



**A CLINICAL STUDY TO EVALUATE THE EFFECT OF *MUSTADI KWATH* IN
STHOULYA (OBESITY)**

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ABSTRACT

In the present century due to the busy and sedentary life people open the gate to welcome numerous diseases. *Sthoulya* is one among the major diseases that falls under the category of *Santarpanotha vyadhi*. The term overweight and obesity refers to body weight that is greater than what is considered healthy for a certain height. *Sthoulya* is mainly caused by *Kapha*, *Vata Doshas* and *Meda Dhatu*. *Mustadi Kwath* has better results in the management of *Sthoulya*, as it does *Kapha-Vatahara*, *Medohara*. So, the present study has been conducted to evaluate the effect of *Mustadi Kwath* in *Sthoulya*. The study has been conducted in 50 patients. One with which is *Kapha-Medahara* & *Tridosahara* respectively because of *Laghu*, *Ruksha* & *Ushna* properties. The present study concludes saying *Mustadi Kwath* showed better results.

KEYWORDS: *Sthoulya*, *Santarpanotha Vyadhi*, Obesity, *Vata*, *Kapha*, *Meda*.

INTRODUCTION

Sthoulya is one among the major diseases that falls under the category of *Santarpanotha Vyadhi* (Nutritional disorder). The term overweight and obesity refers to body weight that is greater than what is considered healthy for a certain height and hence overweight can be commonly said as pre obesity. According to W.H.O overall about 13% of the world's adult population (11% men and 15% women) were obese in 2016. The worldwide prevalence of obesity nearly tripled between 1975 and 2016. Obesity is a condition in which the levels of Lipoproteins, Cholesterol and Triglyceride are raised in plasma. Obesity is a major risk factor in the development of chronic non-communicable diseases like Cardiovascular disease, High Blood Pressure, Stroke, Type-2 Diabetes, Osteoarthritis, Liver cirrhosis, Exertional Dyspnoea, Varicose veins, PCOS etc. There is no much treatment available for Obesity other than physical exercise, supervised low-calorie diet, appetite suppressant drugs and surgery. In the texts of *Ayurveda*, an elaborate description has been given about *Sthoulya*. *Sthoulya* comes under 20 *Kaphaja Nanatmaja Vyadhi*. *Acharyas* considered *Atisthula* as one among the *Astuninditta Purusha*. *Sthoulya* is mainly caused by *Kapha*, *Vata Doshas* and *Meda Dhatu*. *Sthoulya* interferes the daily activities as it causes *Javoprodha* (Hampered movements), *Swedadhikyata* (excessive sweating), *Ayasen shwasa* (Exertional dyspnoea), *Nidra-tiyoga* (Excess sleeping), *Daurgandhya* (Bad body

odour), *Dourbalya* (Deability), *Krichhvyavayata* (Difficulty in sexual act), *Adhika kshudha* (Excessive hunger) etc. *Nidana Parivarjana* (Avoiding the causative factors), *Karshana*, *Guru atarpana* and *Shodhana* (purification) are the principles of treatment in *Sthoulya*. The utility of *Mustadi Kwath* has found better results in the management of *Sthoulya*. In this present study *Mustadi Kwath* which acts as *Kapha Medahara* & *Tridosahara* by its property of *Laghu*, *Ushna*, *Tikshna*, *Ruksha* and *Katu*, *Kashaya Rasa* dominant. The present study was conducted with 50 patients, which were randomly selected. The subjective and objective parameters were assessed before, after treatment and after follow up.

MATERIALS AND METHODS

Patients suffering from *Sthoulya* were selected randomly from OPD of Rishikul Ayurvedic Medical College & Hospital, based on diagnostic criteria. The trial drugs are collected from local areas and market after being properly identified. *Mustadi Kwath* was prepared in the Hans Pharmacy.

