

A CLINICAL STUDY ON THE EFFECT OF *DASANGA GUGGULU* IN THE MANAGEMENT OF *MEDO ROGA* WITH SPECIAL REFERENCE TO HYPERLIPIDEMIA

Jayasinghe J.M.G.S L.¹, Kulatunga R.D.H², Rathnapala D.U.S³

¹MD (Ayu) Scholar, Department of Kaya Chikitsa, Institute of Indigenous Medicine, University of Colombo, Sri Lanka

²Senior Lecturer, Department of Kaya Chikitsa, Institute of Indigenous Medicine, University of Colombo, Rajagiriya, Sri Lanka

³Consultant Nephrologist, General Hospital, Trincomalee, Sri Lanka

Email: dr.gopishanthi@gmail.com

ABSTRACT

Medo Roga is defined as an accumulation of excessive quantity of *Medo Dhatu*, resulting in increase of the size of the physique and the pendulous appearance in buttock, belly, and the breast. It can be correlated as hyperlipidemia and obesity. The study has been carried out to evaluate the efficacy of *Dasanga Guggulu* in the management of *Medo Roga* as an observational study. Total of 30 clinically diagnosed hyperlipidemic patients were selected purposively and self designed questionnaire was adopted to collect the data. Patients were given 3g of *Dasanga Guggulu* in equally divided doses in three times per day for continuous period of three months. Subsequently, Clinical features Lipid profile and Body Mass Index (BMI) were observed before and after the treatment. Results revealed that *Dasanga Guggulu* has given statistically highly significant reduction of the Total Cholesterol and LDL at the level of $p < 0.001$ while, Triglycerides and VLDL $p < 0.05$. Further, it was observed *Dasanga Guggulu* proven statistically highly significant ($p < 0.001$) reduction of BMI, waist circumference, hip circumference and also no adverse effects have been found in the safety profile. In view of the above, it can be concluded that *Dasanga Guggulu* is safe and an effective treatment for *Medo Roga* and Hyperlipidemia.

Keywords: *Dasanga Guggulu*, *Medo Roga*, Lipid profile, Hyperlipidemia

INTRODUCTION

In *Ayurveda*, *Medo Roga* is explained as an excessive accumulation of *Medo Dhatu* (fats) along with *Mansa Dhatu* and it causes pendulous appearance of belly, breast and buttocks¹ in the body. *Charaka Samhita* emphasized that lack of physical activities and sexual intercourse, sedentary life style, indulg-

ing in day sleeping, excessive intake of sweet, cooling and unctuous food, excessive cheerfulness and lack of mental exercise, and the heredity are the main causative factors of *Medo Roga*². In addition, *Acharya Susruta* has mentioned this disease which is caused by the dominant *Dushya* and majority of dis-

eases are made by dominant *Doshas*³. In view of *Ayurveda*, *Medo Dhatu* is divided in to two portions as *Poshya Dhatu* and *Poshaka Dhatu*. *Poshya Dhatu* which gets nourishment and mentioned as *Sthai Medas* (stable) and *Poshaka Dhatu* which nourishes⁴ and identified as *Asthai Medas* (unstable) in the body. *Poshaka Medo Dhatu* is mobile in nature and circulates along with the *Rasa, Rakta Dhatu*s and gives nourishment to *Poshya Medo Dhatu*⁵ and *Medo Dhatu* transform in to *Asthi Dhatu* (bone matters) according to *Dhatu Parinama Nyaya* (theory of *Dhatu* transformation)⁶. In *Charaka Samhita*, it has been mentioned that intake of *Madura* (sweet), *Snigdha* (unctuous), *Kapha Kopakara Ahara* (foods which increase phlegm), *Avyayama* (lack of exercises) and *Diva Swapna* (day sleeping) are the main causative factors to produce *Medo Roga* with decreasing *Medo Dhatwagni* (digestive power of fat)⁷. When *Medo Dhatwagni* is decreased, that digestion of *Poshaka Medo Dhatu* will be decreased and transformation of *Medo Dhatu* into *Asthi Dhatu* (bone matters) will also be decreased. Due to this process that *Asthai Medo Dhatu* as well as *Sthai Medo Dhatu* will be increased. When *Asthai Medo Dhatu* is increased it can be correlated as hyperlipidemia while, *Sthai Medo Dhatu* is increased it can be correlated as Obesity, based on the above facts that Hyperlipidemia and obesity can be correlated with *Medo Roga*. With relation to the process of pathogenesis of *Medo Roga* that increasing fat and obstructing of the *Srothas* (channels) are the key factors for accumulation of *Vata Dosha* in the *Koshtha*⁸. Then, it leads to stimulate digestive power; therefore the corpulent becomes voracious eater. In the event of abnormal fat accumulation, serious complications are developed and the corpulent falls in to the sudden death. *Dasanga Guggulu* is one of the utmost formulas mentioned in the authentic text of *Bhava Prakasha* as a remedy for *Medo Roga*⁹.

