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A comparative study to analyze the effect of *Kshara* and *Sneha* on Hypercholesterolemia - A *Kriyatmak* approach

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ABSTRACT

Hypercholesterolemia is one of the leading high risk factors for various cardiovascular disorders. It has become a serious life threatening causative factor for various lifestyle disorders. A different therapeutic measure which needs to be adopted to cut down this risk factor is a major requirement in the present scenario. Based on "*Samanya Vishesha Siddhanta*" and "*Panchabhoutika Siddhanta*" *Paneeyakshara* should reduce the serum cholesterol level. Based on the concept of "*Hetuvipareetarthakari Upashaya*" *Sneha (Gogrita)* should reduce the serum cholesterol level. Keeping this in mind a study was conducted to analyse the effect of *Goghrita* and *Kshara* on hypercholesterolemic patients. Out of the 50 patients recruited for the study 25 patients were advised to take *Yavakshara* 1 gm twice a day after food with warm water for 7 days and 25 patients were advised to take 20 ml of cow ghee (*Goghrita)* along with food for 7 days. Lipid Profile was checked on first day of study, 8th day (after study period) and 21st day (to check the sustainability of the study). The obtained data were analysed statistically using the 'General Linear Model of Anova Test'. The serum Cholesterol level in both the groups was reduced which was statistically significant. It was found that both *Kshara (Yavakshara)* and *Goghrita* (cow ghee) are very effective in controlling the total cholesterol level.

Key words: *Hypercholesterolemia, Yavakshara, Goghrita, Lipid Profile.*

INTRODUCTION

Hypercholesterolemia is one of the leading risk factors for various cardiovascular disorders, which has also become causative factor for various serious life threatening lifestyle disorders.

Different therapeutic measures which need to be adopted to cut down this risk factor, is a major requirement in the present scenario. So, the need of the hour is to tackle this burning issue through holistic, conventional, and cost effective approach so as to reach the common man.

In Ayurveda, various *Siddhantas* have been stated. Based on *"Samanya Vishesha Siddhanta"*[1] and *"Panchabhoutika Siddhanta"*[2] *Paneeyakshara* should reduce the serum cholesterol level. In Ayurvedic classics there is a clear indication of *Paneeyakshara* in *Medo Rogas.*[3] When viewed from the *Panchabhoutik* aspect, cholesterol is having *Pruthvi* and *Jalamahabhuta Pradhanyata* and when *Tejomahabhuta Pradhanakshara* is administered there occurs *Vilayana* (disintegration) of the cholesterol.

Ghee is considered to be an integral part of the human diet in India since ages. Ghee has good nutritious and therapeutic value. Based on the concept of *"Hetuvipareetarthakari Upashaya"*[4] many studies have already proved that by the consumption

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ISSN: 2456-3110 ORIGINAL ARTICLE Mar-Apr 2020

of *Sneha* there is a reduction in the cholesterol level.[5],[6]

So the present study was taken up to compare the effect of *kshara* and effect of *Sneha* on hypercholesterolemia - where in the *Karmukata* of two *Viruddha Guna Yukta Dravyas* were found to be similar.

Aim and Objective

To compare and analyze the effect of *Kshara* and *Sneha* on hypercholesterolemia.

Materials and Methods

The study protocol and study-related documents were reviewed and approved by Sri Sri Institutional Ethical Committee at Sri Sri College of Ayurvedic Science and Research, Bangalore, Karnataka, on 12th July 2016. The clinical trial is registered on Clinical Trial Registry, India (CTRI) on Jan 4, 2018, vide registration number CTRI/2018/01/011137.

50 Diagnosed patients of hypercholesterolemia at out patient department of Sri Sri College of Ayurvedic Science and Research Hospital, were registered after obtaining the informed consent for the study.

Inclusion Criteria

- Known cases of hypercholesterolemia.
- Both genders
- Age group-30-60 yrs.
- Persons who are not habituated to take ghee.

