



Case Study

EFFECT OF HUTHABHUGADI CHURNA AND TRAYUSHNADI GHRTAM AS AN AYURVEDIC PROTOCOL IN METABOLIC SYNDROME - A CASE SERIES

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ABSTRACT

The combination of obesity, dyslipidaemia, impaired glucose tolerance, hypertension often combined to the term 'Metabolic Syndrome' affects nowadays approximately more than 30% of the population of young generation. It has become a significant global health challenge associated with an increased risk of atherosclerotic cardiovascular disease (CVD). Ayurveda provides insights into the understanding of Metabolic Syndrome through concepts like *Medodhatuvridhi*, *Medovahasrothodushti*, *Santharpanajanya vikara* (*Sthoulya*, *Medoroga*, *Prameha*, *Hrdroga*) and *Amapradoshaja vikara*. The aim of the study is to evaluate the efficacy of *Huthabhugadi Churna* and *Trayushnadi Ghrtam* as an Ayurvedic protocol in metabolic syndrome. This study is a case series done on 5 subjects, were *Huthabhugadi Churna* 6gm twice daily before food with *Takra* as *Anupana* was given for 14 days followed by *Trayushnadi Ghrtam* 5gm thrice daily with lukewarm water as *Anupana* next 14 days. Assessment was done on 0th day, 29th day and 42nd day with subjective and objective parameters. The *Kapha vatahara* and *Medohara* properties of trial drugs helped in the elimination of excess *Medodhatu* and formation of optimal *Rasadi dhathus* relieving the symptoms associated with metabolic syndrome. The study showed a significant effect in normalising the lipid profile and improving the quality of life. These findings challenge the common misconception that consuming ghee leads to hyperlipidaemia offering valuable insights for further research and validation.

INTRODUCTION

Metabolic Syndrome is a major public health and clinical challenge worldwide in the wake of urbanisation, sedentary lifestyle and changing diets. This disease is mainly the outcome of over nutrition due to defective tissue metabolism. Metabolic syndrome refers to clustering of metabolic derangements that include obesity, hypertension, dyslipidaemia, and diabetes mellitus associated with accelerated cardio vascular diseases.^[1]

Ayurveda provides insights into the understanding of metabolic syndrome through concepts like

Medodhatuvridhi, *Medovahasrotho dushti*, *Santharpanajanya vikaras* (*Sthoulya*, *Medoroga*, *Prameha*, *Hrdroga*) and *Ama pradoshaja vikaras*. *Avyayama*, *Divaswapna*, *Sleshmala Aharasevana* result in *Medovaha Srothodushti* with increase in *Medodhatu*. Raised *Medodhatu* upto cellular level produce *Abadha Meda* resulting in the pathogenesis of *Prameha*. *Acharya Charaka* has explained *Prameha*, *Sthoulya* under *Santarpanajanya Vyadhi* which are caused by similar etiological factors.^[2] As the causative factors are nearly similar for *Meda* and *Kaphadushti*, vitiated *Kapha* can lead to a condition *Dhamani Pratichaya* associated with *Medo Dhusti* resulting in *Vyanavayu Vaishamy* (hypertension).^[3]

In the last several decades, *Ghrtam* has been seen as a source that increases the prevalence of CAD as it contains saturated fatty acids and cholesterol. According to some scholars *Ghrtam* is highly saturated and has got a hypercholesteraemic potential and with changed lifestyle *Ghrtam* may not be safe ^[4]. Others

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hold the opinion that all saturated fats are not chemically alike and *Ghrtam* being a medium chain triglyceride it will not cause fatty deposits and thereby it is neutral [5]. This article sheds light on the potential benefits of *Huthabhugadi Churna* [6] and *Trayushnadi Ghrtam* [7] as an Ayurvedic intervention for *Medoroga*.

