IJAPC

INTERNATIONAL JOURNAL OF AYURVEDA AND PHARMACEUTICAL CHEMISTRY

Greentree Group Publishers

Int J Ayu Pharm Chem

RESEARCH ARTICLE

www.ijapc.com

e-ISSN 2350-0204

A Clinical Study to Evaluate the Efficacy of *Mustadi Kwath* in Dyslipidemia vis-à-vis *Medodusti*

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ABSTRACT

Rapid impact of westernisation, industrialization and stressful lifestyle in the present era, has lead to a considerable increase in the incidence of lifestyle and behavioural diseases. Dyslipidemia is one of the burning topics in today's era. Lipid and lipoprotein abnormalities are extremely common in general population. Dyslipidemia is one such disorder which is identified as a potential risk factor for multitudes of diseases like CVD, metabolic syndrome and even HTN. The prevalence of Dyslipidemia is very high in India also, which calls for early and effective intervention strategies to prevent and manage this important risk factor. Because of its high prevalence I have selected this topic entitled **"A Clinical Study to Evaluate the Efficacy of *Mustadi Kwath* in Dyslipidemia vis-à-vis *Medodushti*"**. In *Ayurveda*, it can be better correlated with *Medodushti* which is a functional condition and just a precursor stage of *Medoroga* and can be easily reversible by effective regimen. This study was carried out in OPD and IPD patients of Kayachikitsa department of Rishikul Campus, Haridwar for 90 days. A total of 20 patients were registered for the trial and randomly treated with *Mustadi kwath*. All the concerned approvals were obtained and data was analyzed by using statistical parameters. There was significant result of ***Mustadi Kwath***, found on lipid profile parameters and blood sugar fasting. So it can be a drug of choice in Dyslipidemia in both Diabetic and Non-Diabetic patients**.** The present research also proved that there is major role of *Agni* and *Ama* in pathogenesis of Dyslipidemia, and all the drugs having *Lekhaniya, Dipana, Amapachaka, Kapha-Medohara, Rasayana* and *Srotoshodhaka* qualities will be highly effective.

KEYWORDS

Dyslipidemia, Medodushti, Ayurveda, Lipids, Mustadi Kwath

Greentree Group Publishers

Received 23/05/18 Accepted 14/06/18 Published 10/07/18

INTRODUCTION

In the present era, a major portion of the population is following inappropriate fatty diet regimen and sedentary life style, which may lead to a state of Dyslipidemia. The term dyslipidemia is used to describe disordered lipid metabolism. All the components of dyslipidemia i.e. increase in the value of serum cholesterol, serum triglycerides, serum LDL, serum VLDL and decrease in HDL levels get most of the attention because of the link between cholesterol and pathogenesis of CAD & CVD. In dyslipidemia raised levels of cholesterol leads to deposition of lipids on the walls of arteries and leads to Atherosclerosis. It is responsible for many lifethreatening conditions like Coronary Artery Disease (CAD), Ischemic Heart Disease, Hypertension and Stroke.

Epidemiological studies predict that for each 1% reduction in lipid level, the risk of the heart diseases reduces by 2.5%[1]. Worldwide, high cholesterol levels are estimated to cause 56% ischemic heart diseases and 18% of strokes, amounting to 4.4 million deaths annually[2] .

In Allopathic system of medicine, we have a wide range of drugs like statins, resins, fibric acid derivatives, nicotinic acid etc., which are quite effective in normalizing the lipid levels but they have side effects also, like headache, nausea, bowel upset, rashes, sleep disturbances, myalgia, liver damage, etc[3] . Though few studies have been carried out for these burning problems, however there is still a need for an effective and safe treatment regimen.

Although there are scattered references of ailments in *Ayurveda* which resemble Dyslipidemia, it cannot be directly correlated with any disease condition found in *Ayurvedic* classics, the concept of *Abaddha Meda* expounded by *Acharya Chakrapani*[4] has similarities with the condition of Dyslipidemia described in modern literature. Lipid explained in modern sciences has close resemblance to *Sneha Dravya* in *Ayurveda*, i.e. Lipid can be correlated to *Meda Dhatu*. Abnormal accumulation of *Medodhatu* in body is known as *Medodusti*.

"मेदसाऽऽवृतमार्गत्वात्पुष्यन्त्यन्येनधातवः[5]"I

I.

The symptoms of Dyslipidemia described in modern texts show resemblance with *Ama*, and with many of *Rasa Dushti*, and *Medodushti Janya* symptoms. Being a disorder of *Meda Dhatu*, we have correlated it with ***"Medo Dushti"*** *(Ama Dushit Meda Dhatu).* Dyslipidemia is a disorder of *Agnimandya* and *Sama Rasa* formation which leads to obstruction of the

channels, hence to manage this condition the selected drugs should have *Dipana, Pachana, Kaphanashaka, Medhoghna, Lekhana, Karshana* and *Srotoshodhaka* properties.

