



## Review Article

### CLASSIFICATION OF ENLISTED AYURVEDIC LIPID LOWERING HERBS ACCORDING TO PRINCIPLE OF AYURVEDA

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#### ABSTRACT

Dyslipidemia is a condition marked by unhealthy abnormal concentrations of lipids in blood. There is no direct description of dyslipidemia in Ayurvedic texts. However *Medo Rogas* (fat disorders) are described in Ayurvedic texts since ancient times. Dyslipidemia (*Medo roga*) is a disease of diminished *Jatharagni*, *Bhutagni* and *Dhatwagni* induced *Apachita* or *Saam Asthayi Meda Dhatu Vridhhi*. So for the management of Dyslipidemia (*Medo roga*) such drugs are needed which having *Deepan*, *Pachan*, *Kaphaghna* and *Medoghna* properties. In this regards it is time essential to classify them by considering its specific therapeutic effect and not only by using as an indistinct lipid lowering agent. **Aim:** To review the properties and action of Ayurvedic lipid lowering herbs against specific involved *Samprapti Ghatak* (pathological factor) in the management of Dyslipidemia (*Medo roga*). **Result:** Study provides good evidence of classification of Ayurvedic lipid lowering herbs in the management of Dyslipidemia (*Medo roga*).

**KEYWORDS:** Dyslipidemia, *Medoroga*, *Medo Dhatu*, Ayurvedic lipid lowering herbs.

#### INTRODUCTION

Dyslipidemia is a condition marked by unhealthy abnormal concentrations of lipids in blood. Latest studies have reported that increased cholesterol level is present in 25–30% of urban and 15–20% rural population. It is a major risk factor for many life threatening disorders like atherosclerotic cardio and cerebro vascular disorders (ASCVD). It has been closely linked to the patho-physiology of ASCVD and Dyslipidemia is a key independent modifiable risk factor.<sup>[1,2]</sup> In India the burden of ASCVD is alarmingly high and usually gets the disease at early age with more severe form with poor outcome.<sup>[3]</sup> By virtue of this importance it is rationale to provide safe and effective management for Dyslipidemia.

Now research interest has focused on various Ayurvedic herbs for their potential role in lipid lowering properties. Herbal medicines are used as single and compound formulations or along with minerals. Many Ayurvedic herbo-mineral formulations are processed in herbal juices to increase the potency of formulation. Phytochemical and pharmacological studies are in course to ascertain the lipid lowering properties of many herbal plants described in Ayurveda text from last few decades. Clinical studies also have reported that Ayurvedic herbal medicines are effective in lowering LDL-C.<sup>[4]</sup> Hence reexploring the rich heritage of herbal medicines of Ayurveda is essential by

extensively conducting the preclinical studies and randomized controlled trials. But while using rich heritage of Ayurveda for clinical purpose one should not neglect the concept of *Agni*, *Dosha Dhatu* and *Strotogamitva* of herbs.

**AIM:** To review the properties and action of Ayurvedic lipid lowering herbs against specific involved *Samprapti Ghatak* (pathological factor) in the management of Dyslipidemia (*Medo roga*).

#### MATERIALS AND METHODS

Literature of Ayurveda and research evidences was reviewed, along with taking into consideration of their active principles and pharmacological properties. Understandings of Dyslipidemia were discussed as per Ayurveda system of medicine and Ayurvedic lipid lowering herbs were classified on the basis of principle of Ayurveda and pharmacological research studies.