Diagnostic Criteria

According to National Cholesterol Education Program (NCEP, 2002) Adult Treatment Panel III definition, Metabolic Syndrome is present if three or more of the following five criteria are met [8]:

- Waist circumference over 102cm (40 inches)-men; 88cm (35 inches) - women
- Blood pressure over 130/85mm Hg,
- Fasting triglyceride level over 150mg/dl,
- Fasting HDL cholesterol <40mg/dl(men) or <50mg/dl (women)
- Fasting blood sugar over 100mg/dl

Clinical Report

This present case series included 5 participants diagnosed with metabolic syndrome who are registered for clinical study with primary history of obesity, dyslipidaemia (DLP), diabetes mellitus (DM), hypertension (HTN). After proper evaluation and physical examination trial drugs were given to subjects and results were analysed based on subjective and objective parameters.

Case 1

A male patient of 31 years age who is a known case of DM and HTN presented with fatigue, increased appetite, and chest discomfort. He was taking allopathic medication for DM since past 2 years. He is working in IT sector and hence followed a sedentary lifestyle. Excessive intake of refined carbohydrates, sugar sweetened beverages, deep fried food, untimely food pattern and improper sleep cycle followed by severe emotional stress worsened his health condition. His mother had a history of DM, HTN, CVA. After the treatment, he had significant improvement in his health condition and effective changes were observed in his lipid profile.

Case 2

A female patient of 32 years who is a known case of dyslipidaemia and hypertension for last 3 years presented with difficulty in breathing on slight exertion, excessive fatigue, chest discomfort and excessive sweating and foul smell of the body. She was not under any medications. Her mother had a history of HTN, DM, DLP. She gained about 5kg of bodyweight within 6 months and symptoms started affecting her day-to-day activities. After treatment, significant changes were noted in lipid profile, uric acid, TSH level.

All her symptoms including chest discomfort got reduced thereby improved the quality of life.

Case 3

A male patient of 54 years who is a known case of hypertension (for 15 years), DM (for 8 years), hypothyroidism (for 5 years), DLP (for 2 years) complaints of increased appetite, difficulty in breathing on slight exertion, excessive sleep, and excessive sweating. He was taking allopathic medication for 15 years. He was a chain smoker and a chronic alcoholic for 20 years. He followed a sedentary lifestyle habit with untimely sleeping pattern, eating more junk foods followed by severe emotional stress which worsened his conditions. On examination, Obesity (Class II) and Grade 2 fatty liver changes noted. His father had history of DM, hypothyroidism and mother had history of HTN, DLP, DM, hypothyroidism. After the treatment, positive changes were observed in his blood report and all the symptoms got subsided.

Case 4

A female patient of 63 years who is a known case of DM, HTN, DLP for 7 years complaints of difficulty in breathing on slight exertion, excessive fatigue, excessive sleep. She was under allopathic medication for 6 years. She also complained of constipation, reduced appetite, and heaviness of the body for the past 2 months. She was a school teacher by profession and had family issues leading to severe emotional stress. Because of excessive fatigue and body ache she had trouble in doing her day-to-day activities. After the treatment, all her symptoms got reduced and significant changes were noted in all the blood parameters.

Case 5

A male patient of 38 years who is a known case of DM, DLP, HTN for 1 year presented with excessive fatigue, excessive sweating, and foul smell of the body for 1 year. He is working in IT sector so due to strenuous office work he followed untimely sleep pattern, lack of exercise and excessive use of junk foods and carbonated drinks. He managed the conditions using Ayurvedic medication but the blood parameters were not within normal limit. After the treatment considerable changes were noted in FBS, Lipid profile, TSH, Uric acid level and quality of life was also improved.

Therapeutic Intervention, Follow Up and Outcome

The selected subjects were treated with *Huthabhugadi churna* 6gm twice daily before food with *Takra* as *Anupana* for 14 days followed by *Trayushnadi ghrtam* 5g thrice daily with lukewarm water as *Anupana* for next 14 days. Assessment done on 0th day, 29th day, and 42nd day with subjective and objective

parameters. Uric acid, TSH was assessed on 0th day and the symptom of metabolic syndrome which is 42nd day. After treatment, improvement was noted in presented in Table 1, 2