Exclusion Criteria

- Individuals with the history of mental disorders.
- Individuals taking internal medication which affects fat metabolism.
- Individuals habituated to take ghee.
- Women who are consuming oral contraceptive pills.
- Pregnant and lactating women.
- Alcoholics and smokers.

Study procedure

On screening visit, written informed consent was obtained from patients for their participation in the study. Patients' general, physical and clinical examinations were done. Patients were advised to refrain from Ayurvedic drugs other than study medication (Yavakshara/Goghrita). Also they were asked to refrain from Homeopathy, Unani, Siddha drugs and food supplements for the management of Hypercholesterolemia. On baseline visit (day 0), a patient was recruited in the study if he/she met all the inclusion criteria. After baseline visit, patients were asked to come for subsequent follow-up visits on days 8 and 21. The study period was 7 days and on that day laboratory tests were repeated. Participants were asked to come for another follow upon 21st day (15 days after study period) to check the sustainability of the result. On this day the laboratory investigations were repeated again.

Schedule of the trial and Research Design

It was an interventional trial. Total numbers of individuals were divided into two groups, each group containing 25 individuals.

Group A: was given *Paneeyakshara.*

Dose - 1 gm twice a day after meals.

Group B: was given a *Goghrita.*

Dose - 20 ml twice a day with meals.

Paneeyakshara & *Goghrita* was provided for 7days. All investigations were carried out on 0th, 8th and 21st day of the study.

Diagnostic and Assessment criteria

The objective parameters include;

a. Lipid Profile

b. L.F.T.

Statistical Analysis

The obtained data were analyzed statistically using the 'General Linear Model of Anova Test by using SPSS software.

ISSN: 2456-3110 ORIGINAL ARTICLE Mar-Apr 2020

Observations and Results

Total 50 patients were registered for the study, distributed in two groups. Out of these 38% (19 patients) were male and 62% (31 patients) were females. While assessing the registered patients some of the observations noted as follows: Out of 50 patients, 34% (17 patients) were pure vegetarian and 66% (33 patients) were consuming non-veg food at least once a week. Most common oil used in their diet is sunflower oil 92% (46 patients). Only 30% (15 patients) were doing regular exercise. 30% (15 patients) have sedentary life style, 52% (26 patients) have physical strain, 32% (16 patients) have mental strain and 8% (4 patients) having both physical and mental strain. On baseline visit, the mean Total cholesterol level of group A was 227.44 ± 35.49, which reduced significantly (P<0.0001) to 208.20 ± 33.24 on 8th day and to 196.16 ± 32.78 on 21st day. The mean Total cholesterol level of group B was 228.92 ± 20.97, which reduced significantly (P<0.0001) to 202.36 ± 19.27 on 8th day and to 187.88 ± 24.61 on 21st day.

The detail effect of *Yavakshara* and *Goghrita* on Lipid Profile is summarized in table 1 to 6.