#### Dyslipidemia (*Medoroga*)

There is no direct description of dyslipidemia or hyperlipidemia in Ayurvedic texts. However *Medo Dhatu Rogas* (disorders) are described in Ayurvedic texts since ancient times. Excessive accumulation of *Meda* in body causes various diseases like *Medoroga* or *Sthaulya* or *Atisthauilya*, *Granthi*, *Galaganda* and *Madhumeha*.<sup>[5]</sup>

## Correlation of Etiological factors of Dyslipidemia (*Medo roga*)

Dyslipidemia have varied type of etiological factors. Apart from congenital types (i.e. type I, IIa, III and IV) various acquired types are also found in the development of lipid disorders. Acquired etiological factors are most commonly found in the development of lipid disorders than congenital. Acquired factors are obesity, diabetes mellitus, physical inactivity, alcoholism, hypothyroidism, nephrotic syndrome, cholestatic liver disease etc.<sup>[6]</sup>

As per Ayurveda, *Medodhatu* has immediate relationship with *Rakta Dhatu* in terms that *Prasad Bhaag* produced during metabolism of *Rakta Dhatu* nourishes *Meda Dhatu*. *Rakta Dhatu* is responsible for transportation of *Asthayi Meda Dhatu* (circulating lipids) to all over body tissue. Pathogenesis of *Madhumeha* (Diabetes mellitus) states that the prime involvement of *Meda Dhatu* in disease formation<sup>[7]</sup> *Vrikka* and *Vapavahan* are the *Moola sthana* of *Medovaha strotas*.<sup>[8]</sup> Hence there is involvement of *Vrikka* in *Meda dhatu vikaras* (lipid disorders). Liver is the main site for formation and processing of lipids. Dyslipidemia (*Medo Roga*) is the common feature in various liver disorders. Alcohol consumption is vitiating factor for *Medo Dhatu Vikara*.<sup>[9]</sup> After critical study of both modern and Ayurvedic literature it may be stated that *Medo roga* may have involvement of *Tridosha*, *Rakta Dhatu* (blood tissue), *Yakrit* (liver), *Vrikka* (kidney) and *Vapavahan* (omentum).

## Concept of Dyslipidemia in Ayurveda

The term *Medo Dhatu* described in Ayurveda covers fats, lipid and adipose tissue; hence the disorders of these tissues can be considered as disorders of *Meda dhatu*. As per Ayurveda *Medoroga* involved *Kapha dosha* and *Meda dhatu* as a prime causative factor and *Vata* and *Pitta* are responsible for fatal complications.<sup>[10,11]</sup> Acharyas particularly mentioned if *Meda* is increased in very moderate quantity in body and remains untreated for long period may cause death of patient.<sup>[12]</sup>

On the basis of physiological consideration of *Meda dhatu*, circulating lipids are considered as *Asthayi (Poshak) Dhatu* and where as body fats or adipose tissue can be considered as *Sthayi* or *Sthira Meda Dhatu*. The term lipid is better to consider in relation to physiological aspect of fat where as adipose tissue to be considered in relation to anatomical aspect. In *Medo Rogas* all the etiological factors influence and disturb (*Agnimandya*) the *Jatharagni* primarily and then consequently *Bhutagni* and *Dhatwagni*, which causes excess formation of *Apaachit* or *Saam Meda Dhatu*. From above discussion it may be stated that Obesity (*Sthoulya*) is a disease of *Apaachit* or *Saam Sthayi medo dhatu*

*Vridhhi* and Dyslipidemia (*Medo roga*) is a disease of *Apaachit* or *Saam Asthayi Meda Dhatu Vridhhi*.

## Management Principle for Dyslipidemia (*Medo Roga*)

Dyslipidemia (*Medo roga*) is a disease of diminished *Jatharagni* and *Dhatwagni* induced *Apachita* or *Saam Asthayi Meda Dhatu Vridhhi*. *Bhutagni* is the link between *Jatharagni* and *Dhatwagni*, means all three *Agni* are diminished. So for the management of Dyslipidemia (*Medo roga*) such drugs are needed which having *Deepan*, *Pachan*, *Kaphaghna* and *Medoghna* properties. *Acharya Charak* advises to use *Guru* and *Apatarpan* medicines, which are having *Shleshma-Medohara* properties and *Vataghna* diet in the management of *Atisthaulya*. Various treatment modalities like diet and life style modification, conservative treatment and *Panchkarma* procedures are mentioned in Ayurveda for management of *Medo Rogas*.<sup>[13]</sup> Beside these, wide varieties of causes of Dyslipidemia (*Medo roga*) connote the use of specific lipid lowering drugs as per the etiological factors. For the effective management of lipid disorders it is mandatory to use such drug which has potential pharmacological action on exact etiological factor.

