



REVIEW OF TOP SELLING COMMERCIAL AYURVEDIC FORMULATIONS USED IN DYSLIPIDEMIA

**Dr Swati Sandwal, Dr Yogesh Kumar Pandey
Ch. Brahm Prakash Ayurveda Charak Sansthan**

ABSTRACT

The term Dyslipidaemia defines itself as disturbances in metabolism of lipid molecules inside body which further causes deviation in normal reference ranges of triglycerides, total cholesterol, high density lipoprotein and low-density lipoprotein. These abnormal levels of lipid molecules may lead to various disorders of lipoprotein metabolism inside the body and are collectively called as deranged lipid profile which may ultimately lead to atherosclerosis and various ischemic heart diseases (IHD). On Ayurvedic perspective it can be compared with *Medhodushti*, which can be explained as vitiation in *Prakrit karya* of *Medho Dhatu*. The term *Medhodushti* comprises of two terms Medas(Sneha of body) and Dushti (vitiation from its normal physiology). The fundamental cause is serum lipid retention and deposition, which causes coronary artery blood flow to diminish. To stop this threat, conventional and natural medications are being tried to decrease serum cholesterol levels. However, Number of people use over the counter medicine (OTC) products with or without advised of registered Ayurvedic Practitioner. An effort has been made through this review article to critically analyse the world about the most selling commercially available formulations for dyslipidaemia based on Ayurvedic aspect.

INTRODUCTION

Lipid are various organic compounds that are insoluble in water. Cholesterol, which is made up of hydrocarbon rings, is one of the three primary biological classes of lipids. Triglycerides (TGs), which are esters made up of glycerol coupled to three long-chain fatty acids, are the other two.

(C) Phospholipids, which have a hydrophilic head with a phosphate group and a hydrophobic tail made of two long-chain fatty acids connected by glycerol.

Deranged lipid profile which includes deviation in normal reference ranges of triglycerides, low density lipoprotein, high density lipoprotein and total cholesterol. These abnormal levels of lipid molecules lead to various disorders of lipoprotein metabolism inside body and are collectively called as deranged lipid profile. however, normal ranges of lipids in body are as follows:

HDL molecules – Greater than 50 mg/dl.

LDL molecules – Less than 100mg/dl.

VLDL molecules -Less than 150mg/dl.

Total Cholesterol-Less than 200 mg/dl.

As adipocyte mass rises, obesity-related decreased insulin sensitivity has a variety of impacts on lipid metabolism. More free fatty acids are transported from the increased adipose tissue to the liver, where they undergo re-esterification in hepatocytes to produce triglycerides, which are then bundled into VLDLs for release into the bloodstream. Increased consumption of simple carbohydrates also stimulates the liver to produce VLDLs, which causes VLDL and/or LDL levels in some obese patients to rise. Obesity often results in low plasma levels of HDL-C, in part because of decreased lipolysis.ⁱ

These increased molecules of lipids contribute to liberation of lysosomes which further triggers cells degeneration and results to cell death. hence affects the overall lifespan of an individual.

Arachidonic acid (AA) and other fatty acid precursors are metabolised via two main pathways: the cyclooxygenase (COX) and lipoxygenase (LOX) pathways. Inflammation, which results from an injury-causing stimulus, is a beneficial event that removes the offending factor and restores tissue structure and functionⁱⁱ. This arachidonic acid (acts as a pro-inflammatory) is derived from phospholipids which are the essential part of cell membrane. The Leukotrienes are one of the major eicosanoid lipid mediators produced due to an oxidative transformation of arachidonic acid. The COX pathways include prostaglandins (for vasodilation) and thromboxane (responsible for vasoconstrictor, platelet aggregation) whereas LOX pathway includes leukotrienes (responsible for bronchoconstriction).