In the present study most of the contents of ***Mustadi Kwath*** which has been selected as an internal medication have ***Tridosha shamaka*** *(Haridra, Haritaki, Aaraghvadha),* ***Medohara*** *(Musta, Haridra, Daruharidra, Devdaru),* ***Agnideepaka-Amapachaka*** *(Musta, Patha, Twaka, Devdaru, Vibhitaki)* ***and Yakrituttejaka*** *(Nimba, Twaka)* properties. ***Mustadi Kwath*** fulfills all the requirements needed for the management of *Medodushti*. In present study ***Mustadi Kwath*** with contents namely ***Musta, Arghawadha, Patha, Triphala, Devdaru, Svadanstra, Khadira, Nimba, Haridra, Daruharidra, Twaka, Kutaj****a* has been selected as internal medication.

The researches on Dyslipidemia suggest that *Laghu, Ruksha*, and *Kashaya Rasa* dominant formulation is more effective against Cholesterol and LDL, while *Laghu, Ushna, Katu Rasa* dominant formulation is effective in condition of hypertriglyceridemia[6,7]. Most of the contents of ***Mustadi Kwath*** are *Laghu, Ushna, Tikshna, Ruksha*, and *Katu, Kashaya Rasa* dominant[8].

Keeping in mind, all these factors, this study was planned to assess efficacy of ***Mustadi Kwath***[9] in the management of dyslipidemia.

AIMS AND OBJECTIVES

The aims and objectives of the study were:

- To study the aetiopathogenesis of dyslipidemia and work out the Ayurvedic correlations.
- To evaluate and compare the efficacy of ***Mustadi Kwath*** in the management of Dyslipidemia by using various scientific parameters.
- To provide a reliable, cost effective *Ayurvedic* treatment for dyslipidemia.

Ethical Committee approval number later is UAU/R/C/IEC/2016-17/2

MATERIALS AND METHODS

SELECTION OF PATIENTS

Patients diagnosed with abnormal lipid profile willing to participate in the clinical trial were selected for the present study. A total of 20 patients of Dyslipidemia were selected from OPD/IPD, P.G. Department of Kayachikitsa, Rishikul campus, Haridwar.

The study was conducted on 20 patients, on the basis of inclusion & exclusion criteria. A detailed proforma was prepared incorporating all the points viz., history,

physical examination and assessment of the treatment. Prior written informed consent was taken from patients before including in the study.

SELECTION OF THE SAMPLE: Randomized sampling

SELECTION OF DRUG: *Mustadi Kwath*

DOSE OF DRUG: 40ml BD

DURATION OF STUDY: 90days

TYPE OF STUDY: Single blind.

ASSESSMENT*:* It was done for 3 times at the interval of one month.

FOLLOW UP: It was also done for 1 month after completion of the treatment.

DRUG TRIAL SCHEDULE: Twenty patients were administered 40ml *Mustadi Kwath* BD after breakfast.

INCLUSION CRITERIA:

- Diagnosed & confirmed cases of Dyslipidemia on the basis of **investigation**.
- Patient between the **age group of 20-60 years** of either sex who fulfilled the criteria of Objective and Subjective parameters.
- **Newly diagnosed cases of NIDDM** with optimal control diabetes was also considered under study.

EXCLUSION CRITERIA:

- Patients with age below 20 years & above 60 years.
- Patients suffering from Type-1 Diabetes Mellitus and uncontrolled diabetes mellitus or uncontrolled hypertension.
- Patient having systemic illness like tuberculosis, carcinoma and endocrine disorders or major illness like renal or liver disorder.
- Patient having the past history of myocardial infarction & unstable Angina.
- Patient having clinical features of CCF.

CRITERIA FOR ASSESSMENT

The assessment of the trial was done on the basis of following parameters:

1. Subjective
2. Objective

1. SUBJECTIVE CRITERIA

The subjective assessment was done on the basis of improvement in following signs and symptom:

- *AngaGaurava*- (Feeling of heaviness in body)
- *Aruchi*- (Reduced appetite)
- *Kshudra Swasa*- (Compare with dyspnoea)
- *Angmarda*- (Compared with pain and intermittent claudication)
- *Atisweda*- (excessive sweating)
- *Daurgandhya*- (Unpleasant body odour)
- *Karpaaddaha*- (burning sensation in hands and feet)

- *Javoparodha*- (inability to do physical exercise)
- *Nidratiyoga*- (excessive sleep)

OBSERVATION DURING WORK

- *Avyayama*-(lack of exercise)
- *Divashayana*-(day sleeping)
- *Sleshmalaaharsevana*-(intake of fatty diet)
- *Varuniatisevana*-(excessive alcohol intake)

All the symptoms were graded on the basis of their severity and were given scores ranging between 0-3.

