



## EFFECTIVE AYURVEDIC DRUGS FOR HYPERLIPIDEMIA : REVIEW ARTICLE

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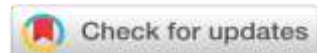
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## ABSTRACT

Hyperlipidemia is a condition in which blood contains an abnormally high amount of lipids i.e. fats. These factors can accumulate and cause blockages in blood vessels. This is why having high cholesterol may increase the risk of damaging organs that don't receive enough blood from arteries. Life threatening emergencies like heart attack and brain stroke can arise from untreated chronic hyperlipidemia. Today's sedentary lifestyle, ready to eat or instant food items, increasing use of technologies which decreases physical activities, all these factors prone for increase in abnormal lipid levels in body. Foods that have cholesterol, saturated fat, and trans fats can raise blood cholesterol level. These include Cheese, Fried and processed foods, Ice cream, Pastries, Red meat etc. According to WHO, the global prevalence of raised total cholesterol among adults was 39% (37% for males and 40% for females) in 2008. According to a study by ICMR-INDIAB, prevalence of dyslipidemia in a large representative sample of four selected regions in India showed that 79% had abnormalities in one of the lipid parameters. *Meda dhatu* from *Ayurveda* is an entity which is correlated to lipids. *Medoroga*, *Medodosha*, *Sthaulya* are the synonyms used for diseases with excessive formation and accumulation of *Meda dhatu*. Two main treatment modalities present in *Ayurveda*, *Shodhan* and *Shaman*, play an efficient role in treating this disease. So, there is a challenge of treating the disease without interference in the daily routine of an individual. This paper specifically throws light on meeting aforesaid needs with some effective *Ayurvedic* drugs possessing *Medopachaka*, *Ag-nideepaka*, *Vatanulomaka* and *Rasayana* properties.

**Keywords:** *Ayurveda*, Hyperlipidemia, *Medoroga*, *Medohara*

## INTRODUCTION

### Hyperlipidemia

Hyperlipidemia is a health condition that increases plasma lipids and lipoproteins. Some examples of plasma lipids are cholesterol, triglycerides (TGs), phospholipids, and cholesterol esters.<sup>1</sup>

Hyperlipidemia is a term that encompasses various genetic and acquired disorders that describe elevated lipid levels within the body. Hyperlipidemia itself does not typically lead to critical symptoms itself, however, having this underlying pathology will often lead to serious illnesses that may ultimately lead to death. Hyperlipidemia is the most common modifiable cause of atherosclerotic cardiovascular disease. Dyslipidaemias, particularly elevated plasma LDL-cholesterol levels, are major risk factors for cardiovascular disease, but some forms, such as hypertriglyceridaemia, are associated with severe diseases in other organ systems, including non-alcoholic fatty liver disease and acute pancreatitis.<sup>2</sup>

### The incidence

Raised total cholesterol is a major cause of disease burden in both the developed and developing world as a risk factor for ischemic heart disease and stroke. In 2008, the global prevalence of raised total cholesterol among adults was 39% (37% for males and 40% for females).<sup>3</sup> Recent studies have reported that high cholesterol is present in 25–30% of urban and 15–20% rural subjects in India. This prevalence is lower than high-income countries. The most common dyslipidemia in India is borderline high LDL cholesterol, low HDL cholesterol and high triglycerides.<sup>4</sup>

### Hyperlipidemia from Ayurveda

Hyperlipidemia can be correlated with *Medoroga* from Ayurveda. *Medoroga*, *Medodosha*, *Sthaulya* are the synonyms used for *Medoroga*. We don't find description of *Medoroga* in *Bruhatrayi* like *Charak samhita*, *Sushrut samhita* and *Ashtang sangrah*. But we get detailed description of definition, causes, pathogenesis and symptoms from *Madhavanidana*.<sup>5</sup> And its treatment from *Harit samhita*, *Yogaratanakar*, *Sha-*

*rangadhar samhita* and some others. *Medoroga* is a disease of excess production of *Medo dhatu*.