Epidemiology

According to numerous research, the total prevalence of dyslipidaemia in India ranges from 10% to 73%, depending on age, socioeconomic status, nutrition, and activity levels, as well as where you live (rural vs. urban). In urban regions, the prevalence of hypertriglyceridemia ranged from 73% in obese Asian Indians to 61% in non-obese Asian Indians, and migrant Asians. In rural areas, the prevalence was somewhat lower but still greater than in white Caucasians. As per previously researched articles obesity has a direct link with dyslipidemia, approximately 60-70 % of obese patients have dyslipidemiaⁱⁱⁱ.

Ayurvedic perspective

The word *Medas* means *Snehan* or oleation of the body. As per ayurvedic texts is based on *dhatu Poshan Nayaya*, which is the minute and potential transformation or conversion of diet (*Aahara*) into *Prasada Bhag* as *Aana Ras* and *Kitta Bhag* as mala in body by the processing of digestion with the help of digestive fire (*Jatharagni*). The *Prasada Sthula Bhaga* (bulky essence part) nutritates the same tissue e.g., *Rasa Dhatu* and its *Anubhaga* (fine essence part) is converted into next (higher tissues). In the same manner *Ras Dhatu* converts to *Rakta*, *Rakt to Mansa*, *Mansa to Medha Dhatu* and the further *dhatu In Kram*.

Medhodushti is defined as vitiation in *Prakrit karya* of *Medho Dhatu*. As described by *Madahav Nidan* - *Medhovridhhi* can be defined as *Sanchaya* of *Medho Dhatu* over *Udara*^{iv} which can be understood as increase in abdominal girth and BMI of patient. *Medho dhatu* works to create *Snighdhta* and *Sweda* in body as well as it provides *Dradta* (strength) to body and does *Pushti* (nourishment) of *Asthi Dhatu*^v. Due to various causes which includes *Avayayam* (No physical activity), *Divasvapan* (Day sleep), *Madhya Sevan* (Alcohol), *Atibhakshan of Ahara* (Excessive food intake) their occurs *Vikarti* in *Chayaupchaya* of *Sneha Guna* in body which leads to *Medhovridhhi*^{vi}. The various *Lakshan* of *Medhovridhhi* includes *Atisnightha*^{vii} in body, *Medh* deposition particularly at *Udar Parshav Stana*, *Nithambha* regions of body, *Durghandta* (Foul smell), *Alap Chesta* and *Shram*^{viii} (Fatigue) etc.

Badh-Abadhmedha^{ix} to Medhovridhhi (~Dyslipidemia)

According to *Chakrapani*, *Medha* in its normal physiological state is present in *Badh Avastha* with *Mansa* hence provides compactness to body (*Sahantam*) and in its pathological state (*Abadh Avastha*) it does not provides compactness (~*Asanhantam*), *Aghanatvam* (decrease in density of *Medha* in body), *Bhutvam* (increased in amount of *Medha Dhatu*) all these pathological state of *Medha Dhatu* will leads to increase in *Dravatvam Guna* (ability to flow) of *Medha* in body. This pathology will further leads to *Medhovridhhi* inside body and can be correlated with accumulation of lipid molecules (dyslipidemia) which may ultimately lead to atherosclerosis (due to its increase in ability to flow).

AIM AND OBJECTIVE:

To review about the popular selling Ayurvedic drugs for dyslipidaemia and analysis of their composition and mode of action in dyslipidaemia.

MATERIAL AND METHODS

Different 10 ayurvedic pharmacy shops in west Delhi (Nangloi) were enquired regarding to all available commercial formulations for Dyslipidaemia and data has been produced. Internet sources were also used for information collection.

Observation :

On enquiring various ayurvedic pharmacy shops about available commercial formulations for Dyslipidaemia following facts were observed which are presented below:

The table briefs about the most selling commercially available ayurvedic formulations with their addresses used for dyslipidaemia including all the major ayurvedic pharmacy available in the ayurvedic market .