Table 1: Showing Subjective Criteria

Cardinal features of Metabolic Syndrome graded from 0-4 scores

Assessment Parameter	Difficulty in breathing even on slight exertion	Polyphagia	Fatigue	Polydypsia	Polyuria	Excess sweating	Excess sleep	Laziness	Foul smell of the body
Case 1									
BT	Grade 0	Grade 2	Grade 3	Grade1	Grade 1	Grade 3	Grade 2	Grade 2	Grade 1
AT	Grade 0	Grade 1	Grade 2	Grade 1	Grade 1	Grade 2	Grade 1	Grade 1	Grade 1
AF	Grade 0	Grade 1	Grade 1	Grade 0	Grade 0	Grade 1	Grade 0	Grade 1	Grade 0
Case 2									
BT	Grade 2	Grade 1	Grade 3	Grade 1	Grade 1	Grade 3	Grade 2	Grade 1	Grade 2
AT	Grade 1	Grade 1	Grade 2	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1
AF	Grade 1	Grade 0	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1	Grade 0	Grade 0
Case 3									
BT	Grade 2	Grade 2	Grade 1	Grade 3	Grade 0	Grade 3	Grade 2	Grade 3	Grade 2
AT	Grade 1	Grade 2	Grade 1	Grade 2	Grade 0	Grade 2	Grade 1	Grade 2	Grade 1
AF	Grade 0	Grade 1	Grade 0	Grade 2	Grade 0	Grade 1	Grade 0	Grade 1	Grade 0
Case 4									
BT	Grade 3	Grade 2	Grade 3	Grade 2	Grade 2	Grade 1	Grade 2	Grade 1	Grade 2
AT	Grade 2	Grade 1	Grade 1	Grade 1	Grade 1	Grade 0	Grade 1	Grade 1	Grade 1
AF	Grade 1	Grade 0	Grade 0	Grade 1	Grade 1	Grade 0	Grade 0	Grade 0	Grade 0
Case 5									
BT	Grade 1	Grade 1	Grade 3	Grade 2	Grade 2	Grade 3	Grade 2	Grade 2	Grade 2
AT	Grade 1	Grade 1	Grade 2	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1
AF	Grade 1	Grade 0	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1	Grade 0	Grade 0

Table 2: Showing Objective criteria

Objective Parameters	T.Cholesterol (mg/dl)	TGL (mg/dl)	LDL (mg/dl)	HDL (mg/dl)	VLDL (mg/dl)	FBS (mg/dl)	PPBS (mg/dl)	SGOT (IU/L)	SGPT (IU/L)	Uric acid (mg/dl)	TSH (Miu/ml)	BP (mmHg)
CASE 1												
BT	245	452	116	38.7	90.4	174	216.1	39.1	74.9	5.3	1.6	150/90
AT	205	383	94	34.7	76.6	168.2	231.4	35.2	64.1			140/90
AF	216	308.5	113.9	40	61.7	198	286.2	28.9	51.7	5.1	1.1	130/80
CASE 2												
BT	299	150	238	31	30	84	97	14	12	4.2	2.2	150/100
AT	218	94	159	35	24	85	84	12	16			142/94
AF	235	118	167	49	19	108	95	12	13	3.6	1.83	140/90
CASE 3												
BT	207	229	108	53	46	254	317	42	59	5.2	1.08	130/90
AT	158	77	69	74	15	173	256	43	55			130/80

AF	121	79	35	70	16	195	302	41	56	3.9	1.27	120/80
CASE 4												
BT	155	189	77	40	38	125	236	50	74	4.5	2.39	150/100
AT	143	80	76	51	16	105	179	36	70			140/90
AF	150	91	90	42	18	120	183	40	66	4.8	2.51	142/94
CASE 5												
BT	213	194	145	29	39	142	180	37	77	9.9	4.5	150/90
AT	188	160	122	34	32	138	286	38	93			140/90
AF	176	166	113	30	33.2	128	218	31	66	6.0	3.74	126/84
BT-Before Treatment, AT -After Treatment, AF-After Follow up												

