

CURRENT TREATMENT PRACTICES FOR DYSLIPIDEMIA PREVALENT IN AYUSH SYSTEMS OF MEDICINE**Dr. Mohd Abid^{1*}, Dr. Sadaf Khan² and Dr. Noman Khan¹**¹Research Associate CCRUM, Ministry of AYUSH.²PG Scholar, Department of Samhita Siddhant, All India Institute of Ayurveda New Delhi.***Corresponding Author: Dr. Mohd Abid**

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ABSTRACT

Nowadays due to sedentary lifestyle and unhealthy diet more than half of the population is suffering from dyslipidemia. Dyslipidemia is an abnormal amount of lipids in the blood. Most cases are of hyperlipidemias in developed countries. Dyslipidemia increases the chance of clogged arteries (atherosclerosis) and heart attacks, stroke or other circulatory disorders, especially in smokers. Currently available treatment of hypolipidemic drugs have been known to be associated with multiple side effects. Most commonly advised drugs that are statins have shown side effects when taken for longer period of time. Also these can't be advised in liver diseases. Hence need of an hour is to explore newer therapies which have significant effect on increased lipid profile and have least side effect. Here AYUSH system gives promising results for this condition. Numerous studies in various branches of AYUSH have been conducted to show the results of these therapies. This paper is a small effort in this area in which few studies from Ayurveda, Unani and Yoga are included to show significant and reliable treatment of dyslipidemia. It also throws light on present altered and hazardous lifestyle and its connection leading to various chronic health conditions.

KEYWORDS: Dyslipidemia, lipids, lifestyle disorders, Ayurveda, Unani, Yoga, Herbs.**INTRODUCTION**

Dyslipidaemia is a major cause of cardiovascular morbidity and mortality. Although awareness for dyslipidaemia has increased over time, its treatment has not improved accordingly. Even though the actual number of individuals receiving treatment has increased, the proportion of those who are treated but did not reach the recommended treatment goal is still not proportionate.^[1] Gupta R et al (2017) reported that Dyslipidaemia is the most important atherosclerotic risk factor. Recent studies have reported that high cholesterol is present in 25-30% of urban and 15-20% rural subjects. This prevalence is lower in high-income countries. The most common dyslipidaemia in India are borderline high LDL cholesterol, low HDL cholesterol and high triglycerides. Studies have reported that over a 20-year period, total cholesterol, LDL cholesterol and triglyceride levels have increased among urban populations. Case-control studies have reported that there is significant association of coronary events with raised apolipoprotein B, total cholesterol, LDL cholesterol and non-HDL cholesterol and inverse association with high apolipoprotein A and HDL cholesterol. Prevalence of suspected familial hypercholesterolemia in urban subjects varies from 1:125 to 1:450. Only limited studies exist regarding lipid abnormalities in children. There is

low awareness, treatment and control of hypercholesterolemia in India.^[2,3,4] Rasheed et al (2014) reported that prevalence of Dyslipidaemia varies according to the age, sex, race, geographical conditions and association with other diseases. The age group of 30 to 40 years has tendency to high prevalence, but above 60 years it become prominently high. Men are more prone to dyslipidaemia than women; rural population has less prevalence than urban in India. The prevalence with other disease association is high i.e. diabetes, obesity, renal disease and liver disease etc.^[5] Dyslipidaemia is an outcome of shifting from rural to urban that leads to sedentary lifestyle so the prevalence of Dyslipidaemia is higher in urban than rural areas.^[6] There are several risk factor associated with Dyslipidaemia viz; diabetes, obesity, hypertension, hypothyroidism, sedentary life style, fatty/oily diets, excess alcohol intake, smoking.^[7] Untreated dyslipidaemia leads to co-morbid symptoms (tiredness, dyspnoea, lethargy, loss of appetite, weight gain, PCOD) and complication (hypertension, hypothyroidism, infertility, PCOD, atherosclerosis, coronary artery disease, cardiovascular Death).^[8]