Pharmological and clinical studies have reported that Ayurvedic herbal medicines are effective in lowering LDL-C.<sup>[14]</sup> Ayurvedic lipid lowering herbs are depicted as per their pharmacological action at specific pathogenesis level. So while managing Dyslipidemia (*Medo roga*) specific herbs has to be used as per the various causative acquired factors.

In this regards it is time essential to classify them by considering its specific therapeutic effect and not only by using as a indistinct lipid lowering agent. It is rationale to use Ayurvedic lipid lowering herbs against specific involved *Samprapti Ghatak* (pathological factor) in the management of Dyslipidemia (*Medo roga*).

## Drug useful in Dyslipidemia (*Medo roga*) might have below properties

- 1) Drug must have *Deepan*, *Paachan* properties with *Ushna Virya* (potency).
- 2) It has action on all varieties of *Agni* i.e. *Jatharagni* (GIT level), *Bhutagni* (Hepatic metabolism level) and *Dhatwagni* (various body tissue metabolism level).
- 3) It has capacity to digest the *Rasa Rakta gata apaachit saam Meda*.
- 4) It has to be safe for long term use.
- 5) At the same time it also minimizes the future complications by the property of *Urjaskar* (*Rasayan* and *Vrishya*).

**Classification of enlisted Ayurvedic lipid lowering herbs according principle of Ayurveda**

On these backgrounds after in depth study for classification of Ayurvedic lipid lowering herbs principles of *Samhitas*, qualities and pharmacological actions mentioned in various *Nighantus* and

pharmacological research evidences are taken in consideration. We try to classify it according to therapeutic effect at various level of *Samprapti Ghatak* (pathological factor) of Dyslipidemia (*Medo roga*).

**Table 1: Classification of Ayurvedic herbs according to disease condition**

S. No.	Disease Condition	Useful Herbs
1.	Obesity ( <i>Sthoulya</i> ) - <i>Apaachit</i> or <i>Saam Sthayi</i> <i>medo dhatu vridhhi</i>	<i>Guggulu</i> ( <i>Commiphora mukul</i> ) <sup>[15]</sup> , <i>Vidanga</i> ( <i>Embelia ribes</i> ) <sup>[16]</sup> , <i>Triphala</i> (Three fruits) <sup>[17]</sup> , <i>Amara Bela</i> ( <i>Cuscuta reflexa</i> ). <sup>[18]</sup>
2.	Dyslipidemia ( <i>Medo roga</i> ) <i>Apaachit</i> or <i>Saam asthayi</i> <i>meda dhatu vridhhi</i>	<i>Jeerak</i> ( <i>Cuminum cyminum</i> ) <sup>[19]</sup> , <i>Guduchi</i> ( <i>Tinospora cordifolia</i> ) <sup>[20]</sup> , <i>Amalaki</i> ( <i>Emblica officinalis</i> ) <sup>[21]</sup> , <i>Chavya</i> ( <i>Piper chaba</i> ) <sup>[22]</sup> , <i>Haridra</i> ( <i>Curcuma longa</i> ) <sup>[23]</sup> , <i>Musta</i> ( <i>Cyperus rotundus</i> ) <sup>[23]</sup> , <i>Arjun</i> ( <i>Terminalia arjuna</i> ) <sup>[24]</sup> , <i>Palandu</i> ( <i>Allium cepa</i> ) <sup>[25]</sup> , <i>Erandamoola</i> ( <i>Ricinus communis</i> root). <sup>[26]</sup>

