



Case Study

EFFECT OF SHUDDHA GUGGULU ON METABOLIC SYNDROME - A CASE REPORT

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ABSTRACT

Metabolic syndrome is conglomeration of symptoms composed of impaired fasting glucose, abdominal obesity, hypertension and dyslipidemia. It is associated with cardio metabolic risk factors with increased risk of multiple chronic diseases, including cancer and cardiovascular disease because of the increased amount of visceral fat together with a chronic inflammatory state.

Metabolic Syndrome is resulted by the causative factors which are Santarpanakaraka in nature leading to Medodushti, which in turn leads to Medoroga. The Santarpana karaka Nidanas include the food articles that are rich in Snigdhamsa, Madhura rasa, Guru and Pichchila gunas. By consuming the food rich in such qualities produces the Rasa dhatu which is excessively composed of the qualities like Ati Snehamsha and Madhuratarata Guna which produces excess Medo dhatu and causes Sthoulya. Ama present in the Medodhatu leads to further Medo dushti and manifests Metabolic Syndrome.

Shuddha Guggulu is potent Ama pachaka dravya and does Pachana of the circulating Atisnigdha Ama in the form of lipoproteins. And also Guggulu having Lekhaneeya Guna reduces deposition of Medo dhatu and prevents inflammatory process by its anti-inflammatory potential. **Aim:** To assess the effect of Shuddha Guggulu in Metabolic Syndrome, dyslipidaemia. **Methodology:** Oral administration of the preparation in the patient. **Result:** There was marked improvement in signs, symptoms and biochemical parameters after intervention. **Conclusion:** Shuddha Guggulu is significantly effective in reducing lipid levels and CRP.

INTRODUCTION

Obesity and Metabolic syndrome are major health concerns globally. Excessive amount of fat deposited in the trunk region around the visceral organs, otherwise known as visceral adiposity is the prime causative event that leads to metabolic disorganization and even cardiovascular diseases<sup>1</sup>. Metabolic syndrome is not a disease in itself. Instead, it's a group of risk factors that include hyperglycemia,

hypertension, dyslipidemia and excessively accumulated abdominal fat. Erratic food habits, physically inactive and sedentary lifestyle, excessive physical and mental stress, wrong sleeping habits lead to deranged metabolic process and in turn leading to establishment of morbidity in various components of the body, finally making the person abode of severe complications also.

Metabolic Syndrome and Medoroga

The term Metabolic Syndrome is a group of clinical and subclinical conditions that includes impaired glucose metabolism, obesity around trunk, high blood pressure and abnormal levels of lipoproteins<sup>2</sup>. It is also associated with cardio metabolic risk factors associated with increased risk of multiple chronic diseases, including cancer and other occlusive and inflammatory disorders of the vessels.<sup>3</sup>

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The excessively deposited amount of visceral fat together with a chronic low grade inflammatory state predisposes to the development of arteriosclerosis manifesting into further arterial complications like TAO, arteritis, etc<sup>4</sup>. Metabolic syndrome is not restricted to vessels or fat, it is also connected with development of fatty liver diseases, endocrine dysfunctions and psychiatric disorders<sup>5</sup>.

### CASE REPORT

A female patient aged about 34 years, approached with a complaint of rapid weight gain, fatigue, disinterest in routine activities, body feeling heavy due to which eventually reduced physical activity since more than 8 years.

**Past history:** During her childhood the patient was slightly underweight as per the history narrated. During her teens she gradually gained weight and was about 75 kgs when she got married at the age of 25.

**Personal history:** She is a software engineer working for an MNC in shift duties. When she joined the job, she used to get stressed of shift duties and work pressure. The stress was added up when she didn't conceive. She feels psychologically low when there would be remark from her spouse about unsatisfactory sexual act due to her bulky abdomen.

**Marital history:** She is married since 9 years. Repeated attempts failed to conceive and she has undergone trial for IVF twice 4 years ago. During these years she started gaining weight, and her body weight has reached up to 96.5 kilograms on the day she approached for Ayurvedic treatment on 03-03-2022.

**Diet history:** She used to have junk and fast foods quite often during her studies and when she joined work.

**Lifestyle and exercise:** Due to shift work her life style was erratic and never engaged in regular physical exercises. She used to wake up till late nights or sometimes awakened whole night and compensated her sleep during day. Her fluid and water intake per day was around 1 litre and preferred spicy deep fried food stuffs. She likes sweets like Mysorepak, Barfis, Jamoon, cakes, pastries and ice-creams and used to eat often apart from her regular 3 meals per day. During the course of treatment for promoting conception and trials for IVF, she was given several courses of hormonal interventions. She has undergone 3 trials of IVF before approaching for Ayurvedic treatment.

