ASSESSMENT OF GURU GUNA OF KAPHA DOSHA W.S.R. TO EFFICACY OF TRYUSHANAADI LAUHA IN STHAULYA

Niharika Sharma[1], Chhaju Ram Yadav[2], M S Meena[3]

P.G. Scholar, [2]Assistant Professor, Director

P.G. Deptt. of Kriya Sharir, NIA, Jaipur, Rajasthan, India

ABSTRACT

Tridosha are the substances having specific *Guna* (quality) & *Karma* (functions). *Guna* are potential energy of *Dravya* and *Karma* are execution of this energy (*Guna*). Here, among all *Guna*, *Guru Guna* of *Kapha Dosha* is chosen for research work as *Guru Guna* is first & foremost *Guna* of *Kapha* described by Acharya *Charaka*. *Sthaulya* simply is the increased physical *Guruta* of body. It is *Kaphaj Nanatmaj Vyadhi*. *Sthaulya* can be described as "*Medo roga, Medovriddhi, Medasvi* and *Ati- Sthaulya*. *Sthaulya* can be described as having heaviness and bulkiness of body due to extensive growth or abnormal increase of *Medodhatu* resulting in to pendulous appearance of buttocks, belly, and breast with decrease in energy level. *Yogratnakar* had described the use of *Tryushanaadi Lauha* in the management of *Sthaulya*. A clinical trial was done with *Tryushanaadi Lauha* on randomly selected 30 clinically diagnosed patients of *Sthaulya*. Out of which, 15 patients were treated with *Tryushanaadi Lauha* & rest 15 with Placebo. *Tryushanaadi Lauha* has highly significant result in *Sthaulya*. It also reduces the *Guru Guna* of *Kapha Dosha*.

Keywords: *Kapha Dosha, Guna, Guru Guna, Sthaulya, Tryushanaadi Lauha*

INTRODUCTION

Today is the era of modernization and fast life. Everybody is busy and living stressful life. Consumption of fast foods having high calories is also increasing. We have every comfort of living and we are not doing any kind of physical activity and so body fats are increasing in our body, which invites the disorders like hypertension, heart diseases and diabetes. industrialization, stress during the work, dietary habits, lack of exercise and various varieties among the daily diet e.g. fast food, freeze fruits, increased amount of soft drinks and beverages, canned foods results into the disturbance of *Agni* or metabolism and ultimately leads to clinical entity known as Obesity or *Sthaulya*.

Obesity is perhaps most prevalent form of malnutrition. Obesity is a clinical term and is referred for overweight. Obesity is defined as excess of adipose tissue or fat that imparts health risk. Body weight of 20% excess over ideal weight for age, sex, and height is considered as health risk. Obesity has reached epidemic proportions in India in 21st century, with morbid obesity affecting 5 % of country's population. In northern India, Obesity was most prevalent in urban populations, (Male-5.5%, Female-12.6 %) followed by urban slums (Male-1.9 % female 7.2%). Obesity rates were the lowest in rural population (Male 1.6 %, Female 3.8%).

Overweight or Obesity may not be considered as a specific disease, but it is

certainly the Mother of degenerative diseases in adult life. Prevention and control of this problem must therefore claim priority attention. Many theories have been put forward with new hypothesis describing this disorder in *Ayurveda* as well as in other systems of medical sciences; still there is enough scope to work out on management aspect of the *Sthaulya*.

AIMS AND OBJECTIVE

- To evaluate the assessment criteria for *Guru Guna* of *Kapha Dosha.*
- Clinical assessment of *Guru Guna of Kapha Dosha w.s.r. to Sthaulya.*
- Conceptual evaluation of etiopathogenesis of *Medodhatu Vriddhi* w.s.r. to Obesity.
- To evaluate the clinical efficacy of *Tryushanaadi Lauha* in *Sthaulya*.

MATERIALS REQUIRED

Here we have mentioned critical review of relevant literature of *Medodhatu Vriddhi* from *Ayurvedic* text books, previous research paper, different medical text books & journals.

CONCEPTUAL STUDY

Principally, *Tridosha* are the substances having specific *Guna* (quality) & *Karma* (functions). Attributes being dependent to substance (*Dravya*) are called *Guna*. *Guna* are potential energy of *Dravya* and *Karma* are execution of this energy (*Guna*).[1]

The identification & understanding of a substance and its separate experience or knowledge is collected on the basis of its attributes (properties) and actions. *Ayurveda* deals with substances for the evolution, development and maintenance of body and diets as well as medicines are essentially required for this purpose.

Gurvadi Guna are called *Sharir Guna* as these attribute are commonly present in body tissues and *Dosha*.[2] On the basis of these *Guna* present in drugs & di-
ets *Dosha*, *Dhatu* & *Mala Samyavastha* is maintained. Importance of *Guna* lies in the fact that these *Guna* are essential to understand functions of *Dosha* & these make principle basis of treatment.

Kapha, known as *Shleshma* is, perhaps a concrete and stable substance as compared to other two members of *Dosha* triad. *Acharya Charaka* considers that *Kapha*, in its normal states of functioning represents a potential source of strength & resistance to disease and decay i.e. *Bala & Ojas*.[3]

Here, among all *Guna*, *Guru Guna* of *Kapha Dosha* is chosen for research work as *Guru Guna* is first & foremost *Guna* of *Kapha* described by *Charaka*. Aso all important and most significant functions of *Kapha* like *Brimhanan*, *Puranam* and *Sthairya* (stability and durability to body & strength to limbs) are due to *Guru Guna* of *Kapha Dosha*.

Sthaulya simply is the increased physical *Guruta* of body. It is *Kaphaj Nanatmaj Vyadhi*.[4] *Acharya Charaka* described *Sthaulya* one among eight undesirable physical condition (*Asta Nindita Purusha*).[5]

Sthaulya can be described as "*Medo roga, Medovriddhi, Medasvi* and *Ati- Sthaulya*. *Sthaulya* can be described as having heaviness and bulkiness of body due to extensive growth or abnormal increase of *Medodhatu* resulting in to pendulous appearance of buttocks, belly, and breast with decrease in energy level. Over indulgence in *Kapha & Meda Sadharmi Amarasa* containing etiological factors leads to *Kapha Bhuishtha Dosha Vruddhi* in the body, which due to its very nature, produces *Agni Vikruti* causing the production of *Ama*. This *Ama* goes directly to *Meda Dhatu* & leads to accumulation of *Meda* by creating *Medodhatwagni-Mandya*. Vitiated *Kapha & Meda* causes

Medovaha Sroto Sanga, leading to *Margavrodha* of *Vata*. This vitiated *Vata* circulates in whole body especially in the *Koshta*, later on causing *Jathragni Sandhukshana* which results in *Kshudha-Adhikya* & *Shighra Jarana* of *Ahara*. *Medodhatwagni Mandya* takes place due to which the capacity to digest *Medaamsa* by the *Medodhatwagni* is hampered, leading to the formation of *Apakwa Meda* which is incapable of nourishing the *Uttar Dhatu*. The *Ama Meda* gets accumulated in *Sarvanga* especially in the *Sphik-Udara-Stana* regions resulting in *Sthaulya*[6]. *Sthaulya* may be correlated with Obesity on the basis of clinical signs and complications of disease.

DRUG REVIEW

In this study, **Tryushanaadi Lauha** has been selected on the basis of recommendation of **Yogaratnakar** as indicated in *Sthaulya.* [7]

Table: 1: Contents of *Tryushanaadi Lauha*

S. No.	Drug	Parts used
1.	*Shunthi*	Rhizome
2.	*Maricha*	Fruit
3.	*Pippali*	Fruit
4.	*Haritaki*	Fruit
5.	*Vibhitak*	Fruit
6.	*Amalaki*	Fruit
7.	*Chavya*	Fruit
8.	Chitraka Moola	Root
9.	*Vida lavana*	-
10.	Audbhida Lavana	-
11.	*Bakuchi*	Seed
12.	Saindhava Lavana	-
13.	Sauvarchala Lavana	-
14.	*Ayoraja (Lauha Bhasma)*	-

Method of Preparation

All the raw drugs were taken in equal proportion. They were then powdered with help of grinder and sieved for fine powder. Finer the powder the better its therapeutic value. It should be free from moisture.

Dose- One *Masha* (Approx.750 mg) Twice a day

Anupana- Madhu & Ghrita (Unequal)

Duration of Trial- 3 months

CLINICAL STUDY

The study was conducted on 30 clinically and pathologically diagnosed patients of *Sthaulya* on the basis of sign & symptoms mentioned in *Ayurvedic* text & history of illness from patient.

Selection of Patients

Patients were selected randomly irrespective of age, sex, religion, education, socio economic condition & occupation from the OPD/IPD of *Arogyashala* and *Bombaywala* Hospitals of National Institute of Ayurveda, Jaipur (Rajasthan). These 30 patients were divided into two equal groups with the help of an arbitrary prepared random table and different drugs were given.

Inclusive Criteria:

➢ Age between 16- 70 yr.
➢ Sex either
➢ Patients having clinical sign & symptoms of *Sthaulya* as per classical *Ayurvedic* literature.
➢ Patients who are ready to sign the consent form.

Exclusive Criteria:

➢ Obesity due to hereditary predisposition.
➢ Obesity due to Hypothyroidism
➢ Patient having drug induced Obesity.
➢ Patient of Obesity with severe hypertension & Diabetes mellitus.
➢ Obesity in lactating women.
➢ Patient with evidence of Renal, Hepatic & Cardiac involvement.

Withdrawal Criteria:

1. Patients developing any threatening complication during this trial. If any adverse effects would be found then it will be withdrawn from the study and informed to nearby Pharmacovigilance cell.
2. Patient not willing to continue treatment.
3. Any other acute illness.

PARAMETERS OF EVALUATION:

The effect of trial drug was assessed in terms of Subjective, Anthropometry & Biochemical parameters.

Subjective parameters: All the patients were registered for clinical trial and were looked for any changes, in their clinical manifestations.

(a) Assessment of *Sthaulya:* For *Sthaulya* following symptoms were assessed *Angachalatva, Atiksudha, Atipipasa, Javoprodh, Daurgandhya, Swedadhikya, Daurbalya, Nidradhikya, Krichchavyavayta, Gaurava, Kshudra Shwasa, Angasada, Krathana,* and *Snigdhangata.* Grading was done for all symptoms & clinical trial was conducted by making a special research Performa. The symptoms score obtained before and after treatment, statistical analysis and percentage relief was taken to known the efficacy of therapy.

(b) Assessment of *Guru Guna* of *Kapha Dosha:* For assessment of *Guru Guna* of *Prakrit Kapha Dosha* a questionnaire was developed on the basis of classical references in *Ayurvedic* texts, which is being asked in 30 healthy individuals & 30 *Sthaulya* patients. Questionnaire was developed in order to assess deviation of *Guru Guna* of *Prakrit Kapha* from normalcy to diseased (*Vaikrit*) state. Symptoms like *Gauravta*, *Utsah Hani*, *Kha Mala*, *Glani* & Nature of walk were looked to assess the *Guru Guna* of *Kapha Dosha.*

Anthropometry Measurements: Following measurements were done; Height**,** Weight, BMI, Hip circumference, Waist circumference, Mid thigh circumference, Mid arm circumference.

Biochemical investigations: Following investigations were done to assess the efficacy of different regimes:

- Hb gm%,
- Lipid profile:- S. Cholesterol, VDRL, HDL, LDL, S. Triglyceride
- Liver Function Test- S. Total Bilirubin, SGOT, SGPT

Statistical-Methods:

Various observations made and results obtained were computed statistically to find out the significance of the values obtained and various conclusions were drawn accordingly. **In Stat Graph Pad** software was used & for nonparametric data **Wilcoxon matched-pairs signed ranked test** was used, while for Parametric data, **Paired't' Test** was used and results were calculated.

OBSERVATION:

All the patients were studied by noting down their demographic profile including their age, sex, address, occupation, socio-economic status, marital status, dietary habits etc.

In the clinical trial it was observed that Maximum numbers of patients i.e. 70% were Female, Maximum patients were Hindu (87%), Maximum number of patients i.e. 50% belonged to age group of 17-30 years**,** Maximum i.e. 44% patients were house wife, Maximum patients i.e. 67% were married, Maximum i.e. 56.67% patients were belonging to middle class, Maximum i.e. 53.33% patients were Graduate / P.G, Maximum i.e. 63.33% patients were addicted to Tea / coffee, Maximum i.e. 80% patients were having vegetarian diet, Maximum i.e. 60% patients were *Madhyama Rasa Satmya*, 30% were *Pravar Satmya* and 10% were *Avara*

Satmya to *Rasa*, Maximum i.e. 53.33% patients were having *Tikshnagni,* Maximum patients i.e. 76.67% were having *Madhyama Kostha*, Maximum patients i.e. 43.33% were having *Kapha- Pittaj Prakriti*, Maximum i.e. 53.33% patients were having *Madhyama Ahara Shakti*, Maximum i.e. 43.33% patients were having *Madhyama Vyayama Shakti*, Maximum i.e. 56.67% patients were *Heena (Avara Samhanan)* in body constitution, Maximum i.e. 50% patients were having *Madhyama Satva,* Maximum i.e. 56.67% patients were having *Madhyama Sara* Maximum i.e. 73.33% patients were having *Ati Nidra.*

RESULTS

Effect of *Tryushanaadi Lauha* on 15 Patients of *Sthaulya* in Group A: After completion of the therapy, *Tryushanaadi Lauha* provided highly significant relief in *Aalasya* (76.6%), *Kshudra Shwasa* (60%) *Gaurava* (82.2%) and *Angasada* (56.9%) [p<0.0001]. Effect was statically significant in *Chala Sphik Udara Stana* (16.8%), *Swedadhikya* (18.18%) and *Nidradhikya* (30.07%). Effect was Insignificant in *Kriccha vyavayata* (18.18%), *Anga Aandha* (18.57%), *Kshuda Adhikya* (26%), *Pipasa Adhikya* (13.97%), *Daurbalya* (11.11%), *Krathana* (0%) and *Javoprodh* (16.9%).

Effect of *Tryushanaadi Lauha* on Laboratory Investigations in Group A

It provided highly significant change in Hb% (4.17%), H.D.L. (4.8%) L.D.L. (7.13%) and S. Cholesterol (9.13%) [p<0.0001]. Effect was statically significant in S. Triglyceride (9.22%). Effect was Insignificant in VLDL (16.3%), Total Bilirubin (9.94%), Direct Bilirubin (10%), Indirect Bilirubin (6.25%), SGOT (4.88%) and SGPT (1.01%).

Effect of *Tryushanaadi Lauha* on Physical parameters in Group A: It provided highly significant change in Body weight (6.15%), B.M.I. (6.67%), Hip circumference (5.62%), Waist circumference (6.32%) and Mid thigh circumference (6.81%) [p<0.0001]. Effect was statically significant in Mid arm circumference (12.2%). Effect was Insignificant in Waist-Hip ratio (4.10%).

Effect of *Tryushanaadi Lauha* on *Guru Guna* in Group A: It provided highly significant result in *Gauravata* (48.7%) and *Utsah Hani* (42.27%). Effect was statically significant in *Glani* (27.2%). Effect was Insignificant in *Kha Mala* (26.19%) and Nature of walk (2.81%).

Effect of Placebo on Clinical features in Group B: It provided significant relief in *Gaurava* (31.08%). Effect was insignificant in *Kshudra Shwasa* (12.6%) and *Angasada* (3.3%), *Chala Sphik Udara Stana* (6.73%), Swedadhikya (0%) and *Nidradhikya* (5%), *Kriccha Vyavayata* (0%), *Anga Gandha* (3.9%), *Aalasya* (8.9%), *Kshuda Adhikya* (4.76%), *Pipasa Adhikya* (50%), *Daurbalya* (11.11%), *Krathana* (0%) and *Javoprodh* (20.62%).

Effect of Placebo on Laboratory Investigations in Group B: It provided insignificant change in all parameters like Hb% (1.76%), H.D.L. (0.83%), L.D.L. (0.43%), S.Cholesterol (0%), S. Triglyceride (1.10%), VLDL (0.14%), Total Bilirubin (6%), Direct Bilirubin (11.56%), Indirect Bilirubin (18.75%), SGOT (3.25%) and SGPT (4.6%).

Effect of Placebo on Physical Parameters in Group B: It provided significant change in Waist circumference (0.9%). Effect was Insignificant in B.M.I. (1.40%), Hip circumference (0.35%), Body weight (0.42%), Mid thigh circumference (0.40%), Mid arm circumference (0.52%) and Waist- Hip ratio (0.46%).

Effect of Placebo on *Guru Guna* Parameters in Group B: It provided insignificant result in *Gauravta* (7.51%), *Utsah*

Hani (6.24%), *Glani* (8.8%), *Kha Mala* (10%) and Nature of walk (3.10%).

DISCUSSION

Assessment of *Guru Guna*

Guru is Guna of *Kapha Dosha*. As *Sthaulya* is a *Kaphaja Vikara*, *Guruta* is supposed to be increased, which is being checked by administration of drug *Tryushanaadi Lauha*.

On the basis of questionnaire as described early we set a standard protocol on the basis of grading of healthy individuals. There we assess *Guru Guna* in diseased person and fix the deviation from normalcy to diseased state. After administration of drug again we estimated the *Guru Guna* at what extent its deviation from diseased state to normalcy.

1. **Gauravta**- *Guru* means heavy. Its *Panchbhautika Sangathana* is *Prithvi & Jala.* Questionnaire is developed on *Gauravta* & grading is done as mentioned in method & materials.

2**. Uthsah Hani**- *Utsah Hani* signifies *Alasya*. *Guru* is *Sada* in action (*Su.Su* 46/518). *Sada* means idleness, slothfulness or lethargy. On the basis of this action of *Guru Guna*, question on *Utsah Hani* is made.

3. **Kha Mala**- *Guru* is "*Uplepa*" in action as mentioned in *Su.Su* 46/518. *Uplepa* is defined as *Mala Vriddhi* by *Acharya Dalhana*. Also *Ch.Su* 17/72, *A.H.Su*.11/14, states that increased state of *Mala* is perceived by heaviness of their respective *Malayana*.

On the basis of these references questionnaire on *Kha Mala* is made. From all *Mala Kha Mala* is being chosen, as *Kitta Mala*, *Mutra Mala* is influenced by many other factors like *Agni, Aahar.*

4. **Glani-** *Guru* is *Sada* in action (*Su.Su* 46/518). "*Sada*" is explained as "*Angaglani*" by *Acharya Dalhana*. "*Sada*" means idleness, slothfulness, or lethargy..

For this, time taken for resuming to daily work after normal overnight sleep is being taken and grading is done as mentioned in method and material. *Glani* is assessed after overnight sleep as then it will not be influenced by nature of work (physical, mental work) done by individual.

5. **Nature of walk –** As mentioned in *Ch.Vi*.8/, due to *Guru Guna* of *Kapha*, *Kaphaj Prakriti Purusha* has "*Sthira Gati*". On the basis of this, question on nature of walk is made. Nature of walk is strongly influenced by *Prakriti* of that particular individual.

Comparative study of *Guru Guna* in healthy and *Sthaulya* patients: Questionnaire for *Guru Guna* have been asked in randomly selected 30 healthy subjects and 30 *Sthaulya* patients. Out of all 5 questions, mean score in healthy is 8.07(less than 50% of total score) and mean score in *Sthaulya* patients is 10.37(more than 50% of total score). These observations clearly indicate that in healthy individual's status of *Guru Guna* is towards normalcy and in *Sthaulya* status of *Guru Guna* is towards *Vikriti*.

Statistically, difference of status of *Guru Guna* between healthy and *Sthaulya* patients is extremely significant with (p<0.0001)

Effect of *Tryushanaadi Lauha* on *Guru Guna* in Group A: The percentage relief on *Gauravata* symptom was **48.7%** which is statistically **highly significant** (p<0.0001). In Obesity main vitiated *Dhatu* is *Meda* which is *Prathivi* and *Aap Mahabhuta Pradhana*. Increase in *Medo Dhatus* will increase the *Guru, Snigdha* and *Sheeta Guna* leading to the *Gauravta*. Moreover *Medodhatu* produced in *Sthaulya* condition is in *Amavastha* which causes *Angagaurava*. The trail drug is *Laghu, Ruksha Guna* and *Ushna Virya Pradhana*

along with *Ama Pachaka & Strotoshodhak* property which might help in minimizing this symptom.

The percent relief in *Utsah Hani* symptom was **42.27%** which is statistically **highly significant** (p<0.0001).

The percentage relief on *Glani* symptom was **27.2%** which is statistically **significant** (p- 0.0039)**.** Trial drug had **insignificant** results in *Kha Mala* (**26.19%**) and Nature of walk (**2.81%**).

Discussion of Observations & Result

1.   **Age:-** 50% patients (15) belongs to the age group of 17-30 yrs.

2.   **Gender:-** Maximum i.e. 70% patients (21) were Females.

This indicates that the incidence of obesity is more among female, which confirms the findings of National family health survey, 2007. The reason behind this observation might be the feminine factor like puberty, menstrual disturbances, menopause, post operative complications and oral contraceptives.

3.   **Religion: -** Maximum numbers of patients i.e. 87% (26) were Hindu. From this observation it can't be concluded that Hindus are more prone to this disease because maximum patients came to hospital were Hindu & this region has got the Hindu community dominance.

4.   **Occupation:-** Maximum number of patients i.e. 44% (13) were housewives.

This is showing highest prevalence of obesity in housewives. The reason behind this might be that housewives are related with light nature of work with advancement of new techniques, tools (mixtures, washing machines etc.), and causative factors for reduced activity. So, their energy expenditure is less than energy intake, which may lead to *Sthaulya*. *Divaswapa* is also a major cause in housewives. Also due to responsibility of family and household jobs they have lesser time for themselves, to do exercise and workout. Whereas in students there might be lack of exercise with increased use of junk food, soft drink & liquors.

5.   **Marital Status-** Maximum numbers of patients i.e. 67% (20) were married.

In present study maximum patients were married. The reason behind this might be that married due to household, family, job responsibilities have lesser concern about their physique. They usually have sedentary life style.

6.   **Socioeconomic Status:** Maximum 56.67% (17) patients belong to middle class family.

One reason behind this is that N.I.A. is a Government Institute and is preferred by Middle class individuals. It is believed that obesity is a disease of only upper socioeconomic class. Above observation clear that the prevalence of obesity is not related with quantum of money, but today it depends upon mode of life style & eating habits. So obesity is widespread in all classes.

7.   ***Desh*:** 100 % of patients (30) were belongs to *Sadharana Desh.* It may be due to the research work was done in *Sadharana Desha.*

8.   **Education Status:** Maximum number of patients i.e. 53.33% (16) patients were Graduate.

9.   **Diet:** Majority of 80% (24) patients were vegetarian. The reason behind is that maximum numbers of subjects were belonging to Hindu religion which prefers vegetarian food over non-vegetarian food.

10.   ***Kostha-*** Maximum i.e. 76.67% (23) patients were of *Madhyam Kostha*, The reason behind these observations might be that *Madhyama Kostha* is found in *Kapha* predominance *Prakriti*, which increases prevalence of *Sthaulya*.

11. **Agni: -** Majority of patients i.e. 16 patients (53.33%) were having *Tikshanagni*. The reason behind these observations might be *Agnisandukshana* due to *Samana Vayu Prakopa* in *Sthaulya* as mentioned in *Samprapti* of *Sthaulya* by *Ayurvedic* classics.

12. **Addiction:** Maximum i.e. 19 patients (63.33%) were registered with addiction of Tea/Coffee.

13. **Sharirika Prakriti**: Maximum patients i.e. 13 patients (43.33%) were having *Kapha-Pittaj Prakriti.* It indicates that *Kapha* is the predominant factor for *Sthaulya* and it is also included by *Charaka* in *Nanatmaja Vyadhi* of *Kapha Dosha*. The study point out that involvement of *Kapha Dosha* is playing very important role in *Sthaulya. Kapha* and *Meda* are similar in their composition. *Meda* is *Kapha* predominant *Dhatu* and properties attributed to both are similar.

14. **Sara:** Maximum number of patients i.e. 17 patients (56.67%) were of *Madhyama Sara. Sarata* is achieved by indulging in healthy diet and regimen, which is not seen in *Sthaulya* patients hence excellence of *Dhatu* can't be found.

15. **Samhanana:** Maximum patients i.e. 17 patients (56.67%) were having *Heena Samhanana.* They were having complaint of Fatigueness; this may be due to *Mamsashaithilya* & *Abaddha* depot fat leading to lethargy to an individual.

16. **Satva:** Maximum i.e. 15 patients (50%) were having *Madhyama Satva*, which indicates moderate mental strength of the subjects.

17. **Satmya:** Maximum i.e. 18 patients (60%) were having *Madhyama Satmya.* This indicates moderate tolerance of patients towards change in food, habits, place and season.

18. **Abhyavarana Shakti**: Maximum patient i.e. 16 patients (53.33%) were having *Madhyama Abhyavaharana Shakti*. In the patients of *Medoroga* due to *Avarana* by *Meda* & *Kapha*, there is *Samana Vayu Prakopa* leading to *Agnisandhukshana*, so there is increased tendency for food intake.

19. **Vyayamashakti:** Maximum i.e. 13 patients (43.33%) were having *Madhyam Vyayamashakti*. It explains the role of etiological factors i.e. *Avyayam* in the prevalence of *Sthaulya*. Lack of physical exercise is the major cause of obesity. This statement is supported by ancient classic as well as modern medical science.

20. **Clinical Features**: Maximum 100% patients had *Sweda Adhikya, Kshudra Shwasa, Daurbalya, Anga Sada, Javoprodha, Gaurava*. 96.67% patients had *Chala Sphika Udara Stana, Alasya, Nidra Adhikya*. 90% patients had *Kshudha Adhikya, Anga Gandha*. 80% patients had *Pipasa Adhikya*. 40% patients had *Krichha Vyavayata* and *Krathana*.

Least present symptom in registered *Sthaulya* patients is *Kriccha Vyavayata*. This is because of hesitance of patients in replying question regarding this, because many of the patients were student.

PROBABLE MODE OF ACTION OF DRUG

Above Pharmacodynamic Study of *Tryushanaadi Lauha* reveals that it has dominance of *Katu-Tikta Rasa; Ruksha & Laghu Guna; Ushna Virya; Katu Vipaka & Kapha-Vata shamaka & Tridosha Shamaka* properties are present in Maximum *Dravya.*

All the contents of *Tryushanaadi Lauha* are *Katu Rasa* predominantly followed by *Tikta Rasa*. According to *Acharya Sushruta, Katu Rasa* has *Sthaulya, Alasya, Kapha* and *Medonashak* effect.[8] *Katu, Tikta Rasa* has *Deepana, Pachana, Ruchikara, Shodhana, Srotansi Vivrunoti(Prasaryati Srotansi–Arundatta),*

Kaphaghna etc, properties.[9] Due to their *Deepana Karma* it helped in *Jatharagni Deepana* and also *Dhatvagni Deepana*. With *Pachana Karma* it helped in *Ama Pachana* which is main cause in the *Samprapti* hence with *Deepana* and *Pachana Karma* it helped in *Samprapti Vighatana*. It reduces exsesive *Medo Dhatu* from body by having *Medo Kshaya* and *Sneha Kshaya* properties.

All involved *Rasa* have *Kaphaghna* properties, *Kapha* is one of the main *Dosha* in the *Samprapti* of *Sthaulya*, so with *Kaphaghna* property it again helped in *Samprapti Vighatana* of *Sthaulya*.

Maximum contents of *Tryushanaadi Lauha* contain *Laghu & Ruksha Guna. Ruksha Guna* is known for its *Dhatu Shoshaka* and *Kapha Shamaka* Properties by its *Rukshana & Lekhana Karma* where as *Laghu Guna* is *Kaphashamaka & Dhatuhrasakaraka, Krishtakaraka* and *Srotoshodhaka* by its *Laghana Karma*. Due to their *Rukshana Lekhana* and *Langhana* properties they results in reduction of excessive *Medo Dhatu* from body by having *Medokshaya* and *Sneha Kshaya* properties which again helped in *Samprapti Vighatana* of *Sthaulya*.

Maximum contents of *Tryushanaadi Lauha* have *Katu Vipaka* which is responsible for *Ama Pachana* and *Srotoshodhana* by enhancing *Jatharagni* and *Dhatwagni*.

Ushna Virya of ingredients digests *Ama* by enhancing *Medo Dhatwagni*. Digestion of *Ama* clears the obstruction of *Rasavaha Srotas* and *Medovaha Srotas* which results in *Vata Shamana* too. It helps in *Samprapti Vighatana* of *Sthaulya*.

The known pharmacological action of majority of the drug contents is *Kapha Vata Shamaka* followed by *Tridosha*

Shamaka Karma. Drugs are having *Deepana, Pachana, Amapachan, Lekhana, Srotoshodhan* etc. properties. The effect of the study drugs can be attributed to the above mentioned properties of its ingredients.

Discussion on Results

A) Effect of *Tryushanaadi Lauha* on Clinical features of *Sthaulya*

Chala Sphik - Udara –Stana:

The percentage relief on *Chala Sphik-Udara–Stana* symptom was **16.8%** which is statistically **significant** (p-0.0156)

It is due to *Medohara* and *Srotoshodhaka* properties of *Tryushanaadi Lauha* which lead to reduction of excess *Medo Dhatu* from these sites. All the contents of *Tryushanaadi Lauha* are *Katu Rasa* predominantly followed by *Tikta Rasa. Katu Rasa* has *Sthaulya, Alasya, Kapha* and *Medonashak* effect.

***Alasya*:** The percentage relief on *Alasya* symptom was **76.6%** which is statistically **highly significant** (p<0.0001).

This might be due to fact that *Tryushanaadi Lauha* predominantly has *Katu Rasa,* which has *Alasya Nashaka* effect. *Tryushanaadi Lauha* by virtue of its *Ushna Virya, Katu-Tikta Rasa, Laghu-Ruksha Guna,* have *Kaphahara* effect & hence *Alasya*.

***Kriccha Vyavayata*:** The percentage relief on *Kriccha Vyavayata* symptom was **18.18%** which is statistically **Insignificant** (p- 0.99).

This is because of hesitance of patients in replying question regarding this, because, many of the patients are students. Also this symptom is influenced by many other factors.

***Angagandha*:** The percentage relief on *Angagandha* symptom was **18.57%** which is statistically **Insignificant** (p-0.125).

Although the effect of trial drug has significant role in *Swedottapatti* symptom

but due to excess of production of *Ama & Srotorodha Dushti* results were not as significant as it should. There might be quite possibility of significance in this criteria when the time of treatment may increase.

Swedadhikya: The percentage relief on *Swedadhikya* symptom was **18.18%** which is statistically **significant**. As *Tryushanaadi Lauha* has *Medohara* effect. So it also reduces *Sweda Utpatti*.

Kshudhadhikya: The percentage relief on *Kshudhadhikya* symptom was **26%** which is statistically **Insignificant** (p-0.125).

Although results were statistically insignificant but clinically relieve was reported in this symptom. This might be due to *Deepana-Pachana* properties with, *Katu* and *Tikta Rasa*. These are *Kapha Shamaka, Ama Pachaka & Srotoshodhaka* in property. *Ama Pachana & Srotoshodhana* leads to *Vatanulomana* which ultimately normalizes *Jatharagni* and *Dhatwagni*, as well as *Kshudha*.

Pipasadhikya :

The percentage relief on *Pipasadhikya* symptom was **13.97%** which is statistically **Insignificant** (p-0.5).

Although results were statistically insignificant but clinically relieve was reported in this symptom. Reason behind is same as for *Kshudhadhikya*.

Kshudrashwasa: The percentage relief on *Kshudrashwasa* symptom was **60%** which is statistically **highly significant** (p<0.0001).

Increased *Medodhatu* in the body increases the weight of the person; along with lean body mass are reduced and sedentary habits remaining muscles are also not trained to bear the load of physical activities. All these are the prime cause for *Kshudra Shwasa*. The *Medohara, Strotoshodhak & Ama Pachaka* property of trial drugs may have helped in minimizing this symptom.

Gaurava: The percentage relief on *Gaurava* symptom was **82.2%** which is statistically **highly significant** (p-0.0001).

Increase in *Medo Dhatus* will increase the *Guru, Snigdha* and *Sheeta Guna* leading to the *Gauravta*. The trail drug is *Laghu, Ruksha Guna* and *Ushna Virya Pradhana* along with *Ama Pachaka & Strotoshodhak* property which might help in minimizing this symptom.

Daurbalya: The percentage relief on *Daurbalya* symptom was **11.11%** which is statistically **insignificant** (p-0.31)

Javoprodha: The percentage relief on *Javoprodha* symptom was **16.9%** which is statistically **insignificant** (p-0.15).

Krathan: The percentage relief on *Krathana* symptom was **0%** which is statistically **insignificant** (p >0.99)

Nidradhikya: The percentage relief on *Nidradhikya* symptom was **30.07%** which is statistically **significant** (p-0.03).

In aetiology of Obesity *Kapha, Meda & Ama Dosha* plays important role, these all leads to *Nidradhikya. Kapha Shamak, Medohara & Ama Pachana* property of trial drug might help in minimizing this symptom.

Angasada: Trial drug has **highly significant** result in *Angasada* (**56.9%**). In other way incomplete digestion of *Ahara Rasa* leads to *Ama Rasa Utpatti* which causes *Angasada. Ushnavirya, Strotoshodhan-Pachana* etc. properties of trial drug leads to completion of metabolic process i.e. complete digestion of *Ahara Rasa,* which might helped in minimizing this symptom.

B) **Effect of *Tryushanaadi Lauha* on Physical parameters:** Trial drug had **highly significant** results on Body Weight (**6.15%**), B.M.I. (**6.67%**), Mid Thigh Circumference (**6.81%**), Hip Circumference (**5.62%**) & Waist Circumference (**6.32%**).

The percentage relief on Mid arm Circumference (cm) was **12.2%** which is

statistically **significant** (p<0.0035). The percentage relief on Waist Hip Ratio was **4.10%** which is statistically **insignificant** (p-0.1807).

C) **Effect of *Tryushanaadi Lauha* in Biochemical Investigations:** Trial drug had **highly significant** result on Serum Cholesterol (**9.13%**), HDL (**4.8%**) and LDL (**7.13%**). The percentage relief on Serum Triglyceride was **9.22%** which is statistically **significant** (p<0.01). The percentage relief on VLDL was **16.3%** which is statistically **Insignificant** (p<0.53).

Meda, Majja, Vasa which are *Sneha Dravya* can be correlated with lipids since they have properties and function similar to that of lipids. The trial drugs have *Ruksha Guna & Laghu Guna* like properties which are known for its *Dhatu Shoshaka, Rukshana & Lekhana Karma*. Due to their *Rukshana Lekhana* properties they results in reduction of lipids from body which might help in minimizing this symptom.

D) **Effect of Placebo on Clinical features:** The percentage relief on *Gaurava* symptom was **31.08%** which is statistically **significant.**

In Obesity main vitiated *Dhatu* is *Meda* which is *Prithivi* and *Aap Mahabhuta Pradhana*. Increase in *Medo Dhatus* will increase the *Guru, Snigdha* and *Sheeta Guna* leading to the *Gauravta*. Moreover *Medodhatu* produced in *Sthaulya* condition is in *Amavastha* which causes *Angagaurava*. Effect in this symptom may be due to *Pathya Sevan* and *Nidan Parivarjan* prescribed along with placebo.

Placebo had **Insignificant** result on *Chala Sphik-Udara–Stana* (**6.73 %**), *Alasya* (**8.9%**), *Kriccha Vyavayata* (**0%**), *Angagandha* (**3.9%**), *Swedadhikya* (**0%**), *Kshudhadhikya* (**4.76%**), *Pipasadhikya* (**50%**), *Kshudrashwasa* (**12.6%**), *Daurbalya* (**11.11%**), *Javoprodha*

(**20.62%**), *Krathana* (**0%**), *Nidradhikya* (**5%**) and *Angasada* (**3.3%**).

E) **Effect of placebo on *Guru Guna* in Group B:** Placebo had **Insignificant** results in most parameters of *Guru Guna* of *Kapha Dosha* i.e. *Gauravta* (**7.51%**), *Utsah Hani* (**42.27%**), *Kha Mala* (**26.19%**) and Nature of walk symptom was **2.81%.** Relief on *Glani* symptom was very **significant** (**27.2%**).

F) **Effect of Placebo on Physical parameters:** Placebo had **significant** relief on Waist Circumference (**0.9%**). This might be due to *Pathya Sevan* and *Nidana Parivarjan.*

Placebo had **Insignificant** result in Body Weight (**0.42%**), B.M.I. (**1.40%**), Mid arm Circumference (**0.52%**), Mid Thigh Circumference (**0.40%**), Hip Circumference (**0.35%**)) and Waist Hip Ratio (**0.46%**).

G) **Effect of Placebo in Biochemical Investigations:** Placebo had **insignificant** results in Serum Cholesterol (**0%**), Serum Triglyceride (**1.10%**), HDL (**0.83%**), LDL (**0.43%**) and VLDL (**0.14%**)

CONCLUSION

• Out of various principles, *Guna* is most important primary theory for prevention, diagnosis and management of diseases.

• *Guna* from important basis of physiology, body functions and types of *Dosha* can be better understood if physiology of *Gunas (Sharir Guna)* is learnt in details.

• *Guna* are adjectives used for *Dravya* identification and understanding of a substance and its separate experience or knowledge is collected on the basis of its attribute (properties).

• *Dravya* having capacity of initiating anabolism is *Guru*. *Guru Guna* is adjective of *kapha Dosha*. *Guru Guna* used in relation to ability to perform anabolism

(*Brimhana*), *"Sada"* or *"Avsada"* (Idleness, lethargy), facilitate power *(Balakrit), Chirpaaki, Sthairya, Snehana* (Resistant to diseases or Immunity, *Dalhana* on *Sushruta*) and *Hrilladan.*

- *Kapha dosha*, all seven *Dhatus, Mala* have *Guru Guna*. This shows importance as well as need of *Guru Guna* for human body.

- By evaluating questionnaire on healthy subjects and *Sthaulya* patients, we found that *Guru Guna Vriddhi* is found in *Sthaulya* patients as compared to healthy.

- Administration of *Tryushanaadi Lauha* relieves symptoms due to its properties like *Katu Rasa, Virya, Vipaka, Prabhava* etc. on *Guru Guna* in *Sthaulya.*

- Trial drug (*Tryushanaadi Lauha*) has highly significant result in *Alasya, Kshudra Shwasa, Gaurava, Angasada.* Significant result in *Sweda- adhikya, Nidra- adhikya, Chala-Sphik-Udara-Stana*. It has insignificant result in *Kriccha Vyavayata, Angagandha, Kshudha Adhikya, Pipasa Adhikya, Daurbalya, Javoprodha & Krathana*. But clinically it relieves *Kshudha & Pipasa Adhikya.*

- Trial drug (*Tryushanaadi Lauha*) has highly significant result in reduction of body weight, B.M.I., mid-thigh circumference, waist circumference, Hip circumference. It has significant result in mid arm circumference, and also has Insignificant result in Waist- Hip ratio.

Thus, it can be concluded that orally *Tryushanaadi Lauha* in dose of 1gm twice a day before meals with *Anupana* of *Madhu & Ghrita* (in unequal proportion) can be used as a safe therapeutic agent in *Sthaulya*.

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CORRESPONDING AUTHOR
Dr. Niharika Sharma
Email: vinaybhardwaj2610@gmail.com