ISSN: 2322 - 0902 (P)
ISSN: 2322 - 0910 (O)

International Journal of Ayurveda and Pharma Research

Review Article

A COMPREHENSIVE REVIEW ON THE EFFECT OF AN AYURVEDIC PROTOCOL IN METABOLIC SYNDROME

Harishma Asok.S[1]*, Arjun Chand. C.P[2], Arun Pratap[3], Kasthuri Nair.A[4]

*[1]PG Scholar, [2]Associate Professor, [3]HOD and Professor, [4]Assistant Professor, Department of Kayachikitsa, Pankajakasthuri Ayurveda Medical College and PG Centre, Killy, Kattakada, Thiruvananthapuram, Kerala, India.

Article info

Article History:
Received: 16-01-2024
Accepted: 11-02-2024
Published: 05-03-2024

KEYWORDS:
Metabolic Syndrome, Ayurvedic Protocol, *Huthabhugadi Churna, Trayushnadi Ghrtam.*

ABSTRACT

The clustering of obesity, dyslipidaemia, impaired glucose tolerance, and hypertension, known as 'Metabolic Syndrome (MS),' has emerged as a significant global public health and clinical concern, attributed to urbanization, sedentary lifestyles, and dietary shifts. Metabolic Syndrome aligns well with the Ayurvedic concept of *Medodhatuvriddhi, Medovahasrothodushti, Santharpanajanya vikaras* (*Sthoulya, Medoroga, Prameha, Hrdroga*) and *Ama pradoshaja vikaras.* It is primarily caused by the vitiation of *Kapha, Meda, Ama* and hence drugs having *Kaphavatahara, Medohara Chikitsa* should be mainly adopted. Additionally, there is a common misconception among the public that ghee consumption leads to hyperlipidaemia. Taking these factors into account, a protocol has been formulated to assess the effectiveness of *Huthabhugadi churna* and *Trayushnadi ghrtam* in the management of MS. Most of the drugs in the formulations are having *Kapha vatahara and Medohara* properties which might help in eliminating excess *Medodhathu* and promote optimal *Rasadi dhathus. Huthabhugadi Churna* might play a pivotal role in addressing *Jatharagnimandya* whereas *Trayushnadi Ghrtam* might correct the imbalance in *Dhatvagnimandya* reducing the *Atipravritti of Medodhathu.* Consequently, this protocol might effectively help in reducing *Kapha, meda* and *ama* ultimately alleviating the symptoms associated with MS.

INTRODUCTION

In today's fast-paced world, the unyielding pursuit of ambitious goals frequently allows minimal space for prioritizing a healthy lifestyle, contributing to the emergence of various new diseases influenced by factors such as modernization, sedentary routines, and environmental impacts. Among these health challenges, Metabolic syndrome (Syndrome X or Insulin resistance syndrome) emerges as a significant concern, characterized by a cluster of metabolic derangements that include obesity, hypertension (HTN), dyslipidaemia (DLP), diabetes mellitus (DM) associated with accelerated cardio vascular diseases (CVD)[1].

Access this article online

Quick Response Code

https://doi.org/10.47070/ijapr.v12i2.3144

Ayurveda provides insights into the understanding of MS through concepts like *Medodhatu vriddhi, Medovahasrothodushti, Santharpanajanya vikaras* (*Sthoulya, Medoroga, Prameha, Hrdroga*) and *Ama pradoshaja vikaras*. It is primarily caused by the vitiation of *Kapha, Meda, Ama* and exhibits symptoms such as difficulty in breathing on slight exertion, polyphagia, fatigue, movement of body parts, polydipsia, polyuria, difficulty in sexual activity, excessive sweating, excess sleep, laziness, poor physical strength, and foul smell of the body along with elevated blood parameters. Therefore, treatment aim to reduce *Kapha, Meda,* and *Ama* while enhancing the power of Agni. This review briefly describes the potential benefits of *Huthabhugadi churna* and *Trayushnadi ghrtam* as an Ayurvedic protocol in the management of MS.