**Family history:** Mother is obese and diabetic.

**General examination:** Central obesity, dyspnoea on exertion, excessive sweating with intense body odour.

### AIMS AND OBJECTIVES

- To evaluate the effect of *Shuddha Guggulu* on patients of Metabolic syndrome – *Medo roga*
- To evaluate the effect of *Shuddha Guggulu* on Dyslipidemia – *Medo dushti*

### Diagnostic Criteria

Patients with Central obesity ( $\leq 85$ cm in F and  $\leq 90$ cm in M) and any 2 of other cardinal features of Metabolic Syndrome namely<sup>6</sup>-

- Hypertriglyceridemia ( $\geq 150$  mg/dl)
- Low levels of HDL ( $< 40$  mg/dl in men or  $< 50$  mg/dl in women)
- Hyperglycemia ( $\geq 100$  mg/dl)
- Hypertension ( $\geq 130/85$  mm Hg)

### Intervention

The patients was given *Triphala Shodhita Shuddha Guggulu* with a dose of 2g<sup>6</sup> in empty stomach at 7.00am daily for 21 days

Days of Intervention	Treatment	Dose	Follow up	Total duration
1- 21 Days	<i>Shuddha Guggulu</i> in empty stomach daily with <i>Ushnodaka Anupana</i>	2g once daily	30 days	51 days

### Assessment Criteria

All the data are collected and documented on a detailed case proforma. Assessment of the condition are done adapting standard methods of scoring; and subjective as well as objective parameters are analyzed.

### Objective Parameters

- Waist circumference
- Fasting blood sugar levels
- Triglyceride levels
- HDL levels
- Blood pressure
- Blood C –Reactive protein levels
- Body weight
- BMI

- Skin fold Thickness
- TMT
- Urine analysis

### OBSERVATIONS

The observations were made after the course of 21 days of intervention with *Shuddha Guggulu*. The woman was feeling lethargic entire day which was completely vanished. She started feeling energetic and active. She did her routine of morning walk for 30 minutes which she continued during the course and her confidence level was boosted up. She started consuming about 2.5 liters of water daily and regulated her food intake.

The following table shows the before and after treatment changes in the patient.

Sl No	Particulars	Before Treatment	After Treatment
1.	Waist circumference	121 cm	115 cm
2.	Fasting blood sugar levels	121 mg/dl	93 mg/dl
3.	Triglyceride levels	216 mg/dl	151 mg/dl
4.	HDL levels	39 mg/dl	46 mg/dl
5.	Blood pressure	124/80 mm of Hg	120/80 mm of Hg
6.	Blood C -Reactive protein levels	6.6 mg/dl	2.8 mg/dl
7.	Body weight	96 kg	92.5 kg
8.	BMI	40.1	39.2
9.	Skin fold Thickness	40 mm	34 mm
10.	TMT	Normal	Normal
11.	Urine analysis	NS	NS

**Follow up:** The patient persistently followed the diet and exercise patterns advised to her during the follow up period. There is further reduction in weight and improvement is maintained consistently during the period of these 30 days.



Figure 1, Waist Circumference - BT Figure 2, Waist Circumference - AT



Figure 3, SFT - BT Figure 4, SFT - AT

## DISCUSSION

### Concept of Santarpana Vikaras and Medoroga

A detailed explanation on *Medoroga* is available in Arshya Granthas of Ayurveda especially the *Brihatrayees* and *Laghutrayees* under the broad concept of *Santarpana janya vikaras*. It is also mentioned as *Medorogah - Medo dhatu dushti janya roгах*<sup>8</sup> meaning *Medoroga* means bunch of disorders

occurring as a consequence to affected and deranged metabolic process of *Medodhatu*. The *Medovaha Srotas* that carries the *Medodhatu* that is under transformation becomes damaged due to indulgence in certain causative factors for a long duration. Those causative factors can be named predominantly as *Acheshta/Avyayama* (physical inactivity), *Divaswapna*

(sleeping during the day hours between the sunrise and sunset), *Medya ahara ati bhakshana* (excessive consumption of fatty diet with rich calories), *Varuni madya sevana*<sup>9</sup> (consumption of a specific variety of alcoholic beverage called *Varuni Madya*).