Concept of Dyslipidemia and Its Management in Unani System of Medicine

The term dyslipidaemia directly is not mentioned in classical Unani literature; however they have described it under the broad headings of Dasumat-e-Dam (Greasy blood) & Simane-Mufrit (Obesity) with the abnormalities of Hazm-e-Kabidi as the main cause of dyslipidaemia. The possible consequences of Siman-e-Mufrit like Khafqan (palpitation), Salabat-e-Nabz (Atherosclerosis), Sakta (Stroke), Zeeq-un-Nafas (breathlessness), Coma and Sudden death are very much similar with the signs, symptoms and complications of dyslipidemia defined in conventional medicine.^[9,12] Hence, Siman-e-Mufrit is a disease in which there is a deposition of Barid Ratab Mad'da (Shahm/Lipid)^[13] and it falls under the category of Amraz-e Balghamiya.^[14] Hippocrates was the first Unani Physician, who gave comprehensive explanation of Siman-e-Mufrit including its complications,^[15] later on renowned Unani physicians like Galen, Ali- Ibn Abbas Majoosi and Ibn-e- Rushd have mentioned the concept of Shaham (fat) and Siman-e-Mufrit in their treatises.^[16, 17, 18] Ismail Jurjani and Ibn-e-Nafis especially pointed out that obese people are more prone to develop cardiac and cerebral complications such as Khafqan (palpitation), Ghashi (syncope), Sakta (stroke), concealed haemorrhage, coma and sudden death.^[19,20]

In Unani system of medicine, renowned Unani Physicians like Hippocrates, Galen, Zakaria Rhazi, Ali Ibn-e-Abbas Majoosi, Ibn-e-Sina, Ismail Jurjani etc. have recommended various drugs, which are hot in temperament to modulate liver functions and also scientifically reported to have antidyslipidaemic activity, viz; Sadkofi (Cyperus rotundus), Balchhar (Nordostachys jatamansi), Muquil (Commiphora mukul), Chhal Arjun (Terminalia arjuna), Badranjboya (Mellisa officinalis), Abresham (Bombyx mori), Tukhm Methi (Trigonella foenum-graecum), Garlic (Allium sativum), Halela Zard (Terminalia chebula), Balela (Terminalia bellerica), Aamla (Phyllanthous officinalis), Chaube Zard (Curcuma longa), Tukhm Kalonji (Nigella sativa), Gurmar Booti (Gymnema sylvestre), PostAnar (Punica granatum), Kundur (Boswellia serrata), Kanduri (Coccinia indica), Zeera (Carum carvi), Badiyan (Foeniculum vulgare), Ajwain (Trachyspermum ammi) etc.^[21,22,23]

There are some famous Unani formulations which are highly effective for the management of dyslipidemia and obesity such as-Safoof Kalonji,^[5] Habbe Sundarus,^[27] Qurs Luk,^[28] Itrifal Sagheer,^[29] Majoos Sheer Alvi Khan,^[30] Safoof Muhazzil,^[31] etc.

Various Research studies on dyslipidemia in Unani medicine

'Itrifal-e-Sagheer', a compound Unani formulation has been indicated in disease conditions simulating dyslipidemia. This study was done to substantiate the efficacy of 'Itrifal-e-Sagheer' in dyslipidemia on

scientific parameters. A randomized, single blind, controlled, clinical trial was carried out on 30 patients of dyslipidemia (15 in each group). The test drug, Itrifal-e-Sagheer and control drug, Abana® were given to respective group for 45 days along with lifestyle modification. The test drug significantly alleviated the symptoms of subjective parameters (palpitation, breathlessness and weight gain) ($p < 0.05$). There was statistically significant reduction in lipid profile of the patients in test group ($p < 0.05$).^[32] The study evidenced that Itrifal-e-Sagheer is potentially effective and safe in the treatment of dyslipidemia. However, a multicentric study with robust study design would be required to generalize the results.

A case study showed the Effect of "Jawarish Bisbasa" A herbal compound Unani formulation, on dyslipidemia. The patient was 28 years old and had been diagnosed with dyslipidemia three months prior to presentation. The patient was treated 8 weeks with JB. His body weight (BW) was 94 kg, BMI 27.4 m², WC 99 cm, WHR 0.91, SAD 28cm, BS(F) 87.31 mg/dl, serum cholesterol 223.9 mg/dl, Serum triglycerides 430 mg/dl, HDL cholesterol 38.98, LDL 98.92 mg/dl and VLDL cholesterol 195.45 mg/dl at the base line and at the end of 8 weeks becomes weight 84 kg, BMI was 24.8, WC 93cm, WHR 0.85, SAD 24.5, BS(F) 99.13 mg/dl, serum cholesterol 127.9 mg/dl, Serum triglycerides 185.95 mg/dl, HDL cholesterol 43.4mg/dl, LDL 38.51 mg/dl and VLDL cholesterol 46.54 mg/dl. There were no side effects reported during the treatment. JB showed significant antihyperlipidemic activity reducing lipid profile, BW, BMI and other anthropometric parameters.^[33]