Composition of Trial Drug**Table No.1: Mustadi Kwath Constituents.**

| Name of drug | Botanical name | Family | Part | Part used |
|--------------|----------------------------------|----------------|------|------------|
| Musta | <i>Cyperus rotundus</i> | Cyperaceae | 1 | Kanda |
| Aaragwadha | <i>Cassia fistula</i> | Leguminosae | 1 | Phalamajja |
| Patha | <i>Cissampelos pareria</i> | Menispermaceae | 1 | Mool |
| Amalaki | <i>Embllica officinalis</i> | Euphorbiaceae | 1 | Phala |
| Haritaki | <i>Terminalia chebula</i> | Combretaceae | 1 | Phala |
| Vibhitaki | <i>Terminalia bellirica</i> | Combretaceae | 1 | Phala |
| Devadaru | <i>Cedrus deodara</i> | Pinaceae | 1 | Cedar wood |
| Swadamshtra | <i>Tribulus terrestris</i> | Zygophyllaceae | 1 | Mool |
| Khadira | <i>Acacia catechu</i> | Leguminosae | 1 | Twak |
| Nimba | <i>Azadirachta indica</i> | Meliaceae | 1 | Twak |
| Haridra | <i>Curcuma longa</i> | Zingiberaceae | 1 | Kanda |
| Daruharidra | <i>Berberis aristata</i> | Berberidaceae | 1 | Mool |
| Kutaja | <i>Holarrhena antidysentrica</i> | Apocynaceae | 1 | Twak |
| Twaka | <i>Cinnamomum zeylanicum</i> | Lauraceae | 1 | Twak |

Inclusion Criteria

1. Patients with *Pratyatama Lakshana* of *Sthoulya* selected for the study.
2. Patients between age group of 30 – 60 years.
3. Patients of either sex with BMI of $>25\text{kg/m}^2$ and upto 34.9kg/m^2 (Obesity grade 1).

Exclusion Criteria

1. Obese patients associated with DM, Hypertension, Hypothyroidism, Cushing Syndrome and any systemic diseases.
2. Obesity due to secondary causes.

Study design

It was a simple prospective clinical study and total 50 patients were taken. A clinical study was done by treating the patient with *Mustadi Kwath* respectively.

Posology

Mustadi Kwath: 50 patients were subjected to *Mustadi Kwath* 40 ml with equal amount of water twice a day 1 hr. after meal.

2. Krichha-vyavayata (According to age)

| | | |
|--|---|----------|
| Normal sexual activity | 0 | Normal |
| Slight weakness in sexual activities | 1 | Mild |
| More weakness in sexual activities and decrease in frequency | 2 | Moderate |
| Unable to perform any sexual activities | 3 | Severe |

3. Kshudra swasa

| | | |
|--|---|----------|
| Absence of dyspnoea | 0 | Normal |
| Dyspnoea on heavy routine physical work | 1 | Mild |
| Dyspnoea on slight routine physical work | 2 | Moderate |
| Dyspnoea on even routine physical work | 3 | Severe |

4. Dourbalya

| | | |
|---|---|----------|
| No abnormal weakness | 0 | Normal |
| Weakness in routine heavy physical work | 1 | Mild |
| Weakness in routine slight physical work | 2 | Moderate |
| Feeling of weakness even in rest and cannot do any heavy work | 3 | Severe |

Period of Study: 18 months (1½ yr.)

Duration of Treatment: 90 days

Assessment: at the interval of 15 days

Follow up: after completion of trial at 30th day
Patients were assessed clinically on 0, 15th, 30th, 45th, 60th, 75th and 90th day.

Assessment criteria: Assessment of the condition was done based on a detail Proforma, adopting standard methods of scoring of subjective and objective parameters were analysed statistically.

