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SERUM LIPID PROFILE BASED CLINICAL STUDY OF "*MURCCHITA GHRITA*"

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ABSTRACT

Fat is essential part of our diet. Vitamin A, D, E, K are fat soluble vitamins. Since ancient time in India, *ghee* is always the preferred source for fat in our diet. Now a days in our society prevalence of Obesity, Cardiovascular and GIT disease is increasing day by day. In the last several decades, *ghee* has been implicated in the increased prevalence of coronary artery disease (CAD) in Asian Indians due to its content of saturated fatty acids and cholesterol and, in heated *ghee* , cholesterol oxidation products. There is no any doubt that cow *ghee* is best source for fat in human diet but there is no any easy method to assure that the *ghee* which is available in market is pure. So it is clear that we must need such kind of *ghee* which should have all the beneficial properties without any adverse effect on lipid profile and GIT. *Ghrita murchanna* is one of the easiest process which can be also perform in kitchen to obtain maximum benefit of *ghrit* without any drawbacks. In present study we have selected two types of *ghrit* first one market available *ghee* made by contemporary method, another one is same *ghee* but it is used after "*Murchhana sanskar*". Comparative study was done to demonstrate the effect of both types of *ghee* on human lipid profile w.s.r. to LDL/HDL level. Two group of 30 people were selected with a decided dose of 10 gm *ghee* BD in their diet for four weeks. The results shows that market available *ghee* increase their LDL/HDL levels and also have GIT problems. Another group which taking *Murcchita ghrita* (same *ghrita* after *Murcchana*) having decrease in LDL/HDL level and having no GIT problem and another hand the group which taking So it is clear that after *Murcchana sanskar* even *ghee* made by contemporary method can be used as a substitute of traditional cow *ghee* as well as *ghee* that having all beneficial properties.

Keywords: *Ghee* , Lipid profile, *Murcchana sanskar*, LDL/HDL.

INTRODUCTION: *Ghrita* (*ghee*), *taila* (oil), *vasa* (fat) and *majja* (marrow) are mainly four *sneha dravya* mentioned in *Ayurvedic* classics. *Ghee* is also known as clarified butter, In Ayurveda it is utilized for thousands of years as a medicine. *Ghee* which is known as "*Gritha*" in *Ayurveda*, described as the best among lipid media due to its quality of inheriting and enhancing the drug potency [1]. It is belief of common people that by consumption of oil or *ghee* will lead to hyperlipidemias. Before the preparation of any *Oushadhi siddha* (medicated) *taila* and *ghrita*,

Murchana (processing of *ghee*) a kind of *Sanskara* (procedure) is strongly advocated as *aadousamurchayet sneham* in *bhaishajya ratnavali*.

According to ICMR-INDIAB study, the prevalence of Hypercholesterolemia was 13.9%, of hypertriglyceridemia was 29.5%, of low HDL-C was 72.3%, and of high LDL-C levels was 11.8% [2]. HDL may transfer some cholesterol esters to other lipoproteins. Some remain associated with HDL, which may be taken up by liver & degraded. HDL thus transports cholesterol from tissues & other lipoproteins to the liver, which can excrete excess cholesterol as bile acids. High blood levels of HDL (the "good" cholesterol) correlate with low incidence of atherosclerosis. Hyperlipidemia is an elevation of lipids (fats) in the bloodstream. These lipids include cholesterol, cholesterol esters (compounds), phospholipids and triglycerides**.** It is of utmost significance because it leads to atherosclerosis of vessels (arterial walls) leading to vascular diseases. High serum levels of low-density lipoproteins (LDL) also play a main role in the initiation and progression of atherosclerosis [3]. The level of LDL cholesterol is most directly associated with coronary heart disease while VLDL shows association with premature atherosclerosis.[4] Coronary Heart Diseases contribute 25-30% of deaths in most of industrial countries and originated by several risk factors, out of them Dyslipidemia is most important [5]. Clinical manifestations of hyperlipidemia are xenthelasma, corneal aurcus, prepatellar xanthomas but most of the time Dyslipidemia may remain hidden clinically [6].