Definition of Metabolic Syndrome

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:[2]

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

Ayurvedic Perspective of Metabolic Syndrome

Agnidushti is the major component in metabolism related disorders. *Nidanas* like *Avyayama, Divaswapna*, excessive intake of *Madhura Snigda Ahara* causes *Kaphadoshavridhi* leading to *Medodhatv-agnimandya* resulting in excessive increase of *Medodhathu*. The raised *Medodhathu*, in the form of *Abadha medas*, circulates with *Rasa* and *Raktha dhathu*, leading to increased lipid levels, including elevated LDL and triglycerides, potentially influencing the formation of *Prasada medas* (low HDL).

The augmented *Medo dhathu*, in its *Kleda* form, reaches the *Basti* and is excreted through urine, causing *Dhathukshaya* contributing to the development of *Prameha* (diabetes mellitus). Furthermore, *Abadha medas* deposits in blood vessels, inducing *Srotholepa*, which results in *Dhamani Prathichaya* (atherosclerosis), potentially leading to *Vyanabala Vaishmaya* (hypertension). Obesity plays a pivotal role in the various manifestations of metabolic syndrome.

Probable Effect of *Huthabhugadi Churna* and *Trayushnadi Ghrtam* As An Ayurvedic Protocol In Metabolic Syndrome

Mandagni, Kapha medo dushti, Srotorodha & Vataprakopa are the important factors involved in the pathogenesis of *Medoroga*. So, the treatment must aim at bringing back the normalcy of vitiated *Doshas* along with removal of causative factors. The drugs suitable here are *Katu*, *Tiktha, Kashaya rasa pradhana ushna tikshna dravyas* which helps in *Langhana*, *Pachana* as well as *Medakledo upasoshana*. Also, there is a misbelief in common people that consumption of ghee leads to hyperlipidaemia. So, this protocol aims to prove that MS can be effectively managed using medicated *Ghrtam.*

Huthabhugadi Churna is mentioned in *Sahasrayogam Churna prakarana*[3] and *Trayushnadi Ghrtam* is mentioned in *Charaka samhitha Grahani chikitsadhyaya*[4]. Administering *Churna* before *Snehana* helps the body attain *Nirama avastha*, alleviates *Srothorodha,* enhance *Agni,* and promote *Koshta sudhi,* facilitating the easy absorption of *Ghrtam.*

Trayushnadi Ghrtam is having *Katu Tiktha Kashaya rasa*, *Laghu ruksha guna*, *Ushna virya, Katu vipaka, Ama pachaka, Agni deepaka* properties which may help to disrupt the pathogenesis. The ingredients of both formulations are having *Kaphavatahara, Ruksha, Ushna, Dipana, Pachana property* which corrects *Medodhatvagnimandya*.

In classical references the dose for *Churna* is mentioned as 12gm which can be applied here and the dose of *Ghrtam* is mentioned as 48gm in classics but when it comes to the use of *Ghrtam* in MS the dose can be limited considering the *Mandagni* of the patients. The time of administration of medicine can be morning and evening before food. It is planned in such a way because the medicine given at this time digest quickly without hampering the health of the patient, destroys the *Doshas* situated in *Amashaya* and helps for making the body thin (*Krisheekaranartham*). The drug taken on *Pragbaktha* also has the action on *Apana vayu*. When *Apana vayu* is corrected proper excretion of feces occurs thereby correcting the digestion and metabolism. Each medicine can be given for 15 days considering the *Medoposhana Kala*.

Considering all the above, a protocol is framed which involves the administration of *Huthabhugadi churna* with *Takra* as *Anupana* followed by *Trayushnadi ghrtam* with lukewarm water as *Anupana. Huthabhugadi Churna* comprises six ingredients, while *Trayushnadi Ghrtam* consists of eight ingredients. Each drug's individual characteristics and properties are mentioned below.