**Table 2: Classification of Ayurvedic herbs based on their therapeutic properties**

S.No.	Samprapti Level	Therapeutic Action	Lipid Lowering Herbs
1	<i>Jatharagni</i>	<i>Agni Deepan, Paachan</i>	<i>Chavya</i> ( <i>Piper chaba</i> ) <sup>[22]</sup> <i>Jeerak</i> ( <i>Cuminum cyminum</i> ) <sup>[19]</sup> <i>Trikatu</i> (Three peppers) <sup>[27]</sup> <i>Sunthi</i> ( <i>Zinziber officinale</i> ) <sup>[28]</sup>
2	<i>Bhutagni</i>	<i>Bhutagni deepan (Agni + Vaayu)</i>	<i>Kutki</i> ( <i>Picrorhiza kurroa</i> ) <sup>[29]</sup> <i>Bhringraj</i> ( <i>Eclipta alba</i> ) <sup>[30]</sup> <i>Bhunimba</i> ( <i>Andrographis paniculata</i> ) <sup>[31]</sup> <i>Daruharidra</i> ( <i>Berberis aristata</i> ) <sup>[32]</sup>
3	<i>Dhatwagni</i>	<i>Dhatwagni Deepan, Paachan</i>	
3.1	<i>Rasa dhatu</i>	<i>Rasa Dhatwagni Deepan, Paachan</i>	<i>Chavya</i> ( <i>Piper chaba</i> ) <sup>[22]</sup> <i>Jeerak</i> ( <i>Cuminum cyminum</i> ) <sup>[19]</sup> <i>Trikatu</i> (Three peppers) <sup>[27]</sup> <i>Arjun</i> ( <i>Terminalia arjuna</i> ) <sup>[24]</sup>
3.2	<i>Rakta Dhatu</i>	<i>Rakta Dhatwagni Deepan, Paachan</i>	<i>Kutki</i> ( <i>Picrorhiza kurroa</i> ) <sup>[29]</sup> <i>Bhringraj</i> ( <i>Eclipta alba</i> ) <sup>[30]</sup> <i>Bhunimba</i> ( <i>Andrographis paniculata</i> ) <sup>[31]</sup> <i>Patola</i> ( <i>Trichosanthes dioica</i> ) <sup>[33]</sup> <i>Sariva</i> ( <i>Hemidesmus indicus</i> ) <sup>[34]</sup> <i>Haridra</i> ( <i>Curcuma longa</i> ) <sup>[23]</sup>
3.3	<i>Mamsa Dhatu</i>	<i>Mamsa Dhatwagni Deepan, Paachan</i>	<i>Nimba</i> ( <i>Melia azadirachta</i> ) <sup>[35]</sup> <i>Triphala</i> (Three fruits) <sup>[17]</sup> <i>Musta</i> ( <i>Cyperus rotundus</i> ) <sup>[23]</sup>
3.4	<i>Meda Dhatu</i>	<i>Meda Dhatwagni Deepan, Paachan</i>	<i>Kirattikta</i> ( <i>Swertia chirata</i> ) <sup>[36]</sup> <i>Sunthi</i> ( <i>Zinziber officinale</i> ) <sup>[28]</sup> <i>Guduchi</i> ( <i>Tinospora cordifolia</i> ) <sup>[20]</sup> <i>Rasona</i> ( <i>Allium sativum</i> ) <sup>[37]</sup> <i>Eranda moola</i> ( <i>Ricinus communis</i> root) <sup>[26]</sup>
4	<i>Upadhatu</i>	<i>Paachan + Dhatwagni deepan</i>	



4.1	Rasa – Stanya		Jeerak ( <i>Cuminum cyminum</i> ) [19]
	Asruj		Kumari ( <i>Aloe vera</i> ) [38]
4.2	Rakta - Sira		Kutki ( <i>Picrorhiza kurroa</i> ) [29]
	Kandara		Eranda ( <i>Ricinus communis</i> ) [26]
4.3	Mamsa- Vasa		Sunthi ( <i>Zinziber officinale</i> ) [28]
	Shat Tvacha		Sariva ( <i>Hemidesmus indicus</i> ) [34] Vidanga ( <i>Embelia ribes</i> ) [16] Chopchini ( <i>Smilax china</i> ) [39] Guduchi ( <i>Tinospora cordifolia</i> ) Karanj ( <i>Pongamia pinnata</i> ) [40]
4.4	Meda – Snayu		Sunthi ( <i>Zinziber officinale</i> ) [28] Eranda moola ( <i>Ricinus communis</i> ) [26]
	Sandhaya		Guggulu ( <i>Commiphora mukul</i> ) [41] Sunthi ( <i>Zinziber officinale</i> ) [28] Rasona ( <i>Allium sativum</i> ) [37] Eranda moola ( <i>Ricinus communis</i> root) [26]