Five classes of lipoprotein

(all contain characteristic amounts TAG, cholesterol, cholesterol esters, phospholipids and Apoproteins - NMR Spectroscopy)

Increasing density

Class	Diameter (nm)	Source and function	Major apoliproteins
Chylomicrons (CM)	500	Intestine. Transport of *dietary* TAG	A, B48, C(I,II,III) E
Very low density lipoproteins (VLDL)	43	Liver. Transport of *endogenously* synthesised TAG	B100, C(I,II,III) , E
Low density lipoproteins (LDL)	22	Formed in circulation by partial breakdown of IDL. Delivers cholesterol to peripheral tissues	B100
High density lipoproteins (HDL)	8	Liver. Removes "used" cholesterol from tissues and takes it to liver. Donates apolipoproteins to CM and VLDL	A, C(I,II,III), D, E

Fig.1: Functions of Lipoproteins

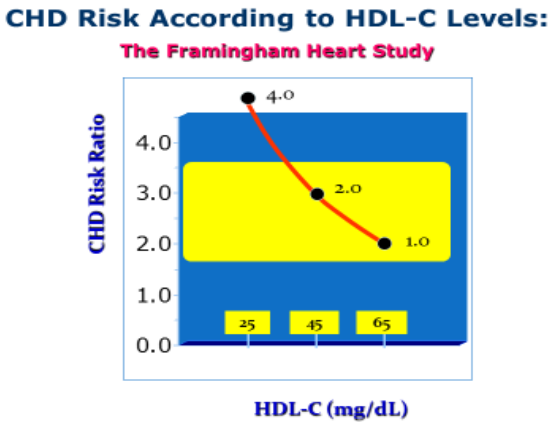

Fig.2: CHD risk with HDL-C levels

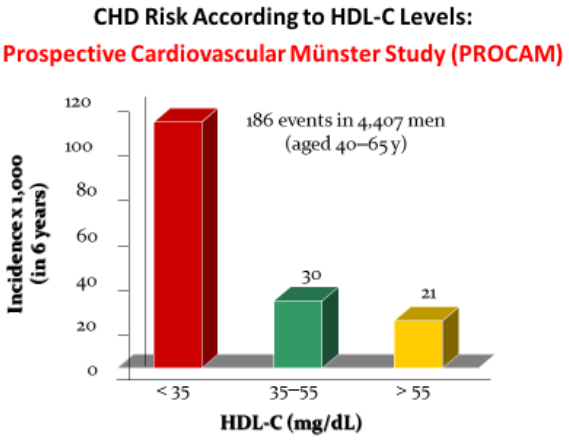

Fig.3: CHD risk with HDL-C levels

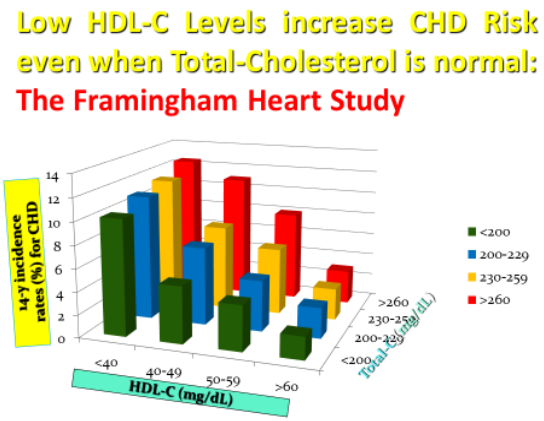

Fig.4: CHD risk with HDL-C levels

AIM AND OBJECTIVES

1. To collect *ghrita* and *Murcchana* of *ghrita*.
2. Standardization of *ghrita ghrita* according to A.F.I.
3. To evaluate the hypolipidemic activity of *amurchita ghrita* (*ghee*) and *murchita ghrita* (processed *ghee*)

MATERIAL AND METHOD

Procedure of *Ghrita Murchhana* – 760 gm of *Ghee* is boiled in a vessel till it becomes free from froath and cooled. The paste of following drugs was added and boiled on mild fire until small amount of water remained and filtered (AFI) [4]. Following drugs was used in *Ghrita Murcchana*-

1. *Haritaki* - 48gm 2. *Vibhkitaki* - 48gm 3. *Amlaki* - 48gm 4. *Musta* - 48gm 5. Haridra - 48gm 6. *Matulunga* - 48gm 7. Water - 3.0721 L.