This study was conducted to evaluate the *therapeutic efficacy of Kalonji (Nigella sativa)* in dyslipidemia as single blind, randomized standard control. 30 patients were allocated in two groups as 20 patients in test group and 10 in control group. Test group was treated with Safoof Kalonji 1 gm twice a day in capsule form, whereas control group was managed with Lipotab, 2 tablet once a day for 60 days. In this study Kalonji has effect on almost all parameters but statistically significant result was only on total cholesterol and HDL cholesterol. Marked improvement in subjective parameters like palpitation, breathlessness and joints pain was seen. Statistically no side effect was observed in test group. These results conclude that the test drug is quite safe in the treatment of dyslipidemia.^[34]

This randomized, placebo-controlled, double-blind clinical trial was conducted on 80 pre-diabetic subjects. They randomly received the *cardamom supplement* (n = 40, 3 g d⁻¹) or identical inert placebo (n = 40) for 8 weeks. Serum concentrations of high-sensitivity C-reactive protein (hs-CRP), interleukin-6 (IL-6), tumour necrosis factor α , total antioxidant capacity, malondialdehyde (MDA), protein carbonyl, and erythrocyte superoxide dismutase and glutathione

reductase activity were analyzed at the baseline and after intervention. Results After the adjustment of some covariates, cardamom supplementation significantly decreased serum hs-CRP ($P = 0.02$), hs-CRP:IL-6 ratio ($P = 0.008$), and MDA ($P = 0.009$) compared with the placebo group. It was shown that cardamom could improve some parameters of inflammation and oxidative stress in pre-diabetic subjects. Thus it may be useful in reducing complications associated with inflammation and oxidative stress in these patients.^[35]

This study was designed as single blind, randomized, standard controlled, conducted at NIUM, hospital from March 2015 to December 2015 on sample size of 33 subjects, 22 in test group and 11 in control group. Test group was treated with powder of *Habb-e-Sundrus* (5gm twice a day) and control group treated with tablet atorvastatin (10 mg once a day) orally for 45 days consecutively. Subjective parameters (dyspnoea on exertion and fatigue) were assessed on each follow-ups (i.e. on 0 th, 15th, 30th and 45th days) while objective parameters (lipid profile and BMI) were measured at baseline and at the end of trial. Serum triglyceride, VLDL, BMI and subjective parameters were shown statistically significant changes over time (45 days) in both test and control groups ($p < 0.05$). However, intergroup analysis revealed that differences in all investigated parameters were statistically non-significant. Safety parameters founds within the normal range. It was concluded that, use of either *Habb-e-Sundrus* or Atorvastatin is equally safe and effective in the management of dyslipidemia.^[36]

Concept Of Dyslipidemia And Its Management In Ayurveda System Of Medicine

Ayurveda believes that equilibrium state of Dosha, Agni, Dhātu and Malas in our body is a sign of health. Obesity according to it begins with imbalance of Doshas, imbalance of Agni, imbalance of the Malas and imbalance of Strotas (microcirculatory channels). Agni has remarkable transformative qualities for ingested material in the body. The nutrients or most refined products of our Agni are used to create the Dhatus (body's tissues). Seven Dhatus are formed sequentially as Rasa, Rakta, Mamsa, Meda, Asthi, Majja and Shukra. Creation of Dhatus is an ongoing complex process. In the process of dhātu production if there is any kind of malfunction then the whole process gets disrupted. The dysfunctional Medo-dhatvagni results in imbalance of Meda dhātu in body leading to obesity and dyslipidemia. Strotas or channels play a major role in the body as they carry the information required to build the tissues step by step. If obstruction occurs in the Strotas due to toxins (Ama), an imbalance begins. According to Ayurveda to maintain balance and health, balanced Agni and clear Strotas are essential. Vayu is an important entity in the body as well as it regulates all the body mechanisms through Doshas. Vayu runs abundantly in GIT which stimulates digestion and helps in absorption of food.

