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Research Article

A RESEARCH STUDY TO DECIDE THE IMPACTS OF PSYLLIUM HUSK ON LIPID PROFILE OF ESSENTIAL HYPERLIPIDEMIC PATIENTS

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Abstract:

Background: *Psyllium husk has been utilized for treating gastrointestinal bombshells like looseness of the bowels, stoppage and peevish gut infection before. Ongoing therapeutic specialists have demonstrated exceptional impacts of psyllium husk on all parameters of lipid profile, aside from triglycerides and extremely low thickness lipoproteins.*

Objective: *This investigation was led to decide the impacts of psyllium husk on lipid profile of