Table 1: Ingredients of *Huthabhugadi Churna* and *Trayushnadi Ghrtam*

Ingredients of *Huthabhugadi churna*	**Ingredients of *Trayushnadi ghrtam***
1. Chitraka	*1. Harithaki*
2. Ajamoda	*2. Vibhithaki*
3. Saindhava Lavana	*3. Amalaki*
4. Pippali	*4. Pippali*
5. Maricha	*5. Maricha*
6. Harithaki	*6. Shunti*
	7. Guda
	8. Goghrtam

Table 2: Properties of *Huthabhugadi Churna* and *Trayushnadi Ghrtam*[5-13]

Drug name	*Rasa*	*Guna*	*Virya*	*Vipaka*	*Karma*
Chitraka	*Katu*	*Laghu, Ruksha, Tikshna*	*Ushna*	*Katu*	*Vata kapha hara, Dipana pachana, Grahi*
Ajamoda	*Katu, Tiktha*	*Laghu, Ruksha, Tikshna*	*Ushna*	*Katu*	*Kapha vatahara, Dipana, Hrdya, Balya*
Saindhava lavana	*Lavana, Madhura*	*Snigda, Tikshna, Sukshma, Laghu*	*Anushna Shita*	*Madhura*	*Tridoshahara, Kaphavilayana, Dipana*
Pippali	*Katu*	*Laghu, Snigda*	*Ushna*	*Madhura*	*Vata kaphahara, Dipana, Rasayana*
Maricha	*Katu*	*Laghu, Tikshna*	*Ushna*	*Katu*	*Kapha vatahara, Dipana, Pachana, Medohara*
Harithaki	*Kashaya pradhana lavana varjitha pancha rasa*	*Laghu, Ruksha*	*Ushna*	*Madhura*	*Tridoshahara, Dipana, Lekhana, Rasayana*
Vibhithaki	*Kashaya*	*Ruksha, Laghu*	*Ushna*	*Madhura*	*Kapha pittahara, Bhedana, Chakshushya*
Amalaki	*Amla pradhana lavana varjitha pancharasa*	*Guru, Ruksha, Shita*	*Shitha*	*Madhura*	*Tridoshahara, Vayasthapana, Rasayana*
Shunti	*Katu*	*Guru, Ruksha, Tikshna*	*Ushna*	*Madhura*	*Vata kaphahara, Dipana, Bhedana*
Guda	*Madhura*	*Laghu, Ruksha, Tikshna*	*Ushna*	*Madhura*	*Vata pittahara*
Ghrtam	*Madhura*	*Guru, Snigda*	*Shita*	*Madhura*	*Tridoshahara, Dipana*

Probable Mode of Action of *Huthabhugadi Churna*

The ingredients of *Huthabhugadi Churna* exhibit a predominant composition of *Katu Tiktha Rasa, Laghu Ruksha Tikshna Guna, Ushna Virya, Katu Vipaka,* and *Kapha Vatahara* action. These properties collectively work to normalize *Guru, Shitha, Snigda, Pichila Guna* predominant *Kapha, Ama,* and *Meda*.

The *Katu, Tiktha, Kashaya Rasa* predominance in *Huthabhugadi Churna* counteracts aggravated *Kapha* and aids in *Ama Pachana*. Its *Agni Dipana* property alleviates *Agni vaishamya,* removes *Srothorodha*, and addresses *Kapha Medo dushti*. Additionally, it reduces excess *Kleda*, contributing to the depletion of *Medo dhathu*. Its *Pachana* property supports *Ama Pachana*, promoting optimal *Rasadi dhathu* formation.

