

## AN AYURVEDIC PERSPECTIVE OF DYSLIPIDEMIA W.S.R TO *MEDOROGA*: A REVIEW ARTICLE

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### ABSTRACT

**Introduction:** Dyslipidemia is defined as a metabolic disorder characterized by abnormal lipid or lipoproteins in the blood.<sup>1</sup> Disorders of lipoprotein metabolism include primary and secondary conditions that substantially increase or decrease specific circulating lipids (e.g., cholesterol or TGs) or lipoproteins (e.g., low-density or high-density lipoproteins).<sup>2</sup> Worldwide, high cholesterol levels are estimated to play a role in 56% of ischemic heart disease events and 18% of strokes, amounting to 4.3 million deaths annually.<sup>3</sup> *Ayurveda* does not have distinct terms to explain dyslipidemia, but it can be interpreted as *Medoroga*, a disease considered among the *santarpanajanya vyadhi*.<sup>4</sup>

**Methods:** A detailed understanding of dyslipidemia in *ayurvedic* perspective is established through literary research by having an insight in *Samhitas* and electronic databases. **Result:** *Ayurveda* views dyslipidemia not merely as an isolated metabolic disorder but as a manifestation of underlying imbalances in the body's physiological systems. The concept of *Medo Dhatu* and *Dhatvagni* play a crucial role in understanding lipid metabolism from an *Ayurvedic* perspective.

**Discussion:** *Ayurveda* offers a holistic and individualized approach in managing dyslipidemia, emphasizing the restoration of balance within the body's metabolic processes rather than simply addressing symptoms. Hence the *medo dhatvagni mandya* and excessive accumulation of *medo dhatu* results in the manifestation of the *medoroga*.

**KEYWORDS:** Dyslipidemia, *Medoroga*, *Dhatvagni*, *Medo dhatu*.

## INTRODUCTION

Disorders of lipoprotein metabolism are collectively referred to as “dyslipidemia”. Dyslipidemia is a critical health issue in the modern era due to its direct contribution to the growing epidemic of cardiovascular diseases and metabolic disorders globally. The growing prevalence of dyslipidemia worldwide is fuelled by lifestyle factors, urbanization, and changing dietary patterns, makes it a major public health issue today. It is often asymptomatic in which most individuals with dyslipidemia do not experience noticeable symptoms, even though their lipid levels are abnormal. Its silent progression contributes to atherosclerosis leading to serious complications. Routine screening for lipid profiles, especially in high-risk populations, is crucial for identifying dyslipidemia early, allowing for timely intervention to prevent more serious health problems. Lipid lowering agents are generally prescribed for treating dyslipidemia such as statins, fibrates, niacin and PCSK9 inhibitors. Prolonged usage of lipid lowering agents can result in some potential side effects such as myalgia, rhabdomyolysis, etc.

In Ayurveda, “*Medyati snihyati iti*”<sup>[5]</sup>, *Medo dhatu* is one among the *Sapta dhatu* which does the *Snehana karma* to the body. *Medo dhatu* formation<sup>[6]</sup> is done when the *mamsagni* acts upon the *poshaka mamsa dhatu* and due to its *mamsa agni paka* it is divided into the following three parts

1. *Sthulabhaga* which is responsible for the formation of *sthayi mamsa dhatu*.
2. *Sukshmabhaga* which is responsible for the further transformation of the *medo dhatu*.
3. *Kittabhaga* i.e. *kha mala*

Again, the *medodhatvagni* acts upon the *sukshmabhaga (poshaka medodhatu)* and converts it into the *sthayi* or *poshya medodhatu* as a *stulabhaga*, *poshaka Asthi dhatu* as a *Sukshma bhaga* and *sweda* as the *malabhaga* or *kittabhaga*. The nourishment of *medo dhatu* depends upon the quantity and quality of *ahara rasa* which affects the proportion of *medo dhatu*. *Agni* especially *Jataragni*, *Bhutagni* (*Ap* and *Prithvi*) and *dhatvagni* (*rasa* and *medo dhatu*) also plays a crucial role in the transformation and metabolism of *medo dhatu*. Hence, if any of these processes are disrupted whether its formation, transformation and metabolism, it can result in imbalances and manifestation of *medo roga*. Here, *sukshmabhaga (poshaka medodhatu)* can be interpreted as lipids. When there is *agni mandya*, especially *medodhatvagni mandya*, *medo agni paka* doesn't occur appropriately i.e. the lipid metabolism hampers which results in lipid disorders.