DISCUSSION

Metabolic Syndrome is an aggregation of multiple disorders that collectively increase an individual's susceptibility to develop atherosclerotic cardiovascular disease, insulin resistance, diabetes mellitus and even vascular and neurological complications like stroke. Insulin resistance and central obesity are key pathological factors. Excess free fatty acids impair insulin response, raising glucose and insulin levels. They hinder glucose uptake and accumulate as triglycerides, affecting lipid metabolism and reducing HDL cholesterol. Inflammation worsens insulin resistance and triggers dyslipidaemia and a prothrombotic state. Increased sympathetic activity, sodium re-absorption, and decreased vasodilation contribute to hypertension. Insulin resistance precedes polyunsaturated fatty acid deficiency, impairing insulin receptor function and glucose transport. This leads to heightened free fatty acid absorption and lipolysis, worsening peripheral insulin resistance.

Santharpana nidanas like *Madhura*, *Snigda*, *Guru*, *Pichila aharsevana* and *Viharas* like *Avyayama*, *Divaswapna* causes *Kaphapradhana tridosha dushti* and *Agnimandya* resulting in improper digestion and *Ama* formation. The *Madhura rasa* predominant *Sleshmala rasadhathu* will cause the excess formation of *Bahu*, *Abhadham* or *Asamhatham Medas* leading to *Medodhatvagnimandya*. Thus *Medodhatu* is nourished more and more, while other *Dhathus* and *Upadhathus* remains under-nourished. Due to the *Avarana* by *Medas*, the movement of *Samana* and *Vyana vayu* get obstructed and is specially confined to *Koshta*. This aggravated *Vata* further disrupts the function of *Pachaka pitta* leading to *Agnivaishamya* and *Kshuth adhikya*. Consequently, there is an increase in *Mamsa*, *Medo dhathu* resulting in weight gain and obesity. Aggravation of *Vata* along with other *Doshas*, leading to the vitiation of *Soumya dhathus* like *Rasa*, *Raktha*, *Mamsa*, *Medas* and other *Dhooshyas* like *Vasa*, *Lasika*; gets *Sthanasamsraya* in *vasti* causing *Prameha*. *Pichila guna* of *Kapha* and *Kleda* vitiates *Rasa* and *Raktha*

dhathu leading to *Dhamani prathichaya* which can be considered as LDL Cholesterol and elevated triglycerides. *Kledayuktha rasa* and *Raktha* will lead to *Vyanavata kopa* in *Svasthaana* i.e., *Hridayam* leading to increased cardiac output which contributes to hypertension.

Probable Mode of Action of Huthabhugadi Churna

The formulation contains *Chitraka*, *Ajamoda*, *Saindhava lavana*, *Pippali*, *Maricha* and *Harithaki*. These ingredients have predominantly *Katu tiktha Kashaya rasa*, *Laghu ruksha tikshna guna*, *Ushna virya*, *Katu vipaka* and *Kapha vatahara* action. All these properties normalize *Guru*, *Sheeta*, *Snigda*, *Pichila guna pradhana Kapha*, *Ama* and *Meda*. *Katu rasa* enhances the *Jatharagni* leading to increased *Medodhatvagni*, allowing proper formation and *Poshana* of *Dhathus*. *Tiktha rasa* aids in *Ama pachana*, promoting optimal formation of *Rasadi dhatus*. The *Ruksha*, *Lekhana* property of *Kashaya rasa* counteract the *Snigda guna* of *Meda* and alleviate aggravated *Kapha*. The *Laghu*, *Tikshna guna* decreases excess *Kapha* reducing *Gaurava* thereby balances *Vata*. Most of the drugs are having *Ushna virya*, *Katu vipaka* which is opposite to the properties of accumulated *Kapha*, *Medas* and aids in *Samprapthi Vighatana*. The *Vata Kaphahara* properties of *Chitraka*, *Ajamoda*, *Pippali*, *Maricha* corrects the *Samprapthi* depleting excess *Kapha* and *Meda* thereby reduce lipid accumulation in the circulatory system preventing the formation of atherosclerosis. *Saindhava lavana* with its *Tikshna*, *Sukshma*, *Laghu guna* enters the *Srothas* and helps in *Kapha medo vilayana*. *Rasayana* property of *Harithaki*, *Pippali* helps in *Dhathu Sthiratva* and *Dhathu poshana* preventing the occurrence of secondary diseases. The anti hyperlipidemic effect of *Chitraka*^[9], *Pippali*^[10], *Maricha*^[11], *Harithaki*^[12] helps to reduce elevated triglyceride and LDL Cholesterol level. The hypoglycemic property of *Pippali*, *Ajamoda* decreases the glycogenesis and necessitates the usage of accumulated fat. The anti oxidant and immune-