### Ayurvedic management of Hyperlipidemia

Quite similar to classical Ayurvedic management of other diseases, *Shodhana* and *Shamana* are also required in Hyperlipidemia. But as this is quite time consuming and requires much more diet restriction, in the present busy lifestyle, it is preferable – 1. to develop an OPD based treatment, which is convenient and comfortable to the patient, without affecting the work efficiency. 2. to minimize or even negate the requirement of IPD stay or regular *Shodhana* therapy. 3. to develop newer more palatable forms of oral medications. Ayurvedic drugs having properties of relevance in management of Hyperlipidemia, e.g. *Agnideepaka*, *Medopachaka*, *Vatanulomaka*, *Rasayana* etc. as explained in various Ayurvedic texts and/or supported by modern evidence, should be considered for fulfilling aforesaid purposes. Furthermore, management of hyperlipidemia (at least non-severe ones) by Ayurvedic drugs may offer an additional advantage of enhancing the inherent ability of *medovaha strotas* to cope well with the lifestyle disorders.

## MATERIALS AND METHODS

This includes: 1. Building a hypothesis for hyperlipidemia, on the basis of aetiopathogenesis of *Medoroga* described in Ayurvedic literatures. 2. On the basis of this hypothesis, compile and/or review some Ayurvedic drugs which can be potentially useful in Hyperlipidemia.

### Review of *Medoroga* in relation to Hyperlipidemia

As said before, due to similarities in symptoms [Table 1] and aetiology [Table 2 and 3], hyperlipidemia can be most closely correlated to *Medoroga* in Ayurveda. To facilitate a proper selection for drugs for effective management of Hyperlipidemia, a brief understanding of spectrum of *Medoroga* in Ayurveda is necessary.

Table 1 : Vyadhi nama-

C.S.	S.S.	A.S.	M.N.
<i>Stahulya</i>	<i>Sthaulya</i>	<i>Sthaulya</i>	<i>Medoroga</i>

C.S. – Charak samhita, S.S. – Sushrut samhita, A.S.- Ashtang sangrah, M.N.- Madhava Nidana

Table 2 : Lakshana (symptoms) of *Sthaulya*<sup>6,7,8,9</sup>

	C.S.	S.S.	A.S.	M.N.
<i>Medo-mamsativruddhi</i>	+	-	-	+
<i>Sfika-Udara-Stana chalatva</i>	+	-	-	+
<i>Utsahahani</i>	+	-	-	+
<i>Ayathaupachaya</i>	+	-	-	+
<i>Ayushorhasa</i>	+	-	-	+
<i>Kshudrashwasa</i>		+	-	+
<i>Atipipasa</i>	+	+	-	+
<i>Atikshudha</i>	+	+	-	+
<i>Atiswapna</i>	-	+	-	+
<i>Atisweda</i>	+	+	-	+
<i>Daurgandhya</i>	+	+	-	+
<i>Krathana</i>	-	+	-	+
<i>Gatrasada</i>	-	+	-	+
<i>Gadgadatva</i>	-	+	-	
<i>Sarvakriyasu asamar- tha</i>	+	+	-	+
<i>Kruchchavyavayata</i>	+	-	-	+
<i>Daurbalya</i>	+	-	-	-
<i>Moha</i>	-	-	-	+

Table 3: Various etiological factors of *Sthaulya* (as per classics)

	C.S.	S.S.	V.	M.N.
<i>Atisampuran</i>	+	+	+	-
<i>Guru-Madhur-Sheet- Snigdha aahar</i>	+	+	+	+
<i>Avyayam</i>	+	+	-	+
<i>Avyavay</i>	+	-	-	-
<i>Divaswap</i>	+	+	+	+
<i>Harshanitya</i>	+	-	+	-
<i>Achinta</i>	+	-	-	-
<i>Bijaswabhav</i>	+	-	-	-

*Samprapti of Medoroga –*

The above said *hetus* lead to excessive accumulation of *Meda*. This accumulated *Meda* obstructs the passage of *Vata dosha* resulting in aggravation of *Vata* especially in the *Koshtha* afflicting the *Agni* and does *ahara shosha* resulting in *shighra jaratyaharam*

(food gets digested quickly) and *Atikankshati* (excessive desire for food). However, if food intake is delayed, then the person is afflicted with dreadful diseases.