Most ingredients possess *Ushna Virya* and *Katu Vipaka*, opposing the properties of accumulated *Kapha* and *Medas*, aiding in *Samprapthi Vighatana*. The *Vata Kapha Medohara* properties of *Chitraka, Ajamoda, Pippali, Maricha* correct the *Samprapti* by depleting excess *Kapha* and *Meda*, relieving *Atipravritti* of *Medo dhathu*. *Saindhava Lavana* with its *Tikshna, Sukshma, Laghu guna*, enters the *Srothas* facilitating *Kapha Medo vilayana*. The *Lekhana karma* of *Harithaki* effectively reduces lipid accumulation, preventing atherosclerosis. The *Rasayana* property of *Harithaki* and *Pippali* aids in *Dhathu Sthiratva* and *Dhathu Poshana*, preventing secondary diseases.

In modern research, the ingredients of formulation demonstrate anti-hyperlipidaemic effects, preventing fatty acid formation and reducing elevated triglyceride and LDL cholesterol levels. The hypoglycaemic property of *Pippali* and *Ajamoda* decreases glycogenesis and promotes fat utilization. *Harithaki* exhibits hepatoprotective and cardio-protective activities, while the antioxidant and immuno-modulatory effects of *Pippali, Maricha*, and *Harithaki* improve overall patient health[14,15,16,17].

Using *Takra* as *Anupana* is suggested, as it acts as *Tridoshagna* with *Madhura, Amla, Kashaya Rasa, Ushna Virya,* and *Madhura Vipaka. Takra* possesses *Dipana, Pachana, Grahi,* and *Laghutva* properties, making it an ideal *Anupana* in metabolic syndrome. Therefore, the administration of *Huthabhugadi Churna* before *Trayushnadi Ghrtam* is considered a suitable choice, serving as an effective *Dipana Pachana* in the management of Metabolic Syndrome.

Probable Mode of Action of *Trayushnadi Ghrtam*

PUFA deficiency contributes to insulin resistance (IR) which is the main pathological factor for MS. Cow's ghee, rich in PUFA (omega-3, omega-6), MUFA (omega-7, omega-9), and fat-soluble vitamins (K2, A, D, E), exhibits anti-diabetic, anti-atherogenic, and immunomodulatory effects, preventing lipid

peroxidation. Ghee's unique medium-chain fatty acids (MCFAs) are smaller and water-soluble, ensuring rapid absorption. The increased lipophilicity of ghee binds insulin receptors, facilitating normal metabolic regulation. These properties emphasize the benefits of incorporating cow's ghee in the management of MS.[18,19]

The ingredients of *Trayushnadi Ghrtam,* exhibits predominant *Katu Kashaya rasa, Laghu Ruksha guna, Ushna virya, Katu vipaka,* and *Kapha Vatahara, Agnideepana* properties. Its *Laghu, Ruksha, Tikshna guna*, and *Katu Kashaya rasa* contribute to *Kapha shamaka*, while *Tikshna Guna* and *Ushna Virya* counteract *Vata*. The *Agnidipana* property enhances *Jatharagni*, potentially improving liver function and correcting liver enzymes. *Trayushnadi Ghrtam* may reduce excessive *Kleda*, enhancing HDL cholesterol levels and regulating lipid metabolism.

Normalization of digestion lead to the formation of high-quality *Poshaka dhathu* from excellent *Ahara rasa*, enhancing *Bala, Varna, Ojas*, strengthening *Indriyas*, and boosting the immune system. The *Rasayana* effect maintains *Dhathu* quality, improving overall health and longevity by enhancing metabolism and providing a healthy body. Modern research supports the anti-diabetic effects of ingredients like *Harithaki, Vibhithaki, Amalaki, Pippali*, and *Maricha. Harithaki, Amalaki*, and *Shunti* have been studied for their hypocholesterolaemic potential. *Triphala, Trikatu*, and *Guda* exhibit antioxidant and immunomodulatory effects, countering oxidative stress associated with MS[20,21,22]. Elimination of excess *Medodhathu* and optimal formation of *Rasadi dhathus* may result in decreased triglyceride levels, improving lipid metabolism. Reduction in *Atipravrutti* of *Medodhathu* may alleviate symptoms of *Medoroga*, such as *Kshudra swasa, Svedabadha*, and *Daurgandhya*. The collective efforts of *Trayushnadi Ghrtam* may also contribute to a decrease in abdominal size by reducing *Medas* deposition in *Udara pradesha*.