RESULTS AND DISCUSSION

❖ Statistically highly significant results were obtained in subjective parameters like *Anga Gaurava, Kshudraswasa, Angmarda, Javoparodha* Table 1.

Table 1 Effect of *Mustadi Kwath* on the Subjective Symptoms

Group A	Median		Wilcoxon Signed Rank W	P-Value	% Effect	Result
	BT	AT				
ANGA GAURAVA	2	1	-3.866[a]	<0.001	67.6	**HS**
ARUCHI	1	0	-3.051[a]	<0.005	78.6	**Sig**
KSHUDRASWASA	1	0	-3.317[a]	<0.001	57.9	**HS**
ANGMARD	1	0	-3.448[a]	<0.001	72.0	**HS**
ATISWEDA	0.5	0	-2.333[a]	<0.005	41.2	**Sig**
DAURGANDHYA	0	0	-1.000[a]	>0.05	33.3	**NS**
KARPADDAHA	0.5	0	-2.919[a]	<0.005	76.5	**Sig**
JAVOPARODHA	2	1	-3.234[a]	<0.001	48.5	**HS**
NIDRA ATIYOG	0	0	-2.530[a]	<0.005	57.1	**Sig**

❖ Statistically significant result was found in subjective parameters like *Aruchi, Atisweda, Karpaddaha, Nidraatiyoga*, except one symptom *Daurgandhya* where result were non-significant statistically.

❖ In biochemical parameters, statistically significant results ($p<0.05$) were found in S. Cholesterol, Sr. triglycerides, Sr. LDL, and Sr. VLDL, while Nonsignificant result ($p>0.05$) was found in S. HDL (Table 2).

Table 2 Effect of *Mustadi kwath* on lipid profile

Biochemical value		Mean	N	SD	SE	T-Value	P-Value	% Effect	Result
S. CHOL.	**BT**	234.3	20	30.6	6.8	8.845	<0.05	26.3	**Sig**
	AT	172.7	20	17.9	4.0				
S. TGL.	**BT**	222.2	20	92.9	20.8	5.388	<0.05	39.4	**Sig**
	AT	134.6	20	32.9	7.4				
S. LDL	**BT**	142.3	20	31.9	7.1	4.638	<0.05	19.4	**Sig**
	AT	114.7	20	12.1	2.7				
S. VLDL	**BT**	43.2	20	21.6	4.8	3.829	<0.05	30.7	**Sig**
	AT	29.9	20	10.2	2.3				
S. HDL	**BT**	38.8	20	7.3	1.6	0.239	>0.05	0.7	**NS**
	AT	38.5	20	6.0	1.3				
	AT	32.6	20	4.8	1.1				

❖ While observing other Biochemical parameters, Statistically Nonsignificant result (p>0.1 NS) was found in Hb%, Blood urea and S. protein, where as Significant result was found in TLC, ESR, Blood sugar Fasting, Serum creatinine and Serum uric acid.

PROBABLE MODE OF ACTION OF *MUSTADI KWATH (Fig 1 and 2)*

The total effect of the ***Mustadi Kwath*** is *Tridosha Shamaka* especially *Kapha Vata Shamaka*. It pacifies the vitiated *Kapha Dosha* which is dominant in the pathogenesis of dyslipidemia as well as depletes the excessively produced *Rasa, Mamsa, Meda, Vasa, Sweda, and Kleda* which are all similar in attributes to *Kapha Dosha*. Thus it is known to act against the *Kapha Pradhana* pathogenesis of dyslipidemia. *Aragvadha and Triphala* have mild purgative action which causes *Anulomana of Vayu* which further corrects the body *Vayu* bringing an end to the *Vata Pradhana Samprapti*. The drugs like *Patha and Gokshura* are *Mutravirechana* which bring about diuresis relieving the body of the excess of *Kleda*. *Aragvadha, Kutaja, Patha, Nimba, Khadira, Haridra and Daruharidra are* known to act on *Medo Dhatu* and allied *Dhatus* and are indicated in diseases like *Kushtha, Medoroga and Prameha*. Hence, due to similarity of *Dosha and Dushyas*, it can be successfully used in Dyslipidemia. These drugs relieve the body of excess of *Kapha, Meda, Kleda, Vasa, Sweda* by diminishing their *Drava Guna*. Drugs like *Musta,*