*Samprapti ghataka –*

*Dosha – Kapha pradhan tridosha*

*Dushya – Mamsa and Meda*

Agni – Jatharagni, Medodhatvagni mandya  
Strotas – Rasa, Mamsa and Medovaha  
Adhishthan – Medodhara kala, vapavahan  
Rogamarga - Bahya

### Drug review-

In various Ayurvedic texts, many drugs & compositions are indicated for the management of *Sthaulya* and hence the related conditions like hyperlipidemia, some of them are being briefed here in the table and the following description.

Table 4: Various drug compositions useful in *Sthaulya* and related conditions

Sr.no.	Ayurvedic preparations	References	Sr.no.	Ayurvedic preparations	References
<b>Churna (powdered form)</b>					
1.	<i>Guduchyadi churna</i>	Ch.Su. 21/22	2.	<i>Vidangadi churna</i>	Ch.Su.21/23
3.	<i>Yava-Aamalak churna</i>	Ch.Su.21/23	4.	<i>Bilwadi churna</i>	Ch.Su.21/24
5.	<i>Agnimantha-Shilajatu Yoga</i>	Ch.Su.21/24	6.	<i>Vidangadi churna</i>	B.R.39/11
7.	<i>Trifaladi churna</i>	Bh.N.M.39/16			
<b>Mantha (liquid form)</b>					
1.	<i>Vyoshadi mantha</i>	A.S.Su.24/42-44	2.	<i>Vidangadi mantha</i>	A.S.Su. 24/41
<b>Kadha (decoction)</b>					
1.	<i>Trifaladi kadha</i>	Sha.M.2/54	2.	<i>Bilwadi kadha</i>	Sha.M.2/53
<b>Shaktu yoga (satu yoga)</b>					
1.	<i>Vyoshadi shaktuyoga</i>	B.R.39/5-10	2.	<i>Chavyadi shaktuyoga</i>	B.R.39/4
<b>Vati (tablet form)</b>					
1.	<i>Vidangadi Loha</i>	B.R.39/22-25	2.	<i>Tryushanadi Loha</i>	B.R.39/26-29
3.	<i>Badavagni Loha</i>	B.R.39/30-31	4.	<i>Loharasayan</i>	B.R.39/32-41
5.	<i>Navak guggul</i>	B.R.39/43	6.	<i>Amrutadi guggul</i>	B.R.39/44
7.	<i>Vadavagni rasa</i>	B.R.39/45	8.	<i>Dashanga guggul</i>	Bh.N.M.39/30
9.	<i>Tryushanadi guggul</i>	Bh.N.M.39/31			
<b>Tail (oil)</b>					
1.	<i>Trifaladi tail</i>	B.R.39/47-49			
<b>Arishtha</b>					
1.	<i>Loharishtha</i>	B.R.39/58-65			

Ch.Su.= Charaka Sutrasthana, B.R. = Bhaisajya

Ratnavali, A.S.Su. = Astanga Sangraha Sutrasthana, Sha.M.= Sharangadhara Samhita Madhyam khand, Bh.N.M. = Bhavaprakasha nighantu Madhyam khand

Regarding use of solo herbs in *Sthaulya* or Hyperlipidaemia, although innumerable drugs can be sorted out from Ayurvedic literatures, some well-known in the present context, for possessing *Shodhana/Shamana* action and/or having specific properties like decreasing cholesterol biosynthesis, increasing hepatic uptake of lipoproteins etc, are being summarized here, along with a brief mention of their properties, due to which they can be considered as highly efficacious single drugs for management of Hyperlipidaemias.