Physical, Chemical and microscopic analysis of *ghrita* according to A.F.I. (Standardization of *ghrita*) was done from the state food testing laboratory, Raipur (C.G.).

Study design and sampling

Dosage - Each *ghrita* was given at the dose of 10 gms BD with meal. Because according to **Acharya Charaka** the maximum dose of sneha is the dose which take the time for digestion whole 1 day and night. According to modern science fat is absorb only 50% of consuming amount. *Ghrita* is taken with meal because it increase the taste and who does not take *ghrita* habitually easily take *ghrita*.

INCLUSION CRITERIA

The age group of 20 to 30 year. Volunteers with normal lipid profile. Who want to take *ghrita* in his/her meal.

EXCLUSION CRITERIA: The age group below or more than 20 to 30 year. One who has any increased value in his/her lipid profile. Hypertensive and renal problem. Who don't like to take *ghrita* in his/her meal.

Measurement

In both group 30 volunteers were selected. Group M = Volunteers with *Murchhita Ghrita* and Group P = Volunteers with Packet *Ghrita*/Market available *ghrita*. Volunteers were analyzed before/ after *ghrita* consuming in following parameters - sleeping habit, appetite, weight, skin colure & luster and serum lipid profile.

Result

Physico-chemical parameters of both samples of *Ghrita* are shown in Table No.1.

Table No.1: Analysis reports of both samples

Quality Characteristics	Result for packet *ghee*	Result for *murchhit ghrita*	Normal/ Abnormal
B.R. reading at 40°C	41.0	42.0	Normal
Reichert value	30.36	36.52	Normal
Free fatty acids (oleic acid)	1.12 %	1.91%	Normal
Moisture	0.01 %	0.07%	Normal
Bauduin Test (for Vanaspati)	Negative	Negative	Normal
Acid value	-	-	Normal
Rancidity	Absent	Absent	Normal
Added Synthetic colour	Absent	Absent	Normal
Extraneous matter	Absent	Absent	Normal
Iodine value	33.96	137.50	Normal
Saponification value	217.26	228.37	Normal
Weight per ml	0.880 gm	0.966 gm	Normal

Serum lipid profile were screened in each group of total 30 volunteers (Mean value of 10+10+10).

Analytical study of the reports of Group M and P volunteer's lipid profile (before/After consuming 600 gm *Ghrita* in about 4 weeks of period) is shown in Table No.2.

Group M = *Murchhit*a *Ghrita*

Group P = Packet *Ghrita*

Table No.2: Reports of lipid profile before/After *Ghee* consuming

Group	Reports of lipid profile before/After *Ghee* consuming				
	S. Cholesterol	S. HDL – C	S. Triglyceride	S. VLDL	S. LDL
GROUP-P	135/148.2 189/176.1 123/127	46/41.4 51/42.1 43/40.3	52.1/89.2 100.3/116.4 72.3/88.4	10.42/17.84 20.06/23.28 14.46/17.68	78.66/88.96 99.6/110.72 65.54/69.02
GROUP-M	132.2/173.2 251/197 111/135.23	44.5/59.2 48/50.2 45/56.12	82.1/107.8 125/91 86/100.48	16.42/21.56 25/18.2 17.24/21.11	71.28/92.44 178/128 48.56/65.33

An increasing or decreasing percentage of lipid profile in these 3 groups (before/after *ghrita* consuming)