CONCLUSION

Metabolic syndrome is mainly due to the vitiation of *Kapha, Meda* and *Ama* causing *Jathar-agnimandya* further leading to *Medodhatva gnimandya.* The *Bahu, Abadha medas* get *Sthanasamsraya* in different sites and produce various metabolic disorders including *Sthoulya, Prameha, Dhamani prathichaya* either directly or through the influence of other *Samprapthi Ghataka*. So, to do *Samprapthi vighatana*, drugs which increase the power of *Agni* and reduce *Kapha, Meda, Ama* should be selected. Most of the drugs of *Huthabhugadi Churna* and *Trayushnadi Ghrtam* are having *Kapha vatahara* and *Medohara* properties which might help in eliminating excess *Medodhathu* and promote optimal *Rasadi dhathus*. *Huthabhugadi Churna* with its *Katu, Tiktha rasa*, *Laghu ruksha guna* might play a pivotal role in addressing *Jatharagnimandya* thereby improving the efficiency of the digestive process. In contrast, *Trayushnadi Ghrtam* with its *Dipana, Amapachana* property might correct the imbalance in *Dhatvagnimandya* reducing the *Atipravritti* of *Medodhathu.* Consequently, this protocol might effectively help in reducing *Kapha, Meda* and *Ama* ultimately alleviating the symptoms associated with MS.

REFERENCES

1. Harrison’s Manual of Medicine, McGraw Hill publication, edited by J. Larry Jameson, Anthony S Fauci, Dennis L. Kasper, Stephen L. Hauser, Dan L. Longo, Joseph Loscalzo, 20th edition, Chap 176, Pg-933.
2. Alberti KG, Eckel R.H, Grundy SM, Zimmet PZ, Cleeman JI, Donato KA, et al. Harmonizing the Metabolic Syndrome: A joint interim statement of the International Diabetes Federation Task Force on Epidemiology and Prevention; National Heart, Lung and Blood Institute, American Heart Association, World Heart Federation; International Atherosclerosis Society and International Association for the Study of Obesity. Circulation, 2009; 120(16) Pg: 1640-1645.
3. K.V.Krishnavaidyan, Churna prakaranam, Sahasrayogam, Sujanapriya vyakhyanam, 2017 edition, Vidyarambham publishers, Pg:199
4. Agnivesha, Chikitsasthana, Grahani chikitsadhyaya 15/87, In: Vaidya Acharya Yadavji Trikamji, editor Charaka samhitha elaborated by Charaka and Dridhabala with Ayurveda dipika commentary by Chakrapanidatta. 7th ed. Varanasi: Chowkamba publications; 2007 Pg: 87
5. Dr. J.L.N. Sastry, Illustrated Dravyaguna Vijnana, 1st ed, Vol.2, Chaukambha orientalia, Varanasi, 2004, p-314
6. Dr. J.L.N. Sastry, Illustrated Dravyaguna Vijnana, 1st ed, Vol.2, Chaukambha orientalia, Varanasi, 2004, p-266
7. Dr. J.L.N. Sastry, Illustrated Dravyaguna Vijnana, 1st ed, Vol.2, Chaukambha orientalia, Varanasi, 2004, p-452
8. Dr. J.L.N. Sastry, Illustrated Dravyaguna Vijnana, 1st ed, Vol.2, Chaukambha orientalia, Varanasi, 2004, p-452
9. Dr. J.L.N. Sastry, Illustrated Dravyaguna Vijnana, 1st ed, Vol.2, Chaukambha orientalia, Varanasi, 2004, p-448
10. Dr. J.L.N. Sastry, Illustrated Dravyaguna Vijnana, 1st ed, Vol.2, Chaukambha orientalia, Varanasi, 2004, p-209
11. Dr. J.L.N. Sastry, Illustrated Dravyaguna Vijnana, 1st ed, Vol.2, Chaukambha orientalia, Varanasi, 2004, p-216

