A Review Article On Trimada With Special Reference To Hyperlipidemia

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ABSTRACT
Coronary Artery Disease is the major cause of death worldwide among all income groups. Although health care system is getting improved because of globalization, the indulgence in western and sedentary lifestyle lead to higher prevalence of cardiovascular risk factors. One of the major cause of CAD is Hyperlipidemia. It is defined as a condition characterized by elevated lipid levels in the human body. *Ayurveda* has a unique approach in understanding and treating Hyperlipidemia. Hyperlipidemia being considered not as a disease but a symptom in various ailments. The conditions are co-related with *Rasavaha srotas* described in ayurvedic texts since ancient times. This is a disease of diminished Agnis (*Jatharagni, Dhatwagni* and *Bhutagni*) which creates a flaw at the level of Agni. Keeping this in mind we can plan the treatment of Hyperlipidemia in the line of treatment of *Rasavaha srotas* and for that *Deepana, Pachana* and *Kaphghana* properties are needed. *Trimada* is one of the most popular formulations used in *Ayurveda* for various purposes. It consists of three drugs - *Chitraka, Mustaka* and *Vidanga*. The paper aims to set the co relation between Hyperlipidemia and the role of utilizing the three drugs of *Trimada* for the prevention and cure of Hyperlipidemia.


INTRODUCTION
Hyperlipidemia, which is abnormally high levels of fats (lipids) in the blood. It is represented with increased blood cholesterol or triglyceride levels or both. At national level, recent studies have reported that high cholesterol is present in 25-30% of urban and 15-20% rural subjects. This prevalence is lower than high-income countries[1]. The increase in the level of cholesterol, triglycerides, LDL and decrease in HDL particles in the bloodstream are strongly associated with atherosclerosis, which is the principle cause of CAD[2]. CAD (Coronary Artery Disease) is the primary cause of death globally with a recognized set of risk factors including mainly high blood pressure, high LDL cholesterol, impaired glucose tolerance and diabetes [3].

Causes of Hyperlipidemia: Abnormal levels of Cholesterol are the result of sedentary lifestyle, wrong dietary intake and bad eating habits. To some extent metabolic conditions, genetic factors and family history too are the contributing factors. The abnormal cholesterol levels form plaques that cohere inside blood vessels causing atherosclerosis leading further complications. High concentration of plasma total cholesterol and LDL cholesterol are co-related with the prevalence of CAD, stroke and peripheral vascular disease.

Psychological stress is associated with increase oxidant production causing oxidative stress[4] is one of the causative factors that link hyperlipidemia with the pathogenesis of atherosclerosis. Oxidized lipids can elicit a wide variety of biological responses that could contribute to atherosclerotic lesion development. Thus, the pathophysiology of the disease suggests that a combined antioxidant and lipid lowering activity would have marked benefits in ameliorating the progression of the atherosclerotic lesion [5].

*Ayurveda*, The Ancient Indian Medical System is a body of organized knowledge explaining principles of physiology, pathology, pharmacology and therapeutics in various specialties. It defines life (Ayu) as a union of mind, body, spirit, and senses and a person is said to be healthy if all these factors are in the balanced state. According to the *Ayurvedic* concept, *Doshha, Dhatu* and *Mala* are the three pillars of the body. Our body is made up of innumerable channels (*Srotas*) which are responsible for proper functioning of physiological activities. The term *Srotas* is derived from “susravana” which means to flow, to ooze out. *Srotas* are those channels through which materials flow in the body [6]. Basically, they are the inner transport system of the human body which act as platform for activities of important bio factors like *Doshhas, Dhatu, Mala, Ojas, Agni* etc.

“*Rasavahanam srotasam hridayam mulam dash ch dhamiaye*” (Ch.Vi 5/7)

*Acharya Charaka, Sushruta* and *Vagbhata* had described various types of *srotas*, among them *rasavaha srotas* is one. *Hridaya* and 10 *Dhammiya* are the mulas of *rasavaha srotas* [7].

“*Guru sheetam atisnigdham atimatram samshrantama, Rasavahini dashyanti chintyanama ch atichintnata*” (Ch.Vi 5/13)

Factors responsible for the *dushhi* (spoilage) of *Rasavaha srotas* are bad eating habits like *Guru* (heavy food), *Atisnigdha ahara* (oily food), *Sheeta ahara* (cold food), *Atimitram* (Excessive eating) etc. *Atichintya* (overthinking) is also one of the major reasons of *Rasavaha Stroto Dushhi* [8].