Medodhatu thus affected and damaged in its qualities as a result of faulty metabolism, leads to manifestation of specific variety of disorders of excessive unhealthy nourishment called *Santarpana Janya Vikaras*<sup>10</sup>. They are enlisted in the classical text books of Ayurveda as- *Prameha*, *Prameha pidaka*, *Kotha*, *Kandu*, *Pandvamaya*, *Jwara*, *Kushta*, *Visuchika* like *Ama pradoshaja vikara*, *Mutra kricchra*, *Arochaka*, *Tandra*, *Klaibya*, *Atisthoulya*, *Alasya*, *Guru Gatrata*, *Indriya lepa*, *Sroto lepa*, *Buddhi Moha*, *Prameelaka*, *Shopha*<sup>11</sup>. *Medoroga* is a typical manifestation as a result of *Ati Santarpana*. Nil or minimal physical activity, sedentary/ sophisticated/ technology over dependent life style, affected or low physical and mental endurance, unplanned- erratic- unhealthy eating habits; over indulgence physical and mental stressful activities, target oriented work pattern, shift duties, excessive and repeated hormonal inductions, excessive alcohol consumption, smoking/ tobacco chewing and altered sleep wake cycle are the most common factors that induce metabolic errors<sup>12</sup>.

Excessive and long term consumption of the foods and indulgence in the activities that are having the potential to aggravate *Kapha Dosha* also are capable of aggravating *Medodhatu* due to similar properties. This increased *Meda* obstructs the *Srotas*, and because of this obstruction *Vata* moving in *Kostha* becomes hyperactive and stimulates *Agni*<sup>13</sup>. This *Agni* is so strong enough to digest the food rapidly as well the hyperactive *Vata* absorb it rapidly. So a person requires frequent and heavy food to quench his appetite and if food is not given then this increased *Vata* and *Agni* together produce severe complications. However, the *Asthayi* form of *Medodhatu*<sup>14</sup> (the *Dhatu* component that is under transformation) is the *Poshaka bhava* for the *Sthayi medodhatu* (the *Dhatu* proper). In other words, it can also be stated that the circulating lipids and lipoproteins are the precursors of the adipose tissue. More the amount of circulating lipids more will be the deposition of the adipose tissue relatively. It is important to note that the *Agni* in *Dhatu* level is responsible for the metabolic activities that take place in the *Dhatu*s. Strong *Agni* of the *Dhatu* converts the *Dhatu* into next metabolic product or the next *Dhatu* in sequence<sup>15</sup>. At the same time *Agni* that is incapacitated results in the reduced metabolic activity of the *Dhatu* and vice versa. Thus it becomes clear that hypo functioning of *Medodhatwagni*<sup>16</sup> leads to reduced metabolic activity in *Medodhatu* and favors deposition of excess *Medodhatu*. Hence according to this logic, the hyper functioning of *Medodhatwagni* relatively

supports enhanced metabolic activity resulting in lesser deposition of adipose tissue and thereby reducing body fat.

### Dyslipidaemia as a Result of *Ati Santarpana*

Dyslipidaemia<sup>17</sup> is a disorder of disturbed lipid metabolism involving abnormality in any or all the lipoprotein in blood. Dyslipidaemia may be manifested by elevation of the total cholesterol, low density lipoprotein (LDL), cholesterol and the triglycerides concentration and decrease in the high density lipoprotein (HDL) concentration in the blood. In the condition called Dyslipidaemia, the circulating level of lipids or lipoprotein fraction are abnormal because of the food consumed, genetic influence or non- congenial environmental condition<sup>18</sup>. These circulating lipoproteins get clearance from plasma after they either transformed into next product or get absorbed by the target organ. However because of excess *Snigdhamsha* they will carry the *Meda* and *Kapha Dharmeeya Amsha* and lead to *Kapha Bhuyishtata* (excess of accumulation of *Kapha Dosha* and *Meda Dhatu*) in the body.

### Discussion on Results in Dyslipidemia

The patients are treated with *Triphala Shodhita Guggulu* after screening and confirmation of the suitability to diagnostic criteria of Metabolic Syndrome. The *Shuddha Guggulu* has shown positive effects on patients with Dyslipidemia. In the investigations and observations made after the total intervention showed significant changes in Total cholesterol, Triglycerides, LDL cholesterol, VLDL and increasing HDL cholesterol. Reduction in Triglycerides levels was more significant.