Observation 1:

(Table No. 1)

Commercially available Formulation	Manufacturer
Abana	Himalaya Drug Company Private Limited Makali Tumkur road Babgalore Bangalore Ka 562123.
Cholesterol Care	Bacfo Pharmaceuticals (India) Ltd (House E-27, Defence Colony, at New Delhi - 110 024)
Lipid Care	Organic India (C 5/10, Agro Park, UPSIDC Kursi Road, Barabanki 225302, Uttar Pradesh,
Lipidom	Patanjali Ayurveda Limited (D-26, Pushpanjali, Bijwasan Enclave, New Delhi DI 110061)
Lipistat	Dabur India Limited's (8/3 Asaf Ali Road at New Delhi DI 110002)
Lipomap	Maharishi Ayurveda Products Private Limited's (Flat No 40, Pocket-H, Ground Floor at Sarita Vihar New Delhi South Delhi DI -110076)
Liponil	Vaidyaratnam Oushadhasala Pvt. Ltd
Liporid	Nagarjuna Ayurvedic Centre Limited Kerala
Liposem	Kerala Ayurveda limited (Vii/415 Nedumbaserryanthani P O Alwaye Ernakulam KI 683585

However, order of sequence is not in the order of volume of sale as no information is available on internet and opinion of outlets varies widely. Hence in the above table manufacturer pharmacies have been arranged alphabetically.

Observation 2:

Sample bottles were collected from ayurveda outlets and composition of commercially available formulations were noted which is represented in the table below.

(Table No. 2)

Commercially available Formulation	Manufacturer	Contents	Dosage	Mode of Administration
Abana ^{x, xi}	Himalaya Drug Company Private Limited .	Arjuna Guggulu	1-2 Tablet	Oral
Lipistat ^{xii, xiii}	Dabur India Limited's	Guggulu Pushkarmula Arjuna	1 Capsule	Oral
Lipomap	Maharishi Ayurveda Products Private Limited's	Nyctantes arbortristis -30mg Zingiber officinale-5gm Piper Longum- 5mg Curcuma longa 100mg Piper nigrum-5mg	2 Tablet	Oral, Before Meal.

		Tinospora Cordifolia (Ghan)-25mg Commiphora mukul-100mg Purified Asphaltum-25mg Hemidesmus indicus -30mg Tinospora cordifolia (satva)-30gm Phyllanthus nirura-30gm Rubia cordifolia -30mg		
Lipidom	Patanjali Ayurveda limited.	Arjun Lauki Lehsun Dal Chini Extract Gum Acacia Croscarmellose Sodium	2 Tablet	Oral, Half an hour after meal.
Liponil	Vaidyaratnam Oushadhasala Pvt. Ltd	Garcinia gummi-180mg Commiphora Mukul-180mg Piper Longum-30mg Piper Nigrum -20mg Zingiber Officinale -20mg Allium Sativa-60mg Nigella Sativa-60mg Terminalia Arjuna-60mg		
Liposem	Kerala Ayurveda limited	Guggulu Salmali Sarpagandha Vrikshamla	2 Tablet	
Lipid Care	Organic India	Arjun Bark – 130mg Harjor Stem-130mg Amalaki Fruit -45mg Vana Tulsi -45mg	1-2 Capsule	Oral
Cholesterol Care	Bacfo Pharmaceuticals (India) Ltd.	Arjuna -350mg Lashun -150mg	1-2 tablets	Oral
Liporid	Nagarjuna Ayurvedic Centre Limited.	Guggulu Lashuna Vrukshamlan		

		Arjuna Prushniparni Shaalparni Krishna Jeerakam Pippali		
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Hence the above table provides brief information regarding commercially available formulations for dyslipidaemia with their contents, pharmacy and dosage i.e, 2 tablet or written on sample bottles as “As directed by Physician” for use including all the major pharmacy available at market.