Aim & Objectives:

- To evaluate the efficacy of *Dasanga Guggulu* in the management of *Medo Roga*.

- To identify the changes of lipid profile and BMI (Body Mass Index) in Hyperlipidemic patients.
- To find out clinical safety profile of *Dasanga Guggulu*.

MATERIALS AND METHODS:

Total thirty patients of hyperlipidemia with fulfilling the criteria for selection have been registered for the study at *Kayachikitsa* clinic of Ayurvedic Teaching Hospital, Borella, Sri Lanka. Written consent of the patients has taken and Ethical clearance has obtained from Ethic review committee of the Institute of Indigenous Medicine, University of Colombo were obtained. Further, authentication of the raw materials of the drugs has taken from Bandaranayake Memorial Ayurvedic Research Institute, Sri Lanka. The relevant data has been collected through an interviewer-administered questionnaire and the drug administration period was three months. Further, no dietary or lifestyle intervention was enforced and lipid lowering medicaments were ceased during the treatment period.

Parameters of the Assessment:

Following mentioned parameters were assessed before and after the completion of the treatment.

- Cardinal features of *Medo Roga* described in *Madhava Nidana*, an Ayurveda authentic text were considered as subjective parameters and the scoring pattern has been adopted for statistical analysis.
- Biochemical investigations have been carried out.

Inclusion criteria:

- Patients who were fulfilled the following criteria were selected for the study irrespectively of sex, race, education, occupation and religion
- Patients who were having BMI in the range 25-40Kg/m²
- Hyperlipidemic patients with age more than 30 and below 70 years.

- Patients were having at least one or more high component of lipid profile (Total cholesterol, Low Density Lipoprotein, Triglyceride, Very Low Density Lipoprotein) following with obesity or overweight.
- Prior and newly diagnosed patients of hyperlipidemia.
- Patients who were having control Type II diabetes mellitus.
- Patients who were having controlled hypertension.
- Secondary hyperlipidemic, uncontrolled type II diabetic mellitus, insulin dependent diabetic mellitus and newly diagnosed diabetic mellitus.
- Cardiac disorders and uncontrolled hypertension.
- Chronic kidney disease.
- Hypothyroidism or pituitary adenomas.
- Pregnant females and lactating mothers.

Laboratory investigation:

Lipid profile, Liver Function Test and Kidney Function Test were carried out before and after completion of the treatment.

Statistical analysis:

Student paired **t** test has been adopted for the assessment of the drug therapy.

Exclusion criteria:

Following clinical conditions were excluded.

Table 1: Ingredients of *Dasanga Guggulu*

Sanskrit name	English name	Botanical name	Part of used
<i>Shunti</i>	Ginger	<i>Zyngiber officinale</i>	Rhizomes
<i>Maricha</i>	Black pepper	<i>Piper nigrum</i>	Dried fruit
<i>Kana</i>	Long pepper	<i>Piper longum</i>	Dried fruit
<i>Chithraka</i>	Ceylon leadwort	<i>Plumbago zeylanica</i>	Roots
<i>Haritaki</i>	Chebulic myrobalan	<i>Terminalia chebula</i>	Dried fruit
<i>Vibhithaki</i>	Bastard myrobalan	<i>Terminalia balarica</i>	Dried fruit
<i>Amalaki</i>	Indian goose berry	<i>Phyllanthus emblica</i>	Dried fruit
<i>Mustha</i>	Brown nut sedge	<i>Cyperus rotundus</i>	Rhizomes
<i>Vidanga</i>	False black pepper	<i>Emblica ribes</i>	Dried fruit
<i>Guggulu</i>	Mukul	<i>Commiphora wightii</i>	Aromatic resin

Preparation of *Dasanga Guggulu*:

All equal quantities of above ingredients were converted in to fine powder and then prepared as pills followed by *Guggulu Paribhasha* mentioned in the Sri Lanka *Ayurveda Aushada Samgraha*¹⁰.

Drug Administration:

Dosage - 1 gram, three times per day after meals.

Anupana - lukewarm water

Duration - 12 weeks

OBSERVATIONS AND RESULTS

Demographic profile revealed that maximum patients i.e. 46.7% were in 50-59 years age group,

90% were female, 76.7% were house wives, 86% patients were belonging to moderate socio – economic status, 46.7% had completed secondary education.

In this study chronicity of the disease revealed that 70% patients were newly identified and 56.7% were having positive family history of hyperlipidemia. Further, study exhibited that 66.7% were having obesity and 74% were non vegetarian. Study of dietetic history showed that maximum patients were consuming excessive *Guru Ahara* (90%) *Madhura Rasa* (90%), *Snigdha Ahara* (93.3%) and *Sheeta Ahara* (96.7%) frequently. In addition, 90% were found with *Avyayama* (lack of exercise) in their lifestyle. Further, effects of therapy on various paramete-

ters are presented in the Table-2, Table -3 & Table - 4 as follows.