Dyslipidemia can be described as Medovridhi as mentioned in Ayurveda.^[37] High amount of saturated fats (Snighdha, Guru, Pichhila) and sedentary life style (Cheshtadvesha, Asana-sukha) may contribute to dyslipidemia. This is described as Medovridhi, a Santarpanjanya vyadhi in Ayurveda.^[38] The patient's of dyslipidemia are treated on the line of management of Medovridhi (Abaddha-medovridhi). According to Ayurveda Abaddhameda is considered as a Dushya of Prameha. Symptoms of Pramehapurvarooopa (prodromal symptoms) are mentioned in Medajaroga. Vataghna, Shleshma-medohar, Ruksha-ushna-tikshna Basti, Ruksha Udvartana, Triphala, Takrarishtha, honey, Bilvadi decoction, Panchamoola, Shilajatu etc. are prescribed to treat this condition.^[39-42]

Various studies on dyslipidemia in Ayurveda

A case study was reported by Sarvesh Kumar Singh et al of a 42 year-old vegetarian, non-smoker and non-alcoholic, female. The case was treated on the line of management of Medovridhi. For Deepana (stimulation of digestive power)- pachana (increasing of digestive power) and Srotoshodhana (purification of micro channel), Panchakolachurna in the dose of 3 g twice in a day and Triphalachurna 5 g once in night were given to the patient for first 3 days. After this the line of management of Medovridhi was given to the patient. Vaitaranabasti in the dose of 400 ml/day along with some Ayurvedic oral medicines such as Triphalaguggulu 500 mg twice in a day, Dashmoolkwath 40 ml twice in a day, Panchakolachurna 3 g twice in a day, and Triphalachurna 5 g once in night for next 16 days were prescribed. After 19 days of treatment based on Ayurvedic principles, final assessment done at 28 days there was significant improvement in lipid profile like total cholesterol, serum triglycerides, HDL, VLDL.^[43]

In a study of 87 patients between age group of 33-59 years with 57 male and 30 female. There was a significant reduction in total cholesterol, LDL, and triglycerides ($p < 0.01$), whereas there was a significant elevation in the HDL level ($p < 0.05$). The fall in CRP levels was quite significant at around 13.6%. The results showed that treatment with *Arjuna* powder (5 g, twice a day) for 3 weeks followed by *Arogyavardhini Vati* (500 mg, twice a day) for next 4 weeks brought about significant reduction in the level of risk factors of CVD arising from dyslipidemia and inflammation.^[44]

A case study was reported in 2018 for hypolipidemic effect of rukshana upakarma. She was treated with *Takra-Siddha Yavagu* (gruel prepared with buttermilk) and *Udvartana* (dry powder massage) for 30 days. After completion of treatment, hematological investigations revealed that her serum cholesterol level was decreased to 147 mg/dl from 223 mg/dl and serum LDL was reduced to 91 mg/dl from 153 mg/dl. Her weight also reduced to 82 kgs from 88 kgs. Hence, it can be concluded that *Rukshana Upakrama* in the form of *Takra-Siddha Yavagu* and *Udvartana* is effective in

the management of dyslipidemia for normalization of lipid in the blood as it possesses Shoshana (absorption) and *Kapha-Medohara* (alleviation of vitiated *Kapha* and *Meda*) properties.^[45]

A study reported on 40 patients (20 in each group) of dyslipidemia designed as single blind randomised case control study. Patients of Group A were administered with Yavamalaka Choorna 6 grams BID before food with warm water for 60 days and group B were administered with shuddha guggulu 3 grams BID before food with warm water for 60 days. In this present study there is a significant improvement after treatment in lipid profile, weight loss in both groups, but there are no significant changes between the groups. Percentage of weight loss was more in Group A than group B.^[46]

A clinical study done to evaluate the role of virechana karma on 30 patients of dyslipidemia shows highly significant improvement on most of the lipid profile parameters based on the assessment done before and after treatment.^[47]