Observation 3:

The data collected highlights the facts that there exist few medicinal plants that are available in almost majority of the commercially available formulations including Medicinal Plant such as **Arjuna, Guggulu ,Lashun ,Pippali ,Vrikshamla .**

(Table No. 3)

S No.	Medicinal Plant	Pharmacy	No.
1.	Terminalia arjuna	Himalaya Drug Company Private Limited (Abana) Patanjali Ayurveda limited (lipidom) Bacfo Pharmaceuticals (India) Ltd (Cholesterol Care) Nagarjuna Ayurvedic Centre Limited (Liporid) Vaidyaratnam Oushadhasala Pvt. Ltd (Liponil)	5
2.	Guggulu (Commiphora mukul)	Dabur India Limited's (Lipistat) Himalaya Drug Company Private Limited (Abana) Maharishi Ayurveda Products Private Limited's (Lipomap) Kerala Ayurveda limited (Liposem)	4
3	Lashun (Allium sativum)	Patanjali Ayurveda limited (Lipidom) Nagarjuna Ayurvedic Centre Limited (Liporid) Vaidyaratnam Oushadhasala Pvt. Ltd (Liponil)	3
4.	Pippali (Piper longum)	(Nagarjuna Ayurvedic Centre Limited (Liporid) Vaidyaratnam Oushadhasala Pvt. Ltd (Liponil) Maharishi Ayurveda Products Private Limited's (Lipomap)	3

It can be observed from above table that 50% of these commercially available formulations for dyslipidaemia contains Arjuna (5/10), 40% formulations contains Guggulu (4/10) , 30% formulations contains Pippali (3/10)and Lashun as

their content. However, few of the medicinal drugs are just used by less number of manufacturers such as Pushkarmoola ,Parijat ,Krishan jeerak Sarpagandha , Amalaki , Prashanparni , Shallparni, etc.

Discussion

It has been inferred from the data collected that dyslipidaemia has a huge burden on the health of our nation and Ayurveda plays crucial role to rule out the causes (Nidan), pathogenesis (Samprapti), and treatment as Chikitsa for it .

In addition to the classical medicinal drugs and formulation prescribed in various Samhitas the below commercially available formulations of various pharmacy add on to the treatment for dyslipidaemia.

Mode of Action of Drugs:

1.Arjuna plant has properties as Kashya Ras, Rooksha , Laghu Guna , Katu Vipak and has hridya prabhav . it has various pharmacological actions such as cardiogenic, antidysentric, antihypertensive, diuretic, hypolipidaemic agent and .it decreases LDL levels. Although earlier researched work also supports the pharmacological action of Arjuna plant in dyalipidaemia .^{xiv , xv , xvi , xvii , xviii}

2.Guggulu has properties such as Visada ,Tikta ,Sara ,Ksaya, Katuka,Ruksha and Laghu and is Ushana Virya . In texts it is further described as Sarvadoshahar and in Puran Swaroop it does Lekhan Karma Although earlier reasearched work also supports the pharmacological action of Guggulu plant in dyalipidaemia .^{xix , xx , xxi , xxii , xxiii}

3. Lahsun is Madhur,Lavana ,Katu, Kashya in Rasas, is Snighdha ,Teekshna ,Sara and Guru in Gunas ,has Katu Vipaka and is Ushana Virya . Although earlier researched work also supports the pharmacological action of Lahsun plant in dyalipidaemia.^{xxiv}

4. Pippali (Piper longum) is a unique spice. It has qualities of typical uses in indigestion, asthma, cough etc. It is katu in rasa and is laghu, teekshna in guna . Its vipaka is Madhura and is Ushana Veerya. It does Deepan, Rechan, Udarrog Hara and is aamnut in properties. Although earlier researched work also supports the pharmacological action of Pippali plant in dyalipidaemia .