Table 2: Effect of *Dasanga Guggulu* on Clinical Features of *Medo Roga* (N=30)

Clinical features	Mean		Paired difference					t value	d f	p-value Sig.*(2-tailed)
	BT	AT	Mean difference	SD	Std. error mean	95% confidence interval of the difference				
						lower	upper			
<i>Ashakth SarvaKarma</i> (Incapable in all activities)	1.93	0.400	1.533	1.0080	.1840	1.1569	1.909	8.332	29	.000*
<i>Kshudra Swasa</i> (excessive sleep)	1.87	0.400	1.466	1.2521	.2286	.9991	1.934	6.416	29	.000*
<i>Trusha</i> (excessive thirst)	2.20	0.500	1.700	1.1492	.2098	1.2708	2.129	8.102	29	.000*
<i>Moha</i> (delusion)	0.23	0.033	.2000	.66436	.1213	.04808	.4480	1.649	29	.000*
<i>Swapna</i> (excessive sleep)	2.33	0.600	1.733	.94443	.1724	1.3806	2.085	10.05	29	.000*
<i>Kratana</i> (exhaustion)	2.00	0.300	1.700	1.0553	.1926	1.3059	2.094	8.823	29	.000*
<i>Sadana</i> (mental exertion)	1.43	0.166	1.266	1.1724	.2140	.8288	1.704	5.917	29	.000*
<i>Kshuth</i> (excessive hunger)	2.07	0.533	1.533	1.0742	.1961	1.1322	1.934	7.818	29	.000*
<i>Daurgandha</i> (bad smell)	1.63	0.57	1.067	.980	.179	.701	1.433	5.960	29	.000*
<i>Alpa Maituna</i> (less sexual activity)	2.63	2.03	.600	1.163	.212	.166	1.034	2.827	29	.000*

*P<0.001 =highly significant

Above cited table No.2 shows that all clinical features of *Medo Roga* have been reduced after the

treatment of *Dasanga Guggulu* and it was statistically highly significant at the level of p< 0.001.

Table 3: Effect of *Dasanga Guggulu* on Biological parameters (N=30)

Variables	Mean		Paired difference					t value	d f	p-value Sig. (2-tailed)
	BT	AT	Mean difference	SD	Std. error mean	95% confidence interval of the difference				
						lower	upper			
BMI	30.700	28.753	1.9466	1.0166	.18562	1.5670	2.3263	10.488	29	.000*
Weight	71.50	66.23	5.267	5.684	1.038	3.144	7.389	5.075	29	.000*
Waist circumference	100.98	93.9167	7.0666	5.3186	.97106	5.0806	9.0527	7.277	29	.000*
Hip circumference	108.50	104.58	3.9166	3.3735	.61592	2.6569	5.1763	6.359	29	.000*
Waist to hip ratio	0.8910	0.8937	.0026	.17390	.03175	.0676	.0622	.084	29	.000*

*P<0.001 =highly significant

Table No.3 indicates that Initial mean values of BMI, Weight, Waist circumference, Hip Circumference and Waist to Hip ratio were reduced after the

treatment and the results were statistically highly significant at the level of P<0.001.

Table 4: Effect of *Dasanga Guggulu* on Bio chemical Parameters (N=30)

Bio Chemical Parameters	Mean		Paired difference				t value	df	p-valueSig. (2-tailed)	
	BT	AT	Mean difference	SD	Std. error mean	95% confidence interval of the difference				
						lower				upper
Total Cholesterol	267.16	133.23	33.926	36.5693	6.6766	20.271	47.581	5.081	29	.000**
Triglycerides	177.49	144.00	33.493	65.4703	11.953	9.0462	57.940	2.802	29	.009*
HDL	48.716	51.033	2.3166	11.3646	2.0748	6.5602	1.9269	1.117	29	.273
LDL	183.73	159.49	24.240	37.0038	6.7559	10.422	38.057	3.588	29	.001**
VLDL	35.056	29.800	5.2566	12.4800	2.2785	0.5965	9.9168	2.307	29	.028*
FBS	127.27	114.16	13.113	35.6595	6.5105	.2021	26.428	2.014	29	.053*
Serum Creatinine	74.16	76.39	2.2343	8.4761	1.5475	5.3993	.9307	1.444	29	.111
Blood Urea	4.075	3.908	.1670	1.836	.3352	.5186	.8526	.498	29	.018*
SGOT	31.093	26.723	4.3700	9.8114	1.7913	.7063	8.0336	2.440	29	.021*
SGPT	33.653	26.17	7.4800	14.3460	2.6192	2.1231	12.836	2.856	29	.008**

**P<0.001 =highly significant * P < 0.05 =statistically significant

Table No. 4 reveals that initial mean values of Total Cholesterol, and LDL have been decreased after the treatment and the result were statistically highly significant (p<0.001). Further, Triglycerides, VLDL and FBS were reduced after the treatment and the reduction was statistically significant (P < 0.05). In addition, it was observed that *Dasanga Guggulu* decreased the blood urea and the result was statistically significant (P < 0.05). Moreover, the study shows after the treatment that SGOT was reduced up to 26.72 and it was statistically significant while, reduction of SGPT was statistically highly significant.