The lexicons have not directly correlated Hyperlipidemia but has purported the *Rasavahastroto dushti* causing *Medovaha stroto dushti* symptomatically leading to *Atishthaulya*. In *Ayurvedic* literatures, obesity and subsequent pathological consequences has been termed as *Atishthaulya*. *Medavitriddhi* and *Vishama-dhatuposhana* are the key pathological phenomena in *Atishthaulya*[9].
MATERIALS AND METHODS

Physiological Aspect: The Dhatus are the structural components of the body which take part in the construction of the body. An increase or decrease in their quantity indicates the presence of metabolic or nutritional disorders in the body caused by improper formation of Rasa Dhatu.

After the digestion of the food the Poshaka rasa dhatu is formed (essence of the food whose purpose is to nourish). This Rasa dhatu being pushed by Vyana vayu reaches the heart and from the heart it enters the Dhamanis through which it reaches the different parts of the body. This way the Rasa dhatu nourishes the other Dhatus and forms other Dhatus like Rakta, Mamsa, Meda dhatu etc. As the Rasa dhatu circulates it nourishes the tissues, organs etc. In the healthy state this Poshaka rasa does Tarpanam (nourishes the people at all ages), Vardhanam (growth and development), Dharanam (providing strength), Avsadanam (provide stability to the body) etc [10].

The triggering factors cause Rasa dhatu dushti and Rasavaha srotodushti which affects the metabolism through vitiation of the Doshas and the Dhatus. This results in vitiation of the digestive fire (Jatharagni) causing annulment of Rasa dhatu. Agni is the basic medium responsible for the digestion and metabolism in the body. Ras dhatu being the primary Dhatu disturbs the other Dhatus in the body like Rakta and Meda dhatu which may lead to further aggravation of symptoms of hyperlipidemia. The disturbed Meda dhatu tends to form the Mala which elings to the Srotas causing hyperlipidemic disorders.

Dravyaguna Vigyan is the bridging subject of Ayurveda which deals with the properties, actions & uses of Dravyas (Drugs). The Ayurvedic Pharmacology of drugs is described under the heading of Dravya, Rasa, Guna, Virya, Vipaka, Prabhav and Karma. As per the principles of Ayurveda drugs which are Kaphahara with Deepana, Pachana, Bhedana and Lekhana karma have a best role in Hyperlipidemia. The drugs with Deepana and Pachana karma increases the digestive fire (Jatharagni) due to Vayu and Agni predominance. The drugs with Lekhana and Bhedana karma works in scraping of Dhatus and Malas (lipid waste) after absorbing moisture from them and disintegrate them in channels. Yogindranath Sen opines that Bhedana dravya liquifies the Pindita mala and expels it out [11].

Drug review:

India has a rich heritage of medicinal plants. It has a wide diversity of flora, which are used by the local population and traditional healers for the treatment of several diseases including lipid disorders. The three drugs of Trimada viz. Chitraka, Mustaka, Vidanga are briefly described as follows:
CHITRAKA

Plumbago zeylanica Linn. Known as Chitraka of family Plumbaginaceae is a perennial shrub widely found throughout peninsular region and eastern parts of India. It has striated and erect stem with ovate leaves short petiole, apex acute or subacute. Flowers are white with stalked glands, having ellipsoid Ovary with acute and furrowed capsule.[12]. Charaka has mentioned it in Lekhaniya, Bhedaniya, Dipaniya, Arshoghna, Triptighna and Sulaprasamana mahakshaya and in Katuskandha[13]. Sushruta has mentioned it in Aragyadhadi, Varunadi, Muskadi, Pippalyadi, Mustadi and Amalakayadi gana[14]. As per Charaka, Chitraka is considered as best herb among Dipaniya, Pacaniya, Arsoghna and Sulahara drug[15]. The plant is also commonly recommended for obesity[16]. Plumbagin, a major phytoconstituent of roots of Plumbago zeylanica has been reported to demonstrate anti-hyperlipidemic activity in rabbits[17]. Various studies suggest that the aqueous extract of Plumbago zeylanica roots has potential antioxidant activity Thus, can prove to be beneficial in the management of atherosclerosis and hyperlipidemic condition. [18]

MUSTAKA

Mustaka (Cyperus rotundus L.) also known as the nutgrass of family Cyperaceae, is a colonial, perennial herb widely used in Ayurveda to treat several ailments. It is 7–40 cm tall with fibrous roots and has dark reddish-brown rhizome. Shiny and narrow dark green leaves which looks like grass are present. The upright stems support a much-branched inflorescence with bisexual flowers[19]. Charaka has mentioned it in Lekhaniya, Triptighna, Kandughana, Stanyashodhana mahakshaya[13]. Sushruta has mentioned it in Vacadi and Mustadi gana[14]. It is an acclaimed digestant & carminative. This plant has various metabolites that show analgesic, anti-hypertensive, anti-inflammatory, anti-obesity, antioxidant, cardioprotective, neuroprotective properties. Studies on the ethnobotanical use of C. rotundus showed that the rhizomes were used to treat aging, atherosclerosis, cancer and various disorders[20]. The alcoholic and aqueous extracts of the tubers of Cyperus rotundus possess lipolytic action by regulating serum lipid profiles, reducing the oxidative stress and decreasing adipose tissue mass and body weight gain[21]