#### 1. *Vidanga* - Embelia ribes

Active ingredients – Benzoquinones, Christembine, Tannin, Essential oil

Ay. Properties – *Krimighna, Dipan, Anuloman, Vata-kaphahara*<sup>10</sup>

Proven Properties - antioxidant activity, wound healing, antidiabetic, central nervous system (CNS)-related disease, antiviral, antiobesity, cardioprotective, antifungal, antibacterial, and antifertility activity.<sup>11</sup>

Forms indicated – *Vidangadi churna, Vidangadi mantha, Vidangadi Loha, Vyoshadi shaktuyoga, Amrutadi guggul, Dashanga guggul*

#### 2. *Guduchi* - Tinospora cordifolia

Active ingredients – Terpenoids and alkaloids

Ay. Properties – *Tridoshaghna, Samgrahi, Balya, Dipan, Rasayan, Raktashodhaka, Jwaraghna*<sup>12</sup>

Proven Properties - anti-diabetic, anti-periodic, anti-spasmodic, anti-inflammatory, anti-arthritis, antioxidant, anti-allergic, anti-stress, anti-leprotic, anti-malarial, hepatoprotective, immunomodulatory and anti-neoplastic activity.<sup>13</sup>

Forms indicated – *Samshani vati, Guduchyadi churna, Amrutadi guggul*

### 3. **Amalaki** – *Emblica officinalis*

Active ingredients – Ascorbic acid, Gallotannins

Ay. Properties – *Tridoshajit, Vrushya, Rasayana, Chakshushya*<sup>14</sup>

Proven Properties - antioxidant, immunomodulatory, antipyretic, analgesic, cytoprotective, antitussive and gastroprotective actions.<sup>15</sup>

Forms indicated – *Chyavanprasha, Triphala churna, Dhatri loha, Guduchyadi churna, Yava-Aamalak churna, Vyoshadi shaktuyoga, Navak guggul, Amrutadi guggul, Dashanga guggul*

### 4. **Haritaki** – *Terminalia chebula*

Active ingredients – Tannins, Anthraquinones, Polyphenolic compounds

Ay. Properties – *Sarvadoshprashamana, Rasayana, Chakshushya, Dipan, Anuloman, Hrudya*<sup>16</sup>

Proven Properties - antioxidative, antiproliferative, anti-microbial, proapoptotic, anti-diabetic, anti-ageing, hepatoprotective, anti-inflammatory, and anti-epileptic. It is also beneficial in glucose and lipid metabolism and prevents atherogenesis and endothelial dysfunction.<sup>17</sup>

Forms indicated – *Guduchyadi churna, Vyoshadi shaktuyoga, Triphala churna, Navak guggul, Amrutadi guggul, Dashanga guggul*

### 5. **Bibhitaki** - *Terminalia bellerica*

Active ingredients – Gallic acid, Tannic acid and Glycosides

Ay. Properties – *Kaphapittajit, Bhedaka, Kriminashana, Chakshushya, Keshya, Kasahara*<sup>18</sup>

Proven Properties - antioxidant, antimicrobial, anti-diarrhoeal, anticancer, antidiabetic, antihypertensive and hepatoprotective agent.<sup>19</sup>

Forms indicated – *Triphala churna, Guduchyadi churna, Vyoshadi shaktuyoga, Navak guggul, Amrutadi guggul, Dashanga guggul*

### 6. **Musta** – *Cyperus rotundus*

Active ingredients – Volatile oil

Ay. Properties – *Pittakaphahara, Sthoulyahara, Shothahara, Dipan, Pachan, Grahi, Trushnanigrahan, Krumighna, Tvakadoshahara, Jwaraghna, Vishaghna*<sup>20</sup>

Proven Properties - anti-inflammatory, hepatoprotective, anti-pyretic, anti-malarial, anti-Obesity, anti-diabetic.<sup>21</sup>

Forms indicated – *Shadangapaniya, Guduchyadi churna, Vidangadi churna, Dashanga guggul, Chandraprabha vati*

### 7. **Madhu** – Honey

Active ingredients –

Ay. Properties – *Dipan, Chakshushya, Tridoshaprashamana, Ropana, Sandhana, Vishaghna, Medohara*<sup>22</sup>

Proven Properties - antibacterial, anti-inflammatory, apoptotic, and antioxidant.<sup>23</sup>