Subjective parameters with grading**1. Javoprodha**

| | | |
|------------------------------|---|----------|
| Absent | 0 | Normal |
| With excessive physical work | 1 | Mild |
| With heavy physical work | 2 | Moderate |
| With routine work | 3 | Severe |

5. *Atisweda*

| | | |
|---|---|----------|
| No feeling of excessive sweating | 0 | Normal |
| Moderate to excessive sweating in heavy physical work | 1 | Mild |
| Moderate to excessive sweating in light physical work | 2 | Moderate |
| Sweating even at rest or in cold season | 3 | Severe |

6. *Daurgandhya*

| | | |
|---|---|----------|
| No foul body odor | 0 | Normal |
| Foul body odor on excessive sweating | 1 | Mild |
| Intense foul body odor even without sweating | 2 | Moderate |
| Patient feels intense foul body odor immediately even after taking bath or changing clothes | 3 | Severe |

7. *Atikshudha*

| | | |
|---|---|----------|
| Having normal diet, patient feels hungry | 0 | Normal |
| Patient taking 3 meals in presence of slight hunger soon after meal | 1 | Mild |
| Patients eats 3 to 5 times a day feels hungry even after taking meal | 2 | Moderate |
| Patient eats more than five times a day feels hungry even after taking meal | 3 | Severe |

8. *Nidra-atiyoga*

| | | |
|---|---|----------|
| Total sleeping hours 5-7 in a day | 0 | Normal |
| Total sleeping hours more than 7 without day sleep | 1 | Mild |
| Sleeping hours more than 7 with day sleep | 2 | Moderate |
| More than 7 hours sleep and feeling sleepy most of the time | 3 | Severe |

Objective parameters

- Body Weight** = Kg
- Body Mass Index** = Weight (kg)/Height (m²)
- Waist circumference** = Circumference around the waist (inches)
- Hip circumference** = Circumference around the hip (inches)
- Waist hip ratio** = Waist circumference/Hip circumference
- Skin fold thickness** = Skin fold thickness (mm) over the middle portion of triceps muscle

Investigations (Before treatment & after treatment)

- Hb%
- T.L.C.
- D.L.C.
- Blood sugar (Fasting, PP)
- Lipid profile
- Thyroid profile

- K.F.T.
- L.F.T.
- Urine (routine, microscopic)

Overall assessment: Overall assessment of result was made by considering the collective effect of subjective and objective parameters of *Mustadi Kwath*. The assessment was as follows:

- Complete remission: 100% relief
- Marked improvement: >75% to 99% relief
- Moderate improvement: >50% to 75% relief
- Mild improvement: >25% to 50% relief
- No improvement: <25% relief

Statistical method: Assessment was done by considering the base line data of subjective and objective parameters to pre and post medication and was analysed statistically with the help of SPSS software by using “t” test.

RESULTSTable No.2: Assessment of result of *Mustadi Kwath* in Subjective parameters of *Sthoulya*.

| Parameter | Mean | | Median | | SD | | % Effect | Wilcoxon W | P-Value | Result |
|------------------------|------|------|--------|----|-------|-------|----------|------------|---------|--------|
| | BT | AT | BT | AT | BT | AT | | | | |
| <i>Javoprodha</i> | 2.78 | 0.62 | 3 | 1 | 0.599 | 0.49 | 77.6 | 1887 | <0.05 | Sig |
| <i>Swedadhikyata</i> | 1.80 | 0.40 | 2 | 0 | 0.786 | 0.495 | 77.78 | 1795 | <0.05 | Sig |
| <i>Nidra-atiyoga</i> | 1.82 | 0.18 | 2 | 0 | 1.093 | 0.442 | 90.24 | 1896 | <0.001 | HS |
| <i>Ayasen shwasa</i> | 2.69 | 0.69 | 3 | 1 | 0.821 | 0.468 | 74.38 | 1061 | <0.05 | Sig |
| <i>Krichhvyavayata</i> | 0.20 | 0.11 | 0 | 0 | 0.694 | 0.383 | 44.44 | 1632 | >0.05 | NS |
| <i>Daurgandhya</i> | 1.16 | 0.27 | 2 | 0 | 0.976 | 0.447 | 76.92 | 1925 | <0.05 | Sig |
| <i>Dourbalya</i> | 2.31 | 0.49 | 2 | 0 | 0.793 | 0.506 | 78.85 | 1860 | <0.05 | Sig |
| <i>Adhika-kshudha</i> | 1.84 | 0.04 | 2 | 0 | 0.903 | 0.208 | 97.59 | 1860 | <0.001 | HS |