## MATERIALS AND METHODS

The concepts of *Medoroga* has been reviewed and critically analysed from various sources such as traditional *Ayurvedic* literature, modern literature, magazines, research journals as well as the online database for a thorough literary search. Based on the data gathered the discussion and interpretations are made.

## NIDANA/ ETIOLOGY

*Nidana parivarjana*<sup>[7]</sup> is one of the approaches in the aspects of *chikitsa*. Hence, understanding the factors which leads to the manifestation of the disease is essential. In contemporary science, etiological factors like primarily sedentary lifestyle (like minimal/little to lack of /no exercise, prolonged sitting and lying down) and intake of junk food, refined carbohydrate like maida and maida based preparation. Other factors like drugs, medical condition and genetic predisposition play a crucial role in manifestation of dyslipidemia.

*Nidana* can be categorized as *aharaja*, *viharaja*, *manasika* and *anya karanas*. *Acharya Charaka* emphasize more towards the *aharaja karanas* and introduces a new etiology factor like *bija dushti*.<sup>[8]</sup> *Acharya Sushruta* gives more importance to the *ama annarasa*.<sup>[9]</sup>

AHARAJA	VIHARAJA	MANASIKA	ANYA
<i>Atisampurna</i> <i>Ati brihmana</i> <i>Guru ahara</i> <i>Madhura ahara</i> <i>Sheeta ahara</i> <i>Snigdha ahara</i> <i>Picchila ahara</i> <i>Navanna</i> <i>Navamadya</i> <i>Anupa mamsa</i> <i>Shlesmala ahara</i> <i>Adhyasana</i>	<i>Avyayama</i> <i>Divaswapna</i> <i>Avyavaya</i> <i>Sukha shayyasana</i> <i>Chesta dveshi</i>	<i>Harsha nitya</i> <i>Achinta</i> <i>Priya darshana</i>	<i>Bija dosha</i> <i>Ama annarasa</i> <i>Snigdha udvartana</i> <i>Snigdha Madhura basti sevana</i>

## SAMPRAPTI / PATHOGENESIS

*Medoroga* is said to be the *dushya janya vyadhi*. Due to indulgence in various etiological factors like *aharaja*, *viharaja* and *anya karanas*, *Kapha vruddhi* occurs. *Ashraya ashrayi bhava* of *kapha* also vitiates the *medas*. *Kapha-medo prakopa* obstructs the pathway of *vata* (*samana vata*). *Vata* circulates over the *koshta* and produces *agni* (*Jataragni*) *sandhukshana*. *Jataragni vruddhi* does the *soshana* of *ahara* just like a wild fire quickly devastates the forest. This results in the undigested *ama annarasa* leading to under nourishment of other

*dhatu* and over nourishment of *medo dhatu*. Excessive *medo dhatu* production leads to *medo dhatvagni mandya* as well as the *avarana* to the *vata* (*vyana vata*). Meanwhile, due to *beeja dushti* there is an existing *Khavaigunya* in *Medovaha srotas* which also causes *medo dhatvagni mandya*. *Medo dhatvagni* further gives rise to *poshaka medo vruddhi* (*sukshma bhaga*) and *poshya medo vruddhi* (*sthula bhaga*) resulting in *medoroga* and *sthoulya* respectively.