modulatory effect of *Pippali*, *Maricha*, *Harithaki* etc improves the general health of the patient. Here *Takra* is used as *Anupana*. It has *Madhura*, *Amla*, *Kashaya rasa*, *Ushna virya*, *Madhura vipaka* and *Tridosahara*. Also it possess *Dipana*, *Pachana*, *Grahi*, *Laghutva* property and hence would act as one of the best possible *Anupana* in Metabolic Syndrome. Therefore *Huthabhugadi Churna* before administration of *Trayushnadi Ghrtam* act as best *Dipana*, *Pachana* making it an ideal choice in metabolic syndrome.

Probable Mode of Action of *Trayushnadi Ghrtam*

In *Trayushnadi Ghrtam* the main ingredients are *Harithaki*, *Vibhithaki*, *Amalaki*, *Pippali*, *Maricha*, *Shunti*, *Guda* and *Ghrtam*. The ingredients of the formulation are predominant in *Katu Kashaya rasa*, *Laghu Ruksha guna*, *Ushna virya*, *Katu vipaka* and *Kapha vatahara*, *Agnideepana* in action. The *Laghu*, *Ruksha tikshna guna* and *Katu Kashaya rasa* acts as *Kapha shamaka* whereas *Tikshna Guna* and *Ushna Virya* counteracts *Vata*. The *Agnidipana* property of *Trayushnadi Ghrtam* increases the *Jatharagni*. The *Teja* and *Agni Mahabhutha* predominance may help to improve the liver function and correct the liver enzymes. *Trayushnadi Ghrtam* may decrease the excessive *Kleda* and improves the quality of *Medas* causing increase in the HDL cholesterol levels in blood regulating the lipid metabolism. When digestion becomes normal *Poshaka dhathu* is formed from excellent *Ahara rasa* which enhances *Bala*, *Varna*, *Ojas*, strengthens *Indriyas* and even boost the immune system. The *Rasayana* effect of *Trayushnadi Ghrtam* helps to maintain the quality of *Dhathus* formed thereby improves health and longevity by enhancing metabolism and provides a healthy body. In modern researches, ingredients like *Harithaki*, *Vibhithaki*, *Amalaki*, *Pippali*, *Maricha* have proven anti diabetic effect and *Harithaki*, *Amalaki*, *Shunti* have been studied for its hypocholesterolaemic potential. *Triphala*, *Trikatu*, *Guda* possess anti oxidant and immunomodulatory effect that can help combat the oxidative stress associated with metabolic syndrome.

CONCLUSION

The present study has highlighted the efficacy of *Huthabhugadi Churna* and *Trayushnadi Ghrtam* as an Ayurvedic protocol for managing metabolic syndrome. The *Kapha vatahara* and *Medohara* properties of these trial drugs have proven effective in eliminating excess *Medodhathu* and promoting optimal *Rasadi dhathus*, thereby alleviating the symptoms associated with metabolic syndrome. Furthermore, significant effect was observed in normalizing the lipid profile of the patients and in improving their quality of life. These findings challenge the common misconception that

consuming ghee leads to hyperlipidaemia offering valuable insights for further research and validation.

However, it is important to consider certain essential factors before administering *Ghrtam* in *Santharpanajnya vikara*. Factors such as *Agni*, *Koshta*, *Prakruti*, *Kala*, and *Vaya* of an individual should be taken into account. Those who are excessively obese, having an excess of *Kapha* and *Medas*, and those who do not engage in regular exercise should avoid consuming *Ghrtam* in excessive quantities. Furthermore, it should be preceded by proper *Dipana Pachana* to prevent the formation of *Ama*.

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