Forms indicated – *Chyavanprasha, Guduchyadi churna, Vidangadi churna, Vyoshadi shaktuyoga*

### 8. **Sunthi** – *Zingiber officinale*

Active ingredients – Essential oil, Gingerol, Shogaol, resinous matter, starch

Ay. Properties – *Dipan, Pachan, Anuloman, Aamadoshahara, Vatakaphahara, Hrudya*<sup>24</sup>

Proven Properties - antioxidant, anti-inflammatory, anti-bacterial, immune modulator, anticancer, anti-diabetic.<sup>25</sup>

Forms indicated – *Trikatu churna, Vaishwanara churna, Vyoshadi shaktuyoga, Navak guggul, Dashanga guggul*

### 9. **Bilva** – *Aegle marmelos*

Active ingredients – Auraptene Coumarins, Glycosides

Ay. Properties – *Mutrala, Tridoshghna*<sup>26</sup>

Proven Properties - Hypoglycaemic, spasmogenic, antiviral, cardiac stimulant, antiemetic, anthelmintic.<sup>27</sup>

Forms indicated – *Bilvadi leha, Dashamula kwath/churna, Bilvadi churna*

### 10. **Shyonaka** – *Oroxylum indicum*

Active ingredients – Flavonoids, Tannins

Ay. Properties – *Kaphapittashamaka, Dipan, Grahi*<sup>28</sup>

Proven Properties - astringent, anti-inflammatory, aphrodisiac, expectorant, anthelmintic and tonic.<sup>29</sup>

Forms indicated – *Dashamula kwath/churna, Bilwadi churna*

11. **Gambhari** – *Gmelina arborea*

Active ingredients – Lignans

Ay. Properties – *Tridosahara, Dipan, Pachan, Bhedan, Medhya, Virechanopaga, Vishahara, Shramahara*<sup>30</sup>

Proven Properties - antioxidant, antimicrobial, anti-diarrhoeal, anticancer, antidiabetic, cardioprotective, antidiuretic, antipyretic, analgesic agent.<sup>31</sup>

Forms indicated – *Bilwadi churna/ kwath, Dashmool churna*

12. **Agnimantha** – *Clerodendrum phlomidis*

Active ingredients – Sterols

Ay. Properties – *Vatakaphahara, Shothahara*<sup>32</sup>

Proven Properties - anti-obesity effects, metabolism booster, Anti-constipation, Uterine tonic, Carminative, Digestive Stimulant, Stomachic, Cardiac Stimulant.<sup>33</sup>

Forms indicated – *Dashamularishta, Dashamula kwath/ churna, Bilwadi churna, Agnimantha-Shilajatu Yoga*

13. **Patla** – *Stereospermum suaveolens*

Active ingredients – phytoconstituents Glucoside, Tannins, ellagic acid, ethylgallate, gallylglucose, chebulanic acid

Ay. Properties – *Tridosahara, Ruchya, Medohara*<sup>34</sup>

Proven Properties - anti-inflammatory, hepatoprotective, immunomodulatory, antiulcer, analgesic and antipyretic.<sup>35</sup>

Forms indicated – *Dashamularishta, Dashamula kwath/ churna, Bilwadi churna*

14. **Shilajatu** – Asphaltum

Active ingredients – fulvic acid, humins, humic acid, selenium, minerals

Ay. Properties – *Rasayana, Vrushya, Medhya, Medohara, Sandhaniya, Chhedan, Tridoshghna*<sup>36</sup>

Proven Properties - antiulcerogenic, antioxidants, cognitive and memory enhancer, antidiabetic, anxiolytic, antiallergic properties, immunomodulator, anti-inflammatory, analgesic, antifungal properties, neuroprotective<sup>37</sup>

Forms indicated – *Agnimantha-Shilajatu Yoga, Chandraprabha vati*

15. **Yava** – *Hordeum vulgare*

Active ingredients – Flavone Glycosides namely Orientoside, Orientin, Vitexin etc., Starch, Sugars, Fats, Proteins