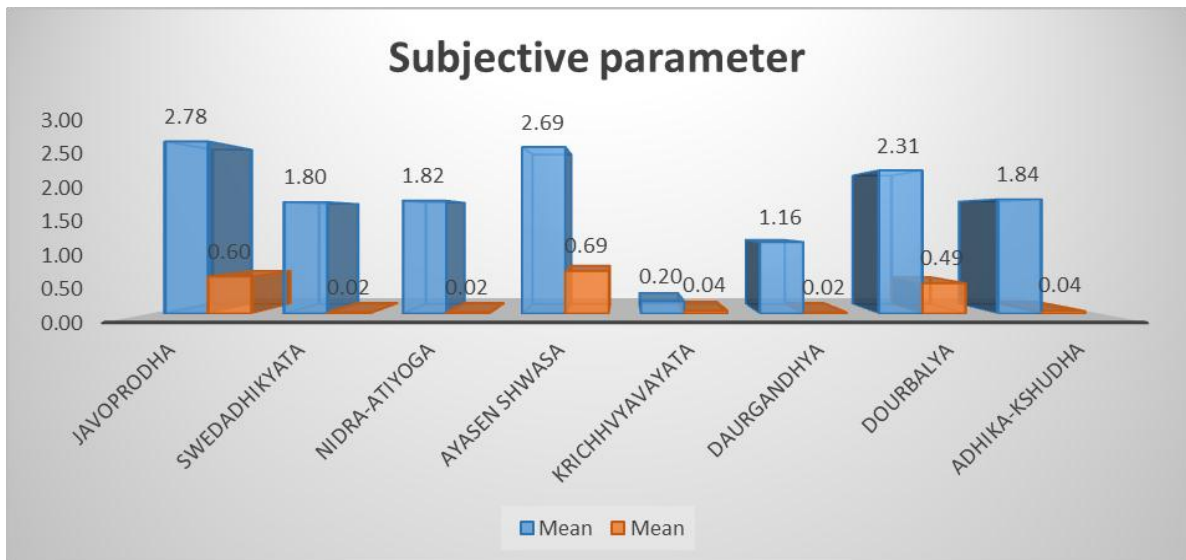


Table No.3: Assessment of result of *Mustadi Kwath* in Objective parameters of *Sthoulya*.

| Parameter | Mean | | SD | | T statistics | P-Value | % Effect | Result |
|--------------------------|-------|-------|-------|-------|--------------|---------|----------|--------|
| | BT | AT | BT | AT | | | | |
| Body Wt. (Kg) | 80.08 | 75.89 | 11.62 | 11.45 | 38.79 | <0.05 | 5.23 | Sig |
| BMI (Kg/m ²) | 30.93 | 29.2 | 2.58 | 2.71 | 16.71 | <0.05 | 5.6 | Sig |
| Skin fold thickness | 31 | 28.42 | 5.92 | 5.7 | 29.15 | <0.05 | 8.31 | Sig |
| Waist Circumference | 42.68 | 35.68 | 5.66 | 5.71 | 21.62 | <0.05 | 16.4 | Sig |
| Hip Circumference | 44.94 | 41.6 | 5.043 | 5.076 | 18.06 | <0.05 | 7.44 | Sig |
| Waist-Hip Ratio | 2.203 | 2.045 | 8.354 | 7.921 | 2.449 | <0.05 | 7.2 | Sig |