Table 1a: *Yavakshara* on Total cholesterol

Days	0	8	21
Mean ± SD	227.44 ± 35.49	208.20 ± 33.24	196.16 ± 32.78

Table 1b: *Goghrita* on Total cholesterol

Days	0	8	21
Mean ± SD	228.92 ± 20.97	202.36 ± 19.27	187.88 ± 24.61

Table 2a: *Yavakshara* on Triglycerdes

Days	0	8	21
Mean ± SD	183.04 ± 102.91	169.84 ± 92.16	167.96 ± 78.52

Table 2b: *Goghrita* on Triglycerdes

Days	0	8	21
Mean ± SD	174.24 ± 82.73	145.64 ± 57.75	149.60 ± 47.53

Table 3a: *Yavakshara* on HDL

Days	0	8	21
Mean ± SD	46.36 ± 4.95	44.12 ± 4.94	40.68 ± 5.94

Table 3b: *Goghrita* on HDL

Days	0	8	21
Mean ± SD	46.56 ± 4.57	45.0 ± 5.50	40.48 ± 7.03

Table 4a: *Yavakshara* on LDL

Days	0	8	21
Mean ± SD	144.80 ± 24.55	136.60 ± 26.55	125.04 ± 23.69

Table 4b: *Goghrita* on LDL

Days	0	8	21
Mean ± SD	150.48 ± 21.31	130.08 ± 18.71	115.88 ± 26.92

Table 5a: *Yavakshara* on VLDL

Days	0	8	21
Mean ± SD	36.28 ± 20.74	33.32 ± 18.57	34.12 ± 15.61

Table 5b: *Goghrita* on VLDL

Days	0	8	21
Mean ± SD	34.48 ± 16.64	31.00 ± 14.88	31.56± 14.47

Table 6a: *Yavakshara* on Cholesterol : HDL Ratio

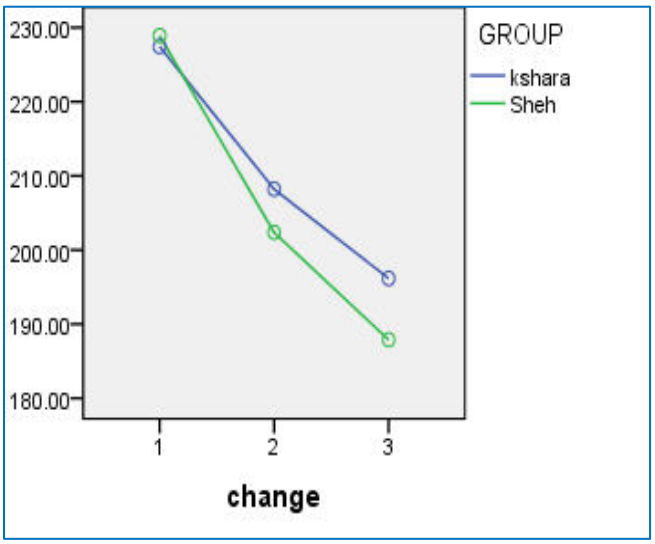
Days	0	8	21
Mean ± SD	4.86 ± 0.60	4.72 ± 0.56	4.83 ± 0.58

Table 6b: *Goghrita* on Cholesterol : HDL Ratio

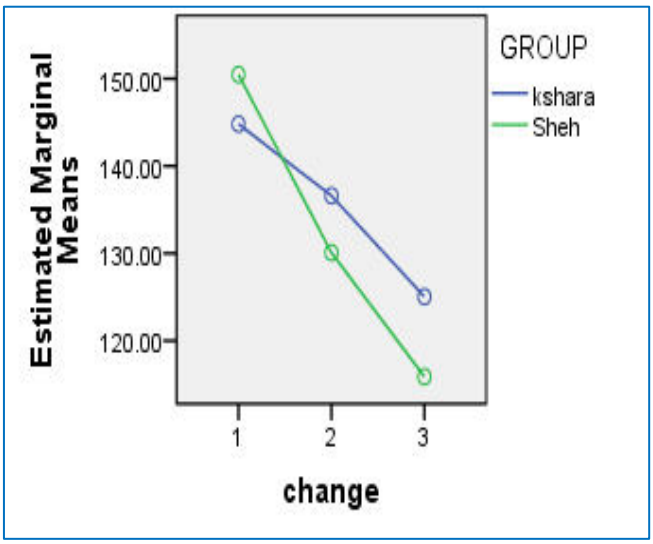
Days	0	8	21
Mean ± SD	4.85 ±0.61	4.59 ±0.60	4.67± 0.61