## DISCUSSION

### Classification of Ayurvedic lipid lowering herbs according to research evidences

Herbal plant lowers lipid by virtue of various pharmacological actions exerts by their active constituents i.e. saponins, tannins, alkaloids, alkenyl phenols, glycol-alkaloids, flavonoids, sesquiterpenes lactones, terpenoids and phorbol esters.[42] As per the pharmacological research evidences, herbs may be classified on their properties like LDL lowering, HDL elevating, inhibition of HMG CoA reductase enzyme and LDL oxidation property.

Herbs like *Lomaphala* (*Passiflora foetida*), *Chakramard* (*Cassia tora* seeds), *Shunthi* (*Zingiber officinale* rhizome), *Bhunimba* (*Andrographis paniculata* leaves), *Mandukparni* (*Centella asiatica* leaves), *Kembuka* (*Costus speciosus*), *Methika* (*Trigonella foenum-graecum* seeds), *Isabgol* (*Plantago ovata* seeds) are having low density lipoprotein lowering property.[43-47]

Some herbs are possessing both LDL lowering and HDL elevating properties like *Ajamoda* (*Apium graveolens* seeds), *Bilva* (*Aegle marmelos* leaves), *Sarshap* (*Brassica juncea* seeds), *Eranda karkati* (*Carica papaya* fruit), *Vidanga* (*Embelia ribes* fruits), *Mundi* (*Sphaeranthus indicus*), *Khadira* (*Acacia catechu* leaf), *Amar bela* (*Cuscuta reflexa*), *Guggulu* (*Commiphora mukul* gum resin) and *Kalonji* (*Nigella Sativa* Seeds).[43,48-51]

Research studies investigate that herbs are also having statin like properties of inhibition of HMG CoA reductase enzyme. It decreases cholesterol synthesis by inhibition of rate limiting HMG CoA reductase enzyme. These herbs are *Plaksha* (*Ficus virens* bark), *Lodhra* (*Symplocos racemosa* bark),

*Amalaki* (*Emblica officinalis* fruits), *Ashok* (*Polyalthia longifolia* leaves) and *Alabu* (*Lagenaria siceraria*).[43]

Oxidative damage by free radicals has been concerned as the ground of diverse diseases. Numerous evidence from the conducted studies put forward that oxidation of LDL plays a key role in pathogenesis of atherosclerosis. *Tulsi* (*Ocimum basilicum*), *Kanchanar* (*Bauhinia variegata* flower), *Haridra* (*Curcuma longa* rhizome), *Teela* (*Sesamum indicum* seeds), *Avartaki* (*Cassia auriculata* leaves) and *Draksha* (*Vitis vinifera* fruit) are lowers lipids by acting on LDL oxidation.[43,52,53]

Some herbs are versatile in properties having LDL lowering, HDL elevating and LDL oxidation properties like *Jamun* (*Syzygium cumini* seeds) and *Samudrashoka* (*Salvia officinalis* leaves). *Lahsuna* (*Allium sativum* fruits) lowers lipids by all above properties.[43]

## CONCLUSION

Each drug has specific pharmacological actions like some herbs are acting on *Jatharagni*, some on *Bhutagni*, some on *Dhatwagni*, some directly acting on *Meda dhatu* and at many more level as per Ayurveda. Study provides good evidence of classification of Ayurvedic lipid lowering herbs in the management of Dyslipidemia (*Medo roga*) as per Ayurveda and research evidences.

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