In pathogenesis of dyslipidemia, either due to excessive production of lipoprotein or due to the improper uptake of lipoprotein by the liver leads to the increased level of lipoprotein in the circulation. Initially, the dietary fats are digested by the gastric lipase and molecules are re-esterified to form chylomicrons which are rich in triglycerides. The chylomicrons supply the fatty acids to skeletal muscles and adipose tissues and are reduced to form cholesterol-enriched chylomicron remnants that are removed rapidly by the liver. VLDL is synthesised from free-fatty acids formed in the catabolism of chylomicrons in the liver, or from endogenous production of TG and packed up with the endogenous cholesterol production in the liver. These molecules further get converted to IDL and later LDL in the same manner. The LDL is rich in cholesterol and it releases cholesterol to other organs to perform various function through ApoB100 receptors. Some quantity of LDL is taken up by the liver through ApoB100 receptors. This uptake and export receptor activity can be regulated by hydroxy-3-methylglutaryl coenzyme A (HMG-CoA) reductase which controls the rate of cholesterol synthesis.

Dyslipidemia can occur due to the following factors such as 1. Over production of VLDL. 2. Improper lipolysis by lipoprotein lipase (LPL). 3. Impaired hepatic uptake of Apo B binding lipoprotein. 4. Disorders of reduced HDL levels.

Due to excessive intake of fat rich food (*Kaphamedokara ahara*), there is increased level of triglyceride rich lipoprotein levels (*poshaka medo vruddhi*) in the blood either due to increased production of VLDL/LDL or due to the activation of HMG-CoA reductase (*agni sandhukshana*) or primary (genetic) causes (*Bija dosha*) or the impaired lipolysis by LPL (*Medodhatvagni*). Apolipoproteins (*vyana vata*) facilitate the transport of lipids from the liver to peripheral tissues (VLDL and LDL) or from peripheral tissues back to the liver i.e. reverse cholesterol transport (HDL).

**SAMPRAPTI GHATAKA**

*Dosha: Kapha (Kledaka), Vata (Samana, Vyana), Pitta (Pachaka)*

*Dushya: Rasa, Meda*

*Agni: Jataragni, Dhatvagni*

*Agni dushti: Vishamagni, medodhatvagni mandya*

*Srotas: Rasavaha, Medovaha*

*Srotodushti: Sanga*

*Udbhavasthana: Amashaya*

*Sanchara sthana: Rasayani*

*Vyaktasthana: Sarva shareera*

*Rogamarga: Bahya*

*Vyadhi swabhava: Chirakari*

*Sadhyasadyata: Kasta Sadhya*

**LAKSHANA / CLINICAL FEATURES**

The *lakshanas* of *medoroga* include *Ksudra swasa/ Ayasena swasa, Ati pipasa, Ati Ksudha, Nidradhikya, Swedadhikya, Daurgandhya, Krathana, Anga Sada, Alasya*.<sup>[10]</sup>

*Acharya Charaka* has mentioned eight *Doshas* of *medo roga*<sup>[11]</sup> in addition to the previously mentioned features such as

1. *Ayusho hrasa* (Diminution of life span) – Due to the excessive production of *medo dhatu*, the nourishment *medo dhatu* alone takes place, rest all *dhatu*s are malnourished leading to *Ayusho hrasa*.
2. *Javoparodha* (Lack of enthusiasm) – Due to the properties of *medo dhatu* like *shaithilya, saukumarya* and *guru*. The person feels disinterested, apathy, or a lack of energy.
3. *Krchra vyavaya* (Difficulty in sexual act) – Due to the diminished production of *shukra dhatu* and obstruction of *medas* to the *marga* of *shukra*.
4. *Daurbalya* (Debility) – Imbalance in the *dhatu* formation leads to diminished strength causing debility.
5. *Daurgandhya* (Foul smell) – *Kittabhaga* of *medo dhatu* is *sweda*, *medo dushti* leads to *ati sweda* results in *Daurgandhya*. *Ama Gandha* of *meda* causes *Daurgandhya*.
6. *Swedabadha* (Distressful sweating) – association of *kapha* and *meda* properties like *vishyandhana, bahuta* and *guruta*.
7. *Ati Ksudha* (Excessive hunger) – *Meda avruta vata* does the *agni sandhukshana* resulting in *tikshnagni*.