12. Dr. J.L.N. Sastry, Illustrated Dravyaguna Vijnana, 1st ed, Vol.2, Chaukambha orientalia, Varanasi, 2004, p-220
13. Dr. J.L.N. Sastry, Illustrated Dravyaguna Vijnana, 1st ed, Vol.2, Chaukambha orientalia, Varanasi, 2004, p-519
14. Mans K, Aburjai T. Accessing the hypoglycemic effects of seed extract from celery (Apium graveolens) in alloxan-induced diabetic rats. J Pharmaceutical Res Int. 2019; 26: 1-0.
15. Krishna MS, Joy B, Sundaresan A. Effect on oxidative stress, glucose uptake level and lipid droplet content by Apigenin 7, 4'-dimethyl ether isolated from Piper longum L. Journal of Food Science and Technology. 2015 Jun; 52(6): 3561-70.
16. Ashok kumar K, Murugan M, Dhanya MK, Pandian A, Warkentin TD. Phytochemistry and therapeutic potential of black pepper [Piper nigrum (L.)] essential oil and piperine: a review. Clinical Phytoscience. 2021 Dec; 7(1): 1-1.
17. Chattopadhyay RR, Bhattacharyya SK (2007). Plant Review Terminalia chebula. Pharmacognos. Rev. 23: 145-150.
18. Harishma Asok.S, Arjun Chand.C.P, Arun Pratap, Kasthuri Nair A. Role of Goghrta (Cow's Ghee) and Medicated Ghrta (Medicated Ghee) In Metabolism and Managing Metabolic Disorders. AYUSHDHARA, 2023; 10(2): 54-59. https://doi.org/10.47070/ayushdhara.v10i2.1192
19. Harishma Asok.S, Arjun Chand. C.P, Arun Pratap, Kasthuri Nair A. Applicability of Goghrtam (Cow's Ghee) in the Prevention and Management of Metabolic Syndrome. World Journal of Pharmaceutical Research, 2023, Vol 12, Issue 21, 284-291
20. Gupta A, Kumar R, Bhattacharyya P, Bishayee A, Pandey AK. Terminalia bellirica (Gaertn.) roxb. (Bahera) in health and disease: A systematic and comprehensive review. Phytomedicine. 2020 Oct 1; 77: 153278.
21. Dasaroju S, Gottumukkala KM. Current trends in the research of Emblica officinalis (Amla): A pharmacological perspective. Int J Pharm Sci Rev Res. 2014; 24(2): 150-9.
22. Nayaka MH, Sathisha UV, Manohar MP, Chandrashekar KB, Dharmesh SM. Cytoprotective and antioxidant activity studies of jaggery sugar. Food chemistry. 2009 Jul 1; 115(1): 113-8

Cite this article as:
Harishma Asok.S, Arjun Chand. C.P, Arun Pratap, Kasthuri Nair.A. A Comprehensive Review on the Effect of an Ayurvedic Protocol in Metabolic Syndrome. International Journal of Ayurveda and Pharma Research. 2024;12(2):102-106.
https://doi.org/10.47070/ijapr.v12i2.3144
Source of support: Nil, Conflict of interest: None Declared

***Address for correspondence**
Dr. Harishma Asok.S
PG Scholar
Department of Kayachikitsa,
Pankajakasthuri Ayurveda Medical College and PG Centre,
Thiruvananthapuram, Kerala, India
Email:
harishmasok310@gmail.com