Fig 1 Mode of Action of *Mustadi Kwath*

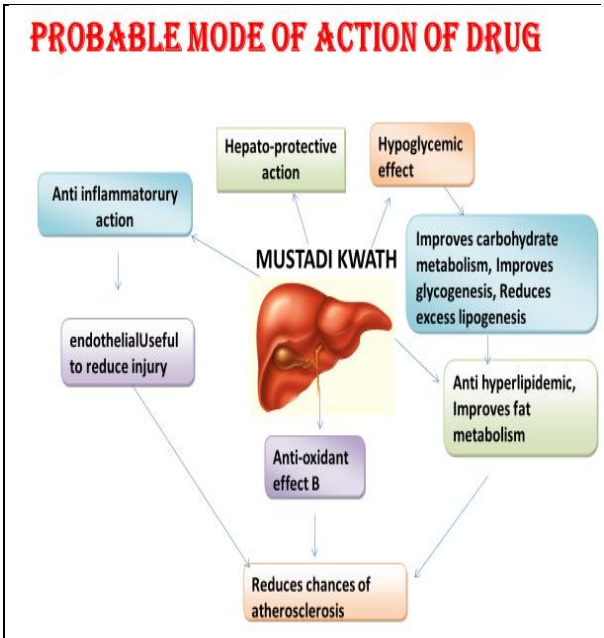

Fig 2 Mode of Action of *Mustadi Kwath*

Devdaru, Twaka, Kutaja, Neema, Patha, Triphala bring about augmentation of the digestive fire *Agnideepaka* leading to proper formation of the *Rasadi seven dhatus. Patha, Musta, Triphala, Haridra, Daruharidra* digests the *Ama Dosha*. Also drugs like *Triphala, Khadira* that are *Rasayana* in nature leads to formation of optimal *Dhatus* and protect the body from injury due to vitiated *Doshas*.

Table 3 shows that there was % relief of ***Mustadi kwath*** occurred in ***Anga Gaurav* (67.6%), *Aruchi* (78.6%), *Angamarda* (72%)** and ***KarPaadDaha* (76.5%).**

Table 3 Percentage Relief of *Mustadi kwath* on various subjective parameters

Sr. No.	Symptoms	% Relief
1.	***AngaGaurava***	67.6
2.	***Aruchi***	**78.6**
3.	***Kshudrashwasa***	57.9
4.	***Angmarda***	72.0
5.	***Atisweda***	41.2
6.	***Daurgandhya***	33.3
7.	***Karpaaddaha***	76.5
8.	***Javoparodha***	48.5
9.	***Nidraatiyoga***	57.1

Table 4 shows that % relief of Mustadi kwath on Lipid profile was found in **Cholesterol level (26.3%), Triglycerides (39.4%), LDL (19.4%), VLDL (30.7%)**.

Table 4 Percentage Relief of *Mustadi kwath* on lipid profile

Sr. No.	Symptoms	% Relief
1.	**Cholesterol**	26.3%
2.	**Triglycerides**	39.4%
3.	**HDL**	0.7%
4.	**LDL**	19.4%
5.	**VLDL**	30.7%

Table 5 shows that **maximum %** relief in **BS-fasting (9.6%) through *Mustadi kwath*.**

Table 5 Percentage relief of *Mustadi kwath* on other biochemical parameters

Sr. No.	Biochemical values	% Relief in Group I
1.	**Hb%**	2.3%
2.	**BS-Fasting**	**9.6%**
3.	**Blood urea**	4.4%
4.	**S. creatinine**	7.4%

The overall effect of therapy (Table 6) was assessed by improvement in all subjective and objective parameters of individual patients. **Markedly improvement was (60%) through *Mustadi kwath*.**

Table 6 Estimation of overall effect of *Mustadi kwath* on 20 patients

STATUS	Mustadi kwath	
	No of Patients	%
Excellent (>75%)	6	30%
Marked improvement (50-74%)	**12**	**60%**
Mild improvement (25-49%)	2	10%
No improvement (<25%)	0	0

CONCLUSION:

"Conclusions" drawn from present work are as follows:

❖ Dyslipidemia can be better correlated as *Medodushti* in *Ayurveda*.

❖ *Medo-dushti* is a functional condition and just a precursor stage of *Medoroga* and can be easily reversed by effective treatment.

❖ Contrary to previous belief that its increased incidence is found in middle aged patients it has been studied that it also significantly prevalent in younger ones.

❖ ***Mustadi Kwath*** had statistically significant (<0.05) response on lowering Blood Sugar Fasting.

❖ The percentage (%) relief of *Mustadi Kwath* occurred in *Anga Gaurava* (67.6%), *Aruchi* (78.6%), *Angamarda* (72%) and *KarPaad daha* (76.5%).

❖ ***Mustadi kwath*** may be a better choice in management of dyslipidemia as it not only normalized lipid profile but also reduces the chance of development of metabolic syndrome by reducing weight and chance of development of Diabetes.

❖ The present research also proved that there is major role of *Agni* and *Ama* in pathogenesis of dyslipidemia, and drugs having *Dipana*, *Pachana*, *Amapachaka*, *Kapha Medohara* and *Srotoshodhak*a action are highly effective.

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