DISCUSSION

In *Ayurveda*, *Medo Roga* originates due to vitiation of *Jataragni* (digestive power) which leads to produce *Ama* (metabolic toxin) of the body and then *Ama* causes reduction of *Medo Dhatvagni* due to improper production of anabolic enzymes of fatty tissues.¹¹ This circumstance leads to excessive growth and further accumulation of *Medo Dhatu* in the body. The studies showed that majority of patients were consumed excessive *Guru Ahara*, *Madhura Rasa*, *Singdha* and *Sheeta Ahara* very often. According to *Ayurveda* such behaviour ultimately

produce *Medho Roga*. Further, *Dasanga Guggulu* contains ten ingredients i.e. *Shunti*, *Maricha*, *Kana*, *Chitraka*, *Haritaki*, *Vibhitaki*, *Amalaki*, *Musta*, *Vidanga* and *Guggulu*. So the potential of those ingredients in the drug contain *Katu* (pungent) and *Kashaya* (astringent) *Rasa*, *Laghu* (light), *Tikshna* (sharp), and *Ushna* (hot) *Guna*, *Ushna Veerya* and *Katu Vipaka* etc. Hence, those properties perform *Lekhaniya* (bio scraper), *Medo Hara* (fat reducing), *Kapa Shamana* (*Kapha Dosha* pacification), *Kapha Srava* (*Kapha Dosha* elimination), *Yakrid Utthejaka* (stimulation of liver functions), *Pachana* (stimulation of digestion) potential. It may that *Dasanga Guggulu* assist to normalize the *Agni* (digestive power) and perform the normal lipids levels in the blood. Further, *Dasanga Guggulu* contains *Commiphora mukul*, which has been already proven as having lipid lowering action.¹² Hence, in this study *Dasanga Guggulu* have been supported to reduce the Total cholesterol and LDL values, statistically highly significant while, Triglycerides and VLDL values have decreased statistical significantly.(table - 4). Hence, all clinical features of *Medo Roga* have been reduced after the treatment of *Dasanga Guggulu* and it was statistically highly significant (table-

2). In addition, BMI, weight, waist circumference, hip circumference and waist to hip ratio were reduced after the treatment and the results were statistically highly significant (table -3).

Further, it has been observed that *Dasanga Guggulu* reduces FBS level and it was statistically significant at the level of $p < 0.05$ (table-4). Due to the fact that the ingredients of *Dasanga Guggulu* possessing that *Tikta* (bitter), *Katu* (pungent), *Kashaya* (astringent) *Rasa*, *Laghu* (light) and *Ruksha* (rough) *Guna*, *Ushna Virya*, and *Katu Vipaka*, hyperglycaemia was reduced. Recent research advances revealed that most of the medicinal plants which help to reduce hyperglycaemia, not only stimulate beta cells to release insulin, but also regenerate beta cells. However these *in vitro* experiments need to be further evaluated *in vivo*¹³. In addition to that *Dasanga Guggulu* is having ingredients of *Haritaki*, *Vibhitaki* and *Amalaki* which have been already proven as having hyperglycaemic potential¹⁴

Moreover, the changes of hepatic and renal functions revealed that the safety profile of the drugs. The results showed blood urea level has been reduced statistically significantly after the treatment and it may not be any harmful effects to the kidney (table -4). Serum Glutamine Oxaloacetic Transaminase (SGOT) and Serum Glutamin Pyruvic Transaminase (SGPT) are the enzymes which are normally present in the liver and the heart and SGOT and SGPT will be released in to the blood when the tissues damage of those organs. Present study results have shown SGOT and SGPT levels in the blood have reduced statistical significantly ($p < 0.05$), which means no any harmful effects of *Dasanga Guggulu* to the hepatic tissues.(table-4).

CONCLUSION

Dasanga Guggulu has therapeutic potential of the reduction of lipid profile, BMI, waist and hip circumference effectively and it also has hypoglycaemic effect. Further, no adverse reaction of *Dasanga Guggulu* was seen in the clinical study. Therefore, it can be concluded that *Dasanga Guggulu* is a safe

medicine in the management of *Medo Roga* and hyperlipidemia.

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