8. *Ati pipasa* (Excessive thirst) - *Meda avruta vata* does the *agni sandhukshana* resulting in *tikshnagni*.

### CHIKITSA SIDDHANTA / TREATMENT PRINCIPLES

***“Karshyameva varam sthoulyam, na hi sthulasya bhesajam.”<sup>[12]</sup>***

Acharya Vagbhata opines that *karshya* is *varam* than *sthoulya*. The reason behind this quotation is that – In *karshya*, the *chikitsa* of *vyadhi* and *dosha* are similar i.e. *brihmana* line of management is adopted, which does both *vata shamana* as well as the *dhatu poshana*. But in *sthoulya*, it is not so. In *sthoulya*, adopting treatment principles is quite difficult. Here, both *medo vriddhi* and *vata prakopa* is noted, *langhana chikitsa* will lead to *kapha medo hara* but further aggravates the *vata* and *agni*, whereas *brihmana chikitsa* will further aggravate the *meda*. Hence Acharya Charaka has quoted that.

***“Guru cha apatarpanam chestam sthulanam.”<sup>[13]</sup>***

*Guru guna* helps in alleviating the vitiated *agni* as well as delays the digestion process and *apatarpana chikitsa* due to its non-nourishing nature will alleviate the *medo dhatu*. Hence both *guru* and *apatarpana* line of treatment are to be adopted in this condition. For example, *yava* due to its *madhura rasa*, *sheeta virya* and *guru guna*, it is *guru* (heavy to digest). At the same time, due to the *katu vipaka* and *ruksha guna* it does the *lekhana karma* and performs the *apatarpana* effect.

In *Ayurveda*, the general line of management / *Samanya chikitsa*<sup>[14]</sup> for any *vyadhi* includes,

1. *Nidana parivarjana*
2. *Samshodhana*
3. *Samshamana*

### NIDANA PARIVARJANA

The first line of treatment in any *vyadhi* is *nidana parivarjana*. This approach is grounded in an idea that many diseases have specific triggers or risk factors, and removing or minimizing exposure to these factors can help in managing or even curing the disease. Modification of lifestyle includes food habits, cessation of smoking, cutting-down alcohol intake, weight reduction, appropriate and regular exercises, are not only very much necessary to attain normal lipid levels but are indeed the first step and cornerstone in the management of hyperlipidaemia/dyslipidaemia.<sup>[15]</sup>



**SAMSHODHANA**

*Medoroga* is considered as one among the *santarpana janya vyadhi*, therefore, the administration of *shodhana* is necessary and adopted in persons with *Atika roga bala* and *rogi bala*. *Samshodhana* is again classified as *bahya* and *Abhyantara*. *Bahya shodhana karmas* include *parisekha*, *ruksha udvartana*, which have *kapha medo hara* and *lekhana* properties. *Abhyantara shodhana karmas* include *Ruksha*, *ushna*, *tikshna basti* like *lekhana basti*, *Kshara basti*, *madhu tailika basti* which are *ruksha*, *ushna*, *kapha medo hara*, *srotovishodhana* and *lekhana* in nature. Management of *santarpana janya vyadhi chikitsa*<sup>[16]</sup> like *ullekha*, *virechana* and *rakta mokshana* by Acharya Charaka is also recommended in this condition.

