta Samhita* has considered *Rasa* as the major pathological factor involved in obesity.
- *Kapha Prakriti* persons were found more prone to *Sthaulya.* So, they should be advised on proper diet regimens and exercise.
- The etiological factors lead to *Kapha* & *Meda Vriddhi* which block the microchannels causing *Samana Vayu* vitiation in the *Kostha* and causes *Jatharagni Sandhukshana* thereby increasing the person's appetite and increased intake of food ultimately leading to *Sthaulya Roga*
- The trial drug *Lekhaniya Mahakashay* is effective in the disease due to their *Deepana, Pachana, Lekhana, Rukshana, Medohara, Srotoshodhana, Aamapachana, Vatanulomana,kaphaghna,* etc. properties.
- As *Sthaulya* itself is a *Santarpanoth Vyadhi* and also *Kashtasadhya* so *Apatarpana Chikista* was prescribed for *Sthaulya*.
- All the patients in the group showed significant improvement in all subjective parameters as well as showed significant improvement in body Thus, it can be concluded that *Lekhaniya Mahakashaya Kwath* is proven to be an effective therapy and this regimen should be tested on large scale for a long duration of the trial with better parameters.
- **Thus, in this study,**

Null Hypothesis (H_0) is rejected and Alternative Hypothesis(H_1) is accepted.

Suggestion

- *Sthaulya* is a *Yapya* type of disease. Thus, it is proposed that the medicines should be administered for a longer duration to provide better results to patients. For further research, some modifications in the treatment schedule should be done, i.e., the addition of *Panchakarma* therapy *(Vamana, Virechana, Basti)*.

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