Table No.3: An increasing or decreasing percentage of lipid profile

Group	Lipid profile value and percentage				
	S. Cholesterol	S. HDL – C	S. Triglyceride	S. VLDL	S. LDL

GROUP-P	+2.05%	-11.53%	+35.88%	+37.4%	+10.02%
GROUP-M	+10.13%	+21%	+24.26%	+8.92%	+12.16%

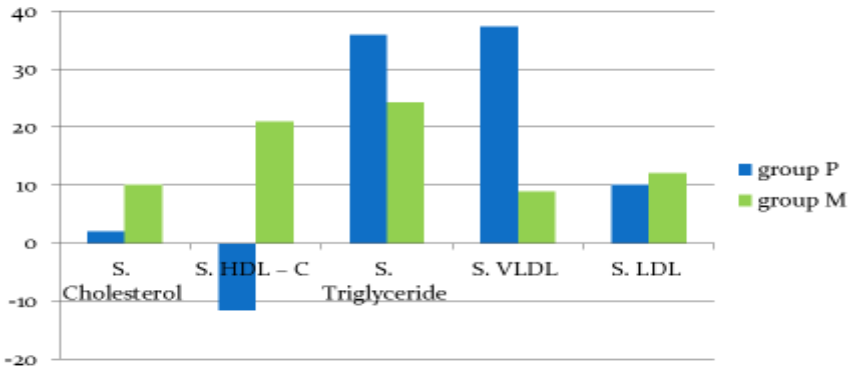

Fig.5: A statistical study of Lipid profile in both groups

DISCUSSION: All *ghrita Murcchana* dravyas having *Kashaya rasa* and lemon is *Amla rasa*, which causes unpleasant taste on *murchhit Ghrita*. So it should be used by adding any pleasant flavor. In this study market available *ghrita* was taken for *ghrita Murchhana*, If cow *ghrita* prepared by Indian traditional method is used, it gives much better result on lipid profile and other parameters. Recent studies reveal that *triphala*, *haridra* (*Curcuma longa*), *musta* (*Cyperus rotandus*) and *matulunga* (*Citrus medica*) have hypolipidemic and cardio protective properties. These properties of drugs have attributed the hypolipidemic activity of *Murchana Samskara* (processing of *ghee*). *Ghrita* should be taken with exercise and controlled diet that will also improve final result. Some drugs like allium sepa (*Rasona*) can be added for cardio protective effect. *Ghrita* was given on the basis of *dosha prakriti*.

CONCLUSION

According to this study *murchhit ghrita* is best & safe for health because it increases HDL level. *Murchhit ghrita* containing also the properties of the drugs which are added in it & all drugs having anti hyperlipidemic action & heated with 8 times of water with appropriate drugs till remaining 1/8 th part so it is easy to digest. The water soluble & fat soluble part of drugs added in *murchhit ghrita* because it prepared by water & fat both media. The results shows that the group which taking *murcchit ghrita* having decrease in LDL/HDL level and having no GIT problem and another hand the group which taking market available *ghee* increase their LDL/HDL levels and also have GIT problems. Results of experimental study show *Murchana samskara* (processing of *ghee*) contributes specific properties in *ghrita* (*ghee*) to reduce total cholesterol, LDL, Triglycerides and to increase HDL in *ghrita* (*ghee*). This effect is useful to reduce harmful effects of fats which are considered to play a significant role in atherosclerosis and other cardiac diseases. activity in *Ghrita* (*ghee*) is attributed by the drugs used in the *Murchana samskara* (processing of *ghee*) having *Katu* (pungent), *tikta* (bitter), *kashaya* (astringent) *rasa* (taste), *laghu* (light for digestion), *ruksha* (dry) *guna*, *kaphahara doshagnata*, *lekhaniya karma* (action). So it is clear that after *Murcchana sanskar*

even *ghee* made by contemporary method can be used as a substitute of traditional cow *ghee* as well as *ghee* that having all beneficial properties.

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