**SAMSHAMANA**

*Samshamana* includes *agni deepana*, *ama pachana*, *srotovishodhana*, *kapha medo vilayana*. Hence the administration of drugs possessing *guru* and *apatarpana* properties are considered as an ideal for *samshamana* therapy. Among the *Shad vidha upakrama*,<sup>[17]</sup> *Langhana* and *rukshana* can be adopted. Drugs of *Lekhaneeya mahakashaya*<sup>[18]</sup> mentioned by Acharya Charaka such as *Musta*, *kushta*, *haridra*, *daruharidra*, etc are also helpful in managing *medoroga*. Some of preparation include

- *Eka Moolika prayoga* – *Guduchi*, *Amalaki*, *Haritaki*, *Vibhitaki*, *guggulu*, *Chitraka*, etc.
- *Churna prayoga* – *Trikatu*, *Triphala*,
- *Guggulu prayoga* – *Navaka guggulu*, *amrutadya guggulu*, *Triphala guggulu*, etc.
- *Kashaya prayoga* – *Asanadi kwatha*, *varunadi kwatha*, *Varasanadi kwatha*, *lekhaneeya mahakashaya*, *Triphala kashaya* etc.
- *Rasa prayoga* – *Loha bhasma*, *Trimurti rasa*, *lakshmivilas rasa*.
- *Arista & Asava* – *loharishta*, *takrarishta*, *lohasava*.
- *Taila prayoga* – *Triphala taila*, *Sarshapa taila*, *tuvaraka taila*.
- *Rasayana* – *loha rasayana*, *shilajathu rasayana*.

In modern science, Dyslipidemia is mainly managed by the administration of following drugs:

- **Statin** – Statins are also called as HMG-CoA reductase inhibitors. They inhibit the action of HMG-CoA reductase thereby controls the cholesterol synthesis.
- **Fibrates** – Primarily activates the lipoprotein lipase which is a key enzyme in the lipolysis of VLDL thereby controlling the TG levels

- Niacin – It reduces the over production of VLDL in the liver and thereby reducing the TG and cholesterol levels.
- Bile Acid Sequestrants (Resins) – They bind with bile acids in the intestine and prevents the reabsorption of bile acids. Cholesterol is necessary for the bile acid production thereby it re uptake the LDL leading to reduced LDL levels in the circulation.

### ***PATHYAPATHYA***

*Medoroga* is considered as a lifestyle disorder, along with *shodhana* and *shamana*, *pathyapathya* (proper diet and regimen) is indeed essential in managing and preventing this condition. If *Pathya ahara* is followed properly then medicines won't be required for a person, and taking the medicine in any case without following the *Pathya ahara* is of no use.

<b><i>PATHYA</i></b>	<b><i>APATHYA</i></b>
<i>Kulatha, chanaka, kodrava, syamaka, yava, masura, mudga, madhu, laja, takra, sura, Rakta shali, patola, shunti, vilepi, Draksha, haridra, vartaka, lasuna, mulaka, sharshapa taila, tila taila, usna jala.</i>	<i>Dugda, maduhka, guru ahara, Navanna, Ksheera, ikshu varga, dadhi, Madhura ahara.</i>
<i>Chinta, shrama, jagarana, vyavaya, vyayama, atapa, yana. Bhramana, Upavasa. Pranayama, yoga, Dhyana.</i>	<i>Divaswapna, sheeta jala snana, ati shayya, Avyayama, Avyavaya.</i>

### **DISCUSSION**

*Medoroga*, as a lifestyle disorder, is a condition rooted in modern science and *Ayurveda* as an imbalance that stem from improper diet, lack of exercise, and emotional stress. Hence, *Nidana parivarjana* by incorporating a balanced *pathya ahara* and *vihara* is essential. Though the anti dyslipidemic drugs helps to maintain the normalcy of lipid levels but still should focus on the potential risks associated with the medication. Here comes the role and responsibility of *Ayurveda* where treatment focuses on a comprehensive and individualized approach that addresses the cause, balances the *doshas*, corrects the *agni* and maintains the lipid metabolism. Based on the presentation of the disease, *Samshodhana* like *udvartana*, *basti* followed by *samshamana* having *guru* and *apatarpana* properties along with *pathya ahara* and *vihara* plays a crucial role in treating the disease.



## CONCLUSION

Dyslipidemia can be well appreciated in *ayurveda* in terms of *medoroga* based on their pathophysiology, clinical presentation and can be treated effectively with the aid of *Samshodhana*, *samshamana* and *pathya ahara* and *vihara*.

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