ISSN: 2456-3110 **ORIGINAL ARTICLE** Mar-Apr 2020

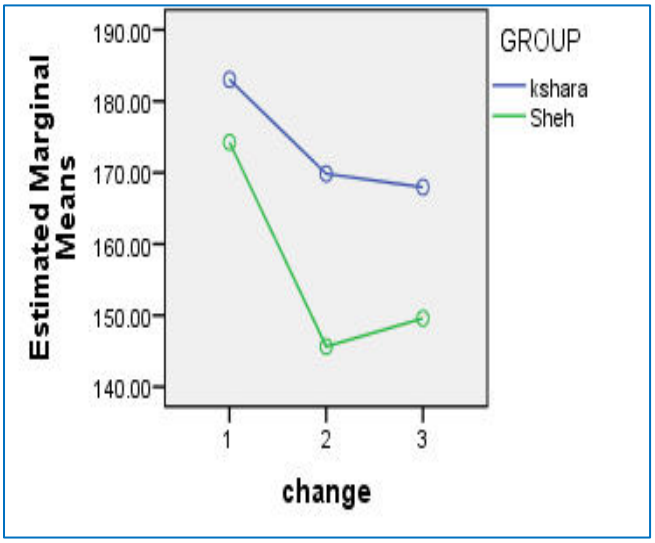
Total Cholesterol



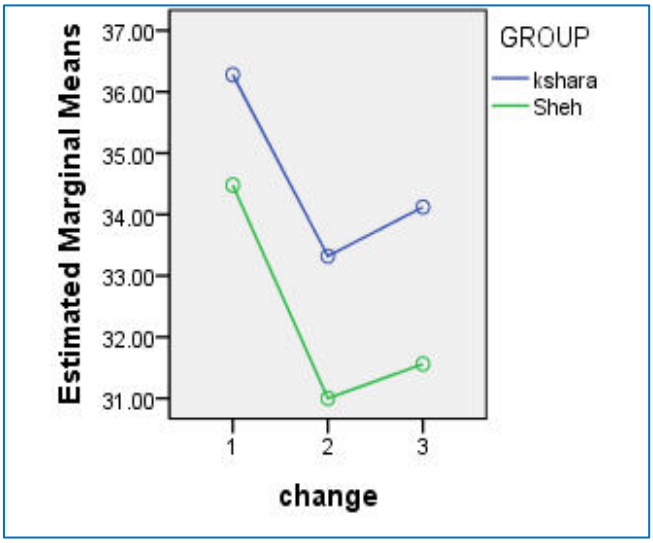
LDL



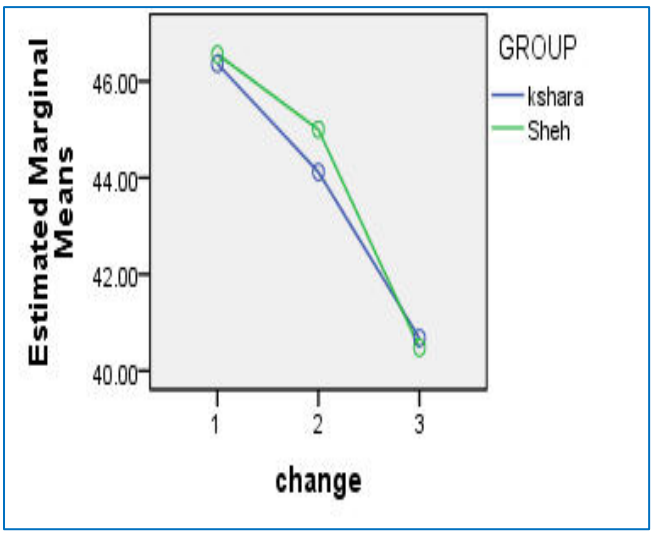
Triglycerides



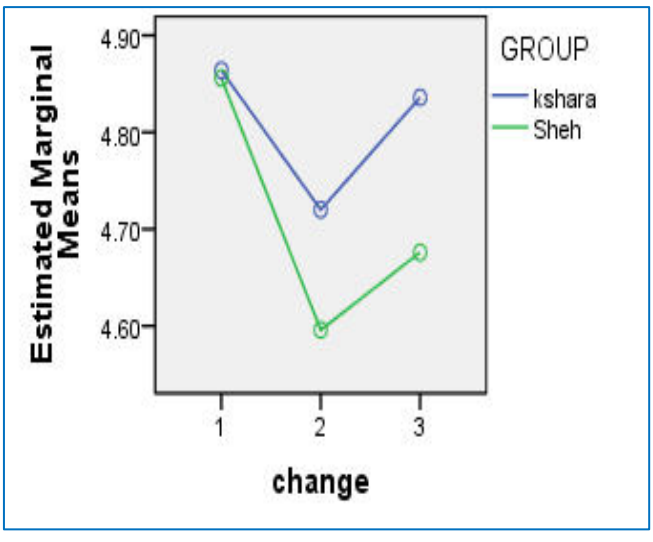
VLDL



HDL



Cholesterol : HDL Ratio



ISSN: 2456-3110 ORIGINAL ARTICLE Mar-Apr 2020

RESULTS

After statistical analysis, following are some of the findings

1. Both *Yavakshara* and *Goghrita* will lower the level of total cholesterol which is statistically significant (P<0.0001).

While comparing between the groups the effect over Total cholesterol is statistically not significant. (P=0.214).

2. Both *Yavakshara* and *Goghrita* were statically significant in lowering the level of Triglycerides (P=0.009)

While comparing between the groups the effect over triglycerides is statistically not significant (P=0.583)

3. Both *Yavakshara* and *Goghrita* were statistically significant in lowering the level of HDL(P<0.0001)

While comparing between the groups the effect over HDL is statistically not significant (P=0.798)

4. Both *Yavakshara* and *Goghrita* were statistically highly significant in lowering the level of LDL(P<0.0001)

While comparing between the groups the effect over LDL is significant but not statistically accepted (P=0.065)

Goghrita is better than *Yavakshara* for lowering the level of LDL.

5. Both *Yavakshara* and *Goghrita* were not statistically significant in lowering the level of VLDL (P=0.084)

While comparing between the groups the effect is statistically not significant (P=0.967)

6. Both *Yavakshara* and *Goghrita* were statistically significant in lowering the level of Cholesterol: HDL ratio (P=0.058)

While comparing between the groups the effect is statistically not significant (P=0.637) but *Goghrita* is more effective than *Yavakshara* in lowering the level of cholesterol : HDL ratio.