However,few of the medicinal drugs are just used by less number of manufacturers such as

1.Pushkarmoola – It is Katu ,Tikta in Ras and Laghu,Tikshan in Gunas, has Katu Vipak and Ushana Vipak . It is VataKaphahar in action and hence prevents Duargandhta (foul smelling) due to excessive Medha accumulation in Dyslipidaemia. ^{xxv}

2.Nyctanthus arbortristis is Parijat plant. It is Tikta in Ras and Laghu, Ruksha in Gunas, has Katu Vipak and Ushana Vipak . It is VataKaphahar in action.^{xxvi}

3.Krishan jeerak -It does Deepan- Pachan Karma and prevents excessive accumulation of Medha in body.^{xxvii}

4.Sarpagandha is Rauwalfia serpentina It is Tikta in Ras and Ruksha in Gunas, has Katu Vipak and Ushana Vipak . It is Kaphavatahar in action.^{xxviii}

5.Amalaki is Phyllanthus emblica. It is Amla Pradhan Panch Ras yukta and has Tridoshahar effect. By the action of its Amla Ras, it does Sansran karma and does Pachan of Kleda inside body.

6.Prashanparni -is Uraria picta and Shallparni -is Hedysarum gangeticum, Collectively called as Anshumati dveya Both have Tridoshahar effect and due to its Madhur Ras both can pacifies excessive Trishna (thirst) in dyslipidaemic patients .

Medhodushti Chikitsa :

As Ayurveda text, the chikitsa of medhodushti can be done by Shelshmahar Chikitsa and use of lekhaneya dravyas as prescribed by acharya charak..it contains following medicinal plants as below :ativisha , kutaki,

haridra , lahsun, etc few of which are the contents in the above list of commercially available ayurvedic formulations as stated earlier .

The drugs of lekhaniya Maha-kashaya does scraping action and includes following medicinal plants :

(Table No. 4)

SNo.	Drugs of lekhaniya Maha-kashaya	Botanical Name
1.	Mustak	Cyperus rotandus
2.	Chirbilwa	Holoptelia integrifolia
3.	Ativisha	Aconitum heterophyllum
4.	Haridra	Curcuma longa
5.	Daruharidra	Berberis aristata
6.	Vacha	Acorus calamus
7.	Katuka	Picrorhiza kurrao
8.	Chitrak	Plumbago zelanica
9.	Kushtha	Saussurea lappa
10.	Haimvati	Iris ensata

Bhedaniya Mahakasahaya.

- *Suvah (Operculina terpehum),*
- *Arka (Calotropis procera),*
- *Urubuka (Ricinus communis),*
- *Agnimukhi (Gloriosa superba.),*
- *Chitra (Baliospermum montanum),*
- *Chitraka (Plumbago zeylanica),*
- *Chirabilva (Holoptelia integrifolia.),*
- *Shankhini (Euphorbia dracunculoides)*
- *Sakuladini (Picrorhiza kurroa.),*
- *Svarnakshiri(Euphorbia thomsoniana .^{xxix}*

It has been inferenced that these popular pharmacy does not includes the contents of lekhnaiya and bhedaniya mahakhsaya . Only maharishi Ayurveda pharmacy has included Haridra as their one of the contents in its formulation

Conclusion:

The popular commercially available formulations for dyslipidaemia are Abana , Lipistat , Lipomap, Lipidom, Liponil, Liposem ,Lipid Care ,Cholesterol Care ,Liporid pharmacy. It can be inferenced that 50% of these commercially available formulations for dyslipidaemia contains Arjuna (5/10), 40% formulations contains Guggulu (4/10) , 30% formulations contains Pippali (3/10)and Lahsun as their content. It is pertinent to know that these formulations do not includes the contents of Lekhnaiya and Bhedaniya Mahakhsaya . Only maharishi Ayurveda pharmacy has included Haridra as their one of the contents in its formulation. These basic drugs are although not included in lekhnaiya and bhedaniya mahakhsaya but are basically rasayanas and helps to attain premium dhatu formation. Rasayana intake will lead to Prashasta Ras Dhatu formation which ultimately leads to Prastha (optimum) Shukra Dhatu and Ojas formation .Hence improves the quality of Medho Dhatu by their Rasayana Krama acting on the Dhatu Nirmana and substratium levels to improve the lipid metabolism of body. Further ,it can be inferenced from the above facts that these medicinal plants which are frequently used in commercially available formulations are Rasayana and hence does not cause unnecessarily Rukshta (dryness) and Shoshan of bodily tissue.

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