VIDANGA

A famed herb in Ayurveda, Vidanga of family Myrsinaceae is a large woody flexible, long shrub with hairy brownish grey roots. The leaves are elliptical, lanceolate, obusely acuminate somewhat silvery beneath, with cylindrical petiole. Flowers are small, pentamemorous, numerous. Petals are free, greenish-yellow, long; Fruits are smooth, globose, black when ripe. The seeds are horny, reddish[22]. Charaka has mentioned it in Krimighna, Kushthaghna, Triptighna mahakshaya[13]. Sushruta has mentioned it in Surasadi gana, Pippalyadi gana[14]. Administration of Embelia Ribes ethanolic extract to diabetic rats produced considerable reduction in serum lipase activity, that suggests its potential in prevention of lipid abnormalities and obesity[23]. Pretreatment with embelin (50 mg/kg) significantly decreased the elevated levels of serum lipid levels and lipoproteins in high fat diet induced obese rats[24].

<table>
<thead>
<tr>
<th>Plant</th>
<th>Botanical Name</th>
<th>Rasa</th>
<th>Guna</th>
<th>Veerya</th>
<th>Vipaka</th>
<th>Dosha Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chitraka[25]</td>
<td>Plumbago zeylanica (Plumbaginaceae)</td>
<td>Katu</td>
<td>Laghu, rooksha, tikshna</td>
<td>Ushna</td>
<td>Katu</td>
<td>Kaphvatashamak</td>
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<tr>
<td>Mustaka[26]</td>
<td>Cyperus rotundus (Cyperaceae)</td>
<td>Tikta</td>
<td>Laghu, rooksha</td>
<td>Sheeta</td>
<td>Katu</td>
<td>Kaphpittashamak</td>
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<tr>
<td>Vidanga[27]</td>
<td>Embelia ribes (Myrsinaceae)</td>
<td>Katu</td>
<td>Laghu, rooksha, tikshna</td>
<td>Ushna</td>
<td>Katu</td>
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DISCUSSION

As per the pathophysiology of Hyperlipidemia which is the result of Medo dhatu vikara due to Rasa dhatu dushti. Agni deepaka, Kaphahara and Pachaka dravyas are beneficial. To prevent the adherence of Malas (lipid waste) in the Strotas, the drugs that are finest in Bhedaka and Lekhana karma are used. The properties of Trimada, are exactly what is required for the treatment of hyperlipidemia. This action is attributed to their Rasa, Guna, Veerya and Vipaka. They restore the metabolism by triggering the absorption and metabolism of Meda (lipids) in the body.

The three drugs Chitraka, Mustaka and Vidanga are Katu rasa pradhanas possess Katu vipaka, Laghu Rooksha guna and Kaph-Vatahara properties. They equilibrate the metabolism by correcting the digestion and absorption of Ahara rasa as these drugs are digestants and carminatives. This in turn help to equipoise the Rasa dhatu which further prevents the annihilation of Rakta, Mamsa, Meda dhatus. Thereby, balancing the Agni which helps in proper nourishment of other Dhatus. This endorses the proper flow of Doshas through different Srotas and also impedes the Malas to cling at one place. They work as an excellent drug to do the Lekhana as per their Rasa punchaka which demonstrate scraping action on the plaque adhering to the Srotas (blood vessels) and facilitate proper movement of Dhatus. Moreover, Bhedaniya action causes disintegration of the accumulated Malas (lipid waste) into smaller ones. This will prevent them from getting accumulated in the vascular system of human body. The Hyperlipidemia caused by oxidative stress where due to Tamoguna and Atichintaniyam the Kapha dosha gets vitiated disturbing the Rasa, Rakta and Medo Dhatus; these drugs are proven to be of prime utilization. Thus, this forestalls the symptoms and complications of Hyperlipidemia.

CONCLUSION

Hyperlipidemia being a common metabolic disorder is a leading cause of many serious illnesses ranging from increased cholesterol level to CAD. It is important to understand its pathogenesis and find the ways and means in traditional system of medicine that can work for the prevention of Hyperlipidemia. Role of Trimada is well known for curing diseases related with metabolic disorders. This review indicates a scientific rationale behind such use of Trimada. A large scale research and clinical trial is essential to confirm its therapeutic potency and increase the scope of use of Trimada for many disorders of such kind.

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