Ay. Properties – *Vatakara, Pittakaphahara, Medahara, Balya, Vrushya, Swarya, Varnya, Sthairyakara, Purishakara, Mutrahara, Lekhana*<sup>38</sup>

Proven Properties - anticancer, antidiabetic, immunity booster, antiobesity, lowers cholesterol, Beneficial in anaemia, toxin cleanser, hepatoprotective agent<sup>39</sup>

Forms indicated – *Dhanvantara ghruta, Eladya modak, Yava-Aamalak churna*

16. **Maricha** – *Piper nigrum*

Active ingredients – Alkaloids (Piperine, Chavicine, Piperidine, Piperetine)

Ay. Properties – *Kaphavatajit, Pittakara, Chhedan, Dipan, Ruchya, Jantunashan, Medohara*<sup>40</sup>

Proven Properties - anti-inflammatory, anti-metastatic, anti-peroxidative [cancer preventing], antioxidant, anti-depressant, anti-diarrheal<sup>41</sup>

Forms indicated – *Trikatu churna, Vyoshadi shaktuyoga, Navak guggul, Dashanga guggul*

17. **Pippali** – *Piper Longum*

Active ingredients – phytoconstituents Glucoside, Tannins, ellagic acid, ethylgallate, gallylglucose, chebulanic acid

Ay. Properties – *Dipana, Hrudyas, Ruchya, Tridosahara, Vrushya, Rasayana, Rechan*<sup>42</sup>

Proven Properties - CNS depressant, analgesic, antipyretic, antioxidant, antiinflammatory, hepatoprotective<sup>43</sup>

Forms indicated – *Trikatu churna, Vyoshadi shaktuyoga, Navak guggul, Dashanga guggul*

18. **Guggulu** – *Commiphora mukul*

Active ingredients – Essential oil, Gum, Resin, Steroids

Ay. Properties – *Vatakaphahar, Rasayana, Varnya, Balya, Medohara, Bhagnasandhanakar*<sup>44</sup>

Proven Properties – Hypolipidemic, Fibrinolytic, Anti-Inflammator, Antiarthritic, Antioxidant, Anti-atherosclerotic, Cardioprotective, antidiabetic, antimicrobial<sup>45</sup>

Forms indicated – *Triphala guggul*, *Yogaraj guggul*, *Chandraprabha vati*, *Amrutadi guggul*, *Dashanga guggul*

## DISCUSSION

The *Ayurvedic* system of management of diseases is comprised of either *shamana* therapy or *shodhana* therapy or both. *Shodhana* is indicated for clearing and opening of channels (micro circulation), i.e. boosting the functional capacity of organ, system and hence the body as a whole. This actually results in proper secretion and movement of enzymes and hormones, which is necessary for maintenance of daily wear and tear and proper growth and nutrition of the whole body. Whereas *Shamana* can be understood as a therapy for neutralization of toxins and/or its effects in order to help maintain the normal function and activity of various organ and systems. In some diseases/conditions, we require both *Shodhana* & *Shamana*, but in many others we can plan the management by using only either of them. In *Ayurveda*, the drug can be in the form of a single herb or its compound or combined form of many ingredients. Their specific compositions possess specific properties and are chosen as per the need for *Shodhana/Shamana* in a particular condition. The drug review indicates that most of these *Ayurvedic* drugs have a wide therapeutic, viz. potent cholesterol biosynthesis reducer, improving hepatic uptake of lipoproteins, anti-obesity activity and hence can be successfully used in management of Hyperlipidemia. Infact, some of the above drugs are already routinely being used in Indian kitchen, viz. *Shunthi*, *Maricha*, *Pippali* etc. and hence those families which regularly consume these as food/feeding articles, are less susceptible to Hyperlipidemia and heart diseases. As per *Ayurvedic Rasayana* concept too, use of drugs like *Amalaki*, *Pippali*, *Triphala*, *Guduchi* etc. as preventive medicine increases the immunity of an individual, acts as and also reduces the obesity. So, regular use of these *Ayurvedic* medicines in their best palatable form not only decreases the increased lipid levels, but also minimizes obesity and risk of getting any heart disease.

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