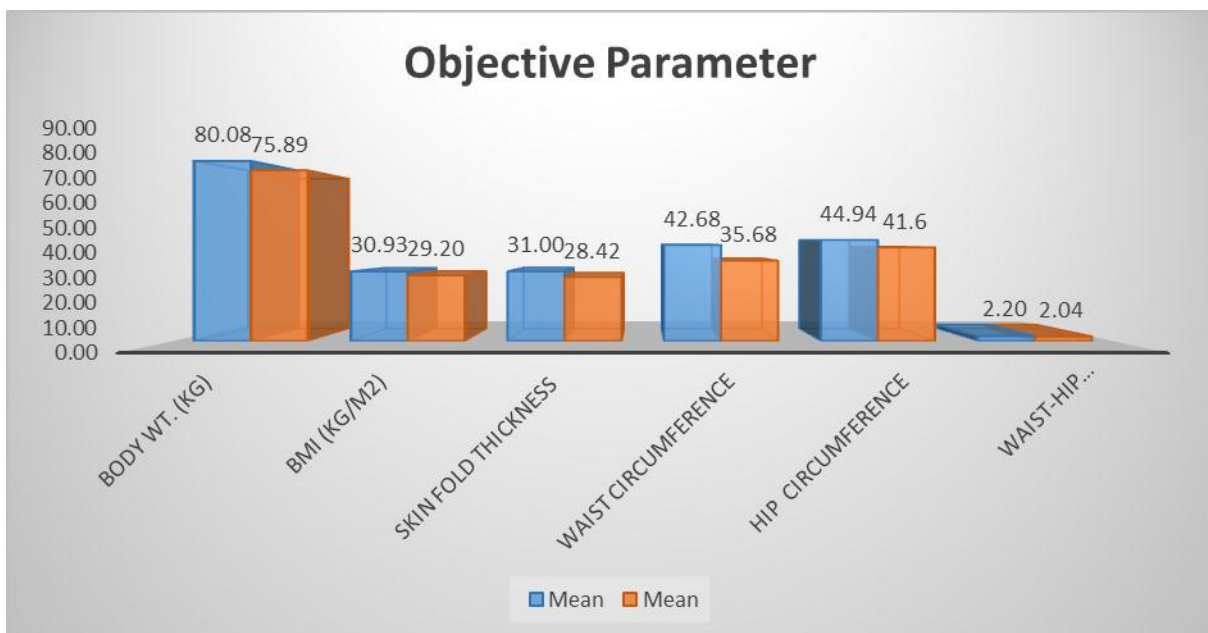


Table No.-4: Estimation of Overall response in Subjective Parameters.

| Overall Effect | Frequency | Percentage |
|----------------------|-----------|------------|
| Complete Relief | 8 | 17.78 |
| Marked Improvement | 35 | 77.77 |
| Moderate Improvement | 2 | 4.44 |
| Mild Improvement | 0 | 0.00 |
| No Change | 0 | 0.00 |
| TOTAL | 45 | 100.00 |