Various studies on dyslipidemia with Yoga Intervention

In this stratified trial on Yoga based lifestyle program in cases with Type 2 diabetes, in the rural and urban population from all zones of India, a total of 17,012 adults (>20 years) of both genders were screened for lipid profile and sugar levels. Those who satisfied the selection criteria were taught the Diabetes Yoga Protocol (DYP) for three months and the data were analyzed. Results showed that among those with Diabetes, 29.1% had elevated total cholesterol (TC > 200 mg/dL) levels that were higher in urban (69%) than rural (31%) diabetes patients. There was a positive correlation ($p = 0.048$) between HbA1c and total cholesterol levels. DYP intervention helped in reducing TC from 232.34 ± 31.48 mg/dL to 189.38 ± 40.23 mg/dL with significant pre post difference ($p < 0.001$). Conversion rate from high TC (>200 mg/dL) to normal TC (<200 mg/dL) was observed in 60.3% of cases with Type 2 Diabetes Mellitus (T2DM); from high LDL (>130 mg/dL) to normal LDL (<130 mg/dL) in 73.7%; from high triglyceride (>200 mg/dL) to normal triglyceride level (<200 mg/dL) in 63%; from low HDL (<45 mg/dL) to normal HDL (>45 mg/dL) in 43.7% of T2DM patients after three months of DYP. It was concluded that A Yoga lifestyle program designed specifically to manage Diabetes helps in reducing the co-morbidity of dyslipidemia in cases of patients with T2DM.^[48]

A total of 300 patients of hypertension and prehypertension were taken in the study where control group were given drugs treatment and life style modification and yoga group additionally had undergone yoga training. Lipid levels were estimated in both groups at entry, 06 months and 12 months and analyzed. Results showed that yoga therapy group showed decrease in TG, LDL and VLDL at six months and 12 months but

decrease was not significant. HDL levels showed significant increase in yoga group ($P < 0.05$) at six months which was maintained at 12 months more so in diabetic patients. It can be concluded that Yoga therapy has beneficial effect on serum lipid levels and should be included in therapy along with other measures.^[49]

The present study was conducted to assess the effectiveness of yoga in the management of dyslipidemia in patients of type 2 diabetes mellitus. This randomized parallel study was carried out in Medical College Trivandrum, Kerala, India. Hundred type 2 diabetics with dyslipidemia were randomized into control and yoga groups. The control group was prescribed oral hypoglycemic drugs. The yoga group practiced yoga daily for 1 h duration along with oral hypoglycemic drugs for 3 months. The lipid profiles of both the groups were compared at the start and at the end of 3 months. After intervention with yoga for a period of 3 months the study group showed a significant reduction in total cholesterol, triglycerides and LDL, with an improvement in HDL. Yoga, being a lifestyle incorporating exercise and stress management training, targets the elevated lipid levels in patients with diabetes through integrated approaches.^[50]

The present study was conducted on normal healthy volunteers, 41 men and 23 women, to evaluate the impact of Pranayama and Yoga asanas on blood lipid profiles and free fatty acids, in two stages. In stage-I, Pranayama was taught for 30 days and in stage-II, yogic practices were added to Pranayama for another 60 days. A Significant reduction was observed in triglycerides, free fatty acids and VLDL-cholesterol in men and free fatty acids alone were reduced in women at the end of stage-I. A significant elevation of HDLcholesterol was seen only in the men at the end of stage-I. At the end of stage-II, free fatty acids increased in both men and women, and women demonstrated a significant fall in serum cholesterol, triglycerides, LDL and VLDL-cholesterol. The results indicated that HDL-cholesterol was elevated in men with Pranayama, while triglycerides and LDLcholesterol decreased in women after yoga asanas. The results of the present study indicate that Pranayama and yoga asanas can be helpful in patients with lipid metabolism disorders such as coronary artery disease, diabetes mellitus and dyslipidemia etc.^[51]

CONCLUSION

When the whole world is suffering from large number of cases of obesity, hypertension and cardiovascular disorders like atherosclerosis and dyslipidemia, pleasant solutions to these problems are unavailable. Also there are not long lasting solutions present in the modern system of medicine. Therefore peoples are looking towards indigenous system of medicine and herbal remedies for everlasting solutions, so the present review for treating this condition through Unani, Ayurveda and yoga seems promising in near future. The Studies

included showed significant changes in patient's condition. Also these herbal medicines and yogic postures don't confine result to alleviating any specific symptom rather it has a holistic effect on whole body, eventually improving the quality of life of an individual as a whole. Hence this opens new door for further research in this area for more documentations of the results, so that the world may rely more on these systems of medicine.

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