DISCUSSION

'*Tatra Kshranat Kshananaad Wa Ksharah*'[7] according to Acharya Sushruta, *Kshara* possess the property of *Ksharan* and *Kshanan*. According to Sushruta, it possess *Katurasa (Agni - Vayumahabhut Pradhan Rasa), Ushnavirya* (hot potency), *Tikshna Guna* (penetrating property) and can do *Lekhana* (scraping effect) of *Mamsadi Dhatus* (muscles and etc.) *Medovrudhdhi Nashaka*[8] (reducing the increased fat). Because of this *Guna, Yavakshara* is very effective against the cholesterol. This effect proves *Samanya–Vishesh Sidhdhanta*, one of the most important basic principles of the Ayurvedic science.

On the basis of *"Hetuvipareetarthakari Upashaya" Goghrita*, being same property of cholesterol (*medadhatu*)[9] is effective in the reduction of the level of Total cholesterol.

CONCLUSION

Yavakshara and *Goghrita* both are statistically significant in reduction in the level of serum total cholesterol. *Goghrita* seems to be statistically more significant in comparision to *Yavakshara* in reducing the bad cholesterol i.e. VLDL and LDL. When we have to advise these two *Yavakshara* and *Goghrita* as therapeutic measure to lower the cholesterol, it is better to take *Goghrita* especially in *Pitta Prakriti* persons and for those who belong to *Vata* and *Kaphaprakriti, Yavakshara* can be recommended in such persons. Based on body stature *Goghrita* can be advised to *Krusha* (lean/emaciated) individuals and *Yavakshara* to *Sthula* (obesed/overweight). As *Ksharo Hi Pumstvopaghatinam,*[10] *Yavakshara* can be avoided in males. *Goghrita* is a drug of choice in males, as it is *Shukra Vardhaka.*[11] In female patients it is better to advice *Yavakshara* for lowering the cholesterol.

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ISSN: 2456-3110 **ORIGINAL ARTICLE** Mar-Apr 2020

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