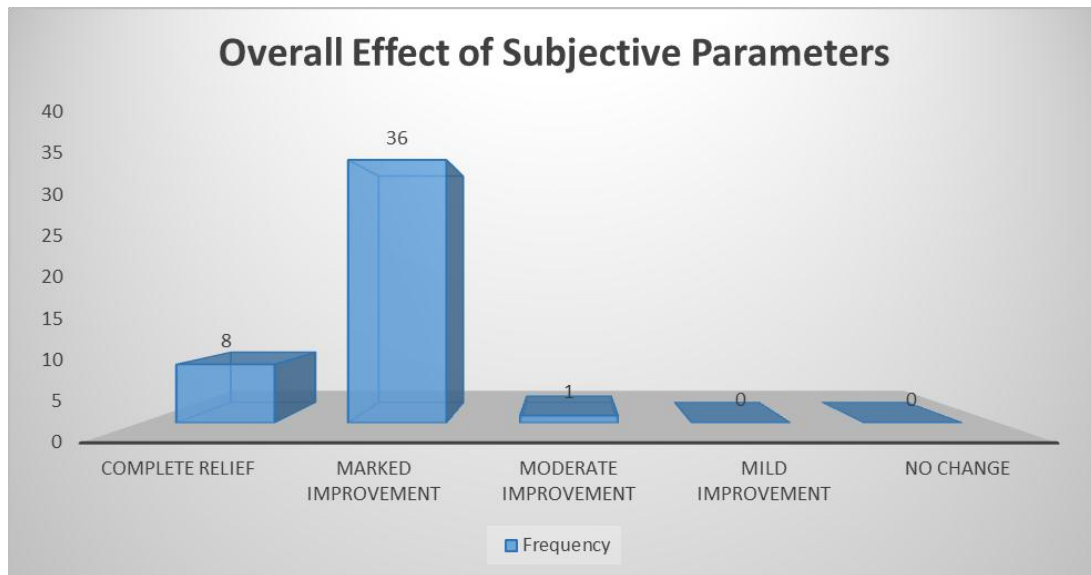
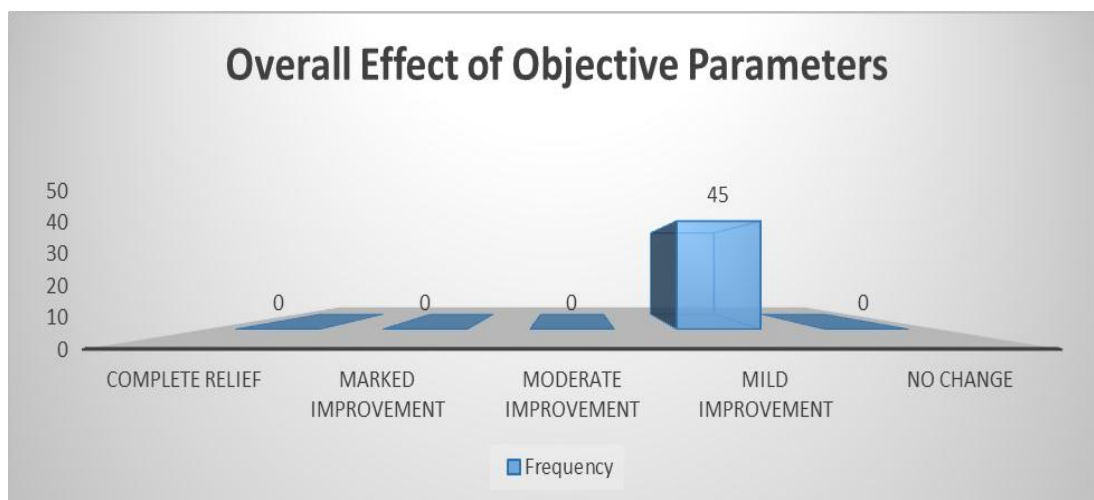


Table No. 5: Estimation of Overall response in Objective Parameters

| Overall Effect | Frequency | Percentage |
|----------------------|-----------|------------|
| Complete Relief | 0 | 0 |
| Marked Improvement | 0 | 0 |
| Moderate Improvement | 0 | 0 |
| Mild Improvement | 45 | 100 |
| No Change | 0 | 0 |
| TOTAL | 45 | 100 |



DISCUSSION

In the present study maximum incidence of *Sthoulya* was found in females than in male and most of them belong to age group between 30-40 years and belong to vegetarian diet. *Vishma Agni* (taking food irregularly or without following a particular time and proper quantity) & having irregular bowel habit and Hereditary factors are the main causes found in obese females. *Divaswapa*, sedentary life style and *Avara Vyayam Shakti* were also found in majority of the patients.

Discussion on drug

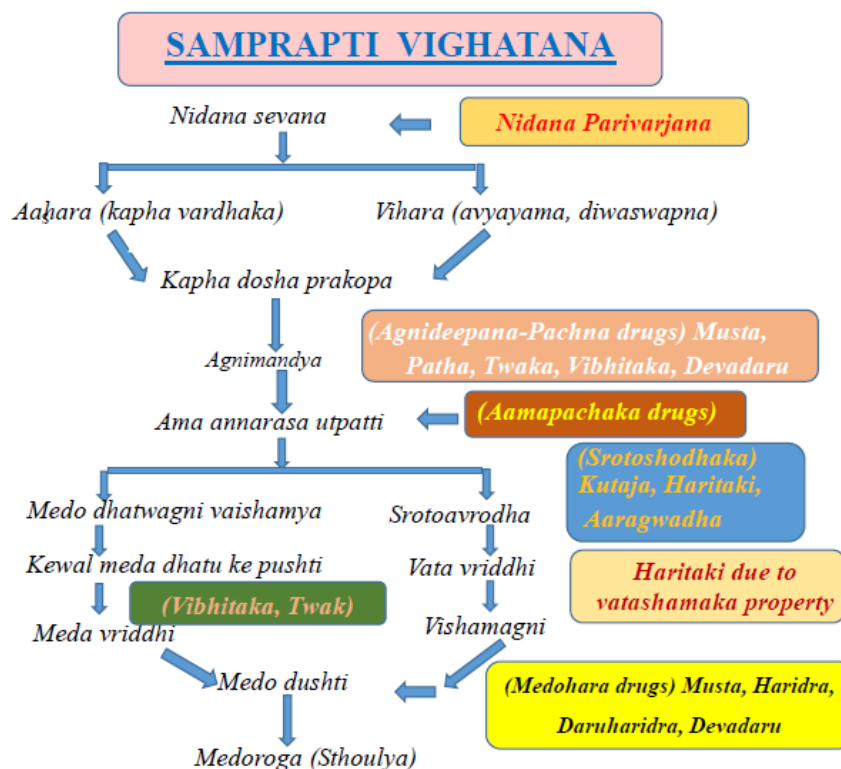
Sthoulya is one of the *Santarpanajanya vyadhi* it is best dealt with *Apatarpana Chikitsa*. *Sthoulya* is associated

with *Kapha* predominant, *Vata Dosha* and *Meda dathu*. *Mustadi Kwath* acts as *Meda-Kaphahara* & *Tridosahara* in nature. *Patha*, *Haritaki*, *Vibhitaki*, *Devadaru*, *Haridra*, *Daruharidra*, *Twak* have *Ushna Virya* (hot potency). *Musta*, *Patha*, *Devadaru*, *Haridra*, *Daruharidra*, *Khadira*, *Nimba*, *Kutaja*, *Twak* have *Katu Vipaka* & *Laghu* (light) *Ruksha* (dry) *guna*. On the whole all these drugs have opposite qualities of *Kapha* and *Meda* acts as *Kapha Medahara*. So, *Mustadi Kwath* was selected for *Sthoulya*. There by it may reduce *Javoprodha* (Hampered movements), *Swedadhikyata* (Excessive sweating), *Ayasen shwasa* (Exertional dyspnoea), *Nidra-atiyoga* (Excess sleeping), *Daurgandhya* (Bad body odour), *Dourbalya* (Deability),

Krichhvyavayata (Difficulty in sexual act), *Adhika kshudha* (excessive hunger).

Probable Pharmacological Action of the contents of *Mustadi Kwath*

- By looking at the individual herbal constituents and their pharmacological action as mentioned in *Ayurvedic* literatures as well as shown in recent studies, it appears that the most of the contents of *Mustadi Kwath* have *Tridoshashamaka*, *Kaphapittashamaka*, *Lekhaniya*, *Medohara*, *Pramehaghna*, *Deepana-pachana*, *Hridya*, *Shrotoshodhaka* etc. properties. In this way the properties of the contents of *Mustadi Kwath* help in the *Samprativighatana* of the disease.
- Most of the contents in formulation are *Katu*, *Tikta*, *Kashaya Rasa*, *Ushna Virya*, *Katu Vipaka*, *Laghu Ruksha Guna* have *Kapha Shamaka* properties. *Tikta Rasa* and *Kashaya Rasa* also subsides *Kapha Dosha*.
- *Patha* and *Gokshura* are *Mutravirechaka* which brings about diuresis relieving the body from excess *Kleda*.
- *Aaragwadha*, *Kutaja*, *Patha*, *Nimba*, *Khadira*, *Haridra*, *Daruharidra* are known to act on *Medo Dhatu* and allied *Dhatu*s and are indicated in diseases like *Kustha*, *Medoroga*, *Prameha*. Hence due to similarity of *Dosha* and *Dushyas*, it can be successfully used in *Sthoulya*.
- These drugs relieve the body to excess of *Kapha*, *Meda*, *Vasa*, *Sweda* and *Kleda* by diminishing their *Drava Guna*.
- *Triphala* and *Aaragwadha* have mild purgative properties which causes *Anulomana* which further corrects the *Vata dosha* bringing an end to the *Vata pradhana Samprapti*.
- Drugs like *Musta*, *Devadaru*, *Twaka*, *Kutaja*, *Nimba*, *Patha*, *Triphala* are *Agnideepana* leading to proper formation of the *Rasadi Dhatu*s.
- *Patha*, *Triphala*, *Musta*, *Haridra*, *Daruharidra* digest the *Ama Dosha (Amapachana)* present at the *Jathragni* level as well as the *Medodhatvagni* level.
- Also, drugs like *Triphala*, *Khadira* are *Rasayana* in nature which lead to formation of optimal *Dhatu*s and protect the body from injury due to vitiated *Doshas*. Some of the research studies carried out on these drugs confirmed both hypoglycemic and hypolipidemic activities.
- *Musta*, *Haridra*, *Daruharidra* etc. having *Lekhana*, *Rechaka* and *Sthoulyahara* properties.
- *Triphala* and *Haridra* are useful in the management of *Sthoulya*. They may have profound influence on reduction of Bodyweight and Dyslipidemia.
- According to *Acharya Sharangdhara*, *Haritaki* is the best medicine for *Amapachaka* and alleviates the *Srotorodha* by *Ushna*, *Tikshna Guna*.



CONCLUSION

- In present Scenario, regarding the etiological factors it is found that sweet and oily food articles like Pizza, burger, chocolates, pastries etc. sedentary or

stressful lifestyle are the most common factors which are the triggered causes of *Sthoulya*.

- *Sthoulya* being a *Kapha* dominance & even involvement of *Tridosha* can be evident from its signs & symptoms.
- *Sthoulya* in modern medical science has similarity with Obesity.
- Most of the drugs are *Katu*, *Tikta*, *Kashaya Rasa*, *Ushna Virya*, *Katu Vipaka*, *Laghu Ruksha Guna* have *Kapha Shamaka* properties.
- Most of the patients were reported in the chronic stage of Obesity (58%) in 0-2 yrs. and had previously undergone allopathic treatment. It clearly shows the relapsing nature of the disease.
- Complete relief were found in 8 patients (17.78%) in Subjective parameters which were acute newly diagnosed due to follow of strict instructions of diet, routine and medications as they were eager to reduce their weight.
- It suggests that, long term treatment is necessary for control of the disease.
- In present study, effect of *Mustadi Kwath* was assessed by using the classical symptoms of *Sthoulya*.
- The result demonstrated that drug was very much effective for relieving the sign and symptoms of the patients of *Sthoulya*.
- *Aadarasha* (best) *Chikitsa* is that which cure the disease and also not causes any other disease, so treatment of *Sthoulya* is an ideal choice.
- *Mustadi Kwath* may be a better choice in the management of *Sthoulya* as it not only normalized lipid profile but also reduces the chance of development of metabolic syndrome by reducing weight and chance of development of Diabetes.
- The present research also proved that there is major role of *Agni* and *Ama* in pathogenesis of *Sthoulya* and drugs having *Dipana*, *Pachana*, *Amapachaka*, *Kaphamedohara* and *Srotoshodhaka* action are highly effective.
- No adverse effect of the therapy was noted during the trial and in the follow up period.

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