### Probable Mode of Action of *Shuddha Guggulu*

*Tiphala shodhita Guggulu* contains *Guggulu* – *Commiphora mukul* processed in decoction of *Triphala*<sup>19</sup> (*Haritaki- Terminalia chebula*, *Bibhitaki- Terminalia bellerica* and *Amalaki- Emblica officinalis*) as per the guidelines given in the texts.). *Vata* and *Kapha* are involved in the pathology of this disease. So, a combination of *Vata* alleviating and *Kapha* reducing drugs are needed to break the pathology. *Guggulu* is a good *Ama pachaka dravya* and also enhances *Agni*. It is also a good *Vata anulomaka* there by supports the propeller action and timely clearing of the intestines.

The combination of *Triphala* is well known for its *Anuloma*<sup>20</sup> (laxative) action. It is most effective for balancing *Vata* and supporting *Agni*. All the 3 ingredients of *Triphala* namely *Haritaki- Terminalia chebula*, *Bibhitaki- Terminalia bellerica* and *Amalaki- Emblica officinalis* are mentioned singly or in combinations to treat *Medoroga*<sup>21</sup>. *Triphala Kashya* is also mentioned as *Medohara* and useful in *Kapha* disorders<sup>22</sup>. In the combination of *Shuddha Guggulu*, the concentration of *Guggulu* is found to be more, which has the *Prabhava* (special effect) of *Medo-*

*Vatahara* (reducing *Meda* and *Vata*) and *Lekhana* (scraping). In this formulation, the drugs *Triphala* are dominant with *Kashaya* and *Amla rasa* and *Guggulu is Katu* and *Tikta rasa* dominant. *Katu* and *Kashaya rasa* have the action to pacify *Kapha and Meda dhatu*. *Amla Rasa* takes care of *Vata* not to get aggravated. Among these three, *Katu rasa* has the potential of stimulating the *Agni* and *Lekhana guna*. This will help the *Agni* to be restored and the formation of *Ahara rasa* that is nutritionally corrected. Once the *Jatharagni* is restored, it will influence the other *Agnis* to normalise so that *Medo Dhatwagni* is also restored. The process of appropriate *Dhatu* formation begins. This process will support the reduction of *Abaddha Medas* and restoration of normal *Medas*.

*Katu*, *Tikta* and *Kashaya rasa* together have properties of *Paachana* (digestive), *Anulomana* (laxative), *Kleda* (moist) and *Meda Shoshana* (reducing *Meda*), *Srotovishodhana* (cleansing the channels) and are dominant in *Lekhana* (scraping) property, which altogether support the action of breaking the *Samprapti* (pathogenesis) of *Medoroga*. Apart from these, the qualities like *Laghu*, *Rooksha*, and *Teekshna* properties of *Guggulu* counter the *Snigdha Guru Manda* qualities of *Kapha* and *Meda dhatu*. Thus the combination of *Triphala* and *Guggulu* work together in bringing down the aggravated and excessively accumulated *Kapha meda* combination.

By the virtue of these *Gunas* the formulation stimulates *Jatharagni* which in turn stimulates *Medodhatvagni*. This corrects the underlying pathology of Dyslipidemia. By the action of *Katu and Tikta Rasa*, *Laghu*, *Tikshna and Ruksha Guna* with *Ushna Virya*, the *Shuddha Guggulu* arrests the further production of *Ama* and thus supports the phenomenon of *Samprapti Vighatana* of *Medo Roga*. The condition is always initiated with *Sanga* (obstruction) type of *Sroto Dushti* and the combination of *Laghu Guna*, *Katu Tikta Rasa* and *Ushna Virya* relieves *Sanga* also supporting the reversal of the condition. The circulating *Ama* and excess *Snehamsha* in the *Ahara rasa* are converted and further production is checked. The reversal of the pathology stands ensured.

### CONCLUSION

In the present study, the *Triphala Shuddha Guggulu* is found effective in relieving signs and symptoms of *Medo Roga* and also showed a significant effect in normalizing the lipid profile in the patient. The quality of life was significantly improved and the patient didn't develop any adverse effects of the trial drug. Further study is required on large number of sample to establish the efficacy of *Shuddha Guggulu* in Metabolic Syndrome vis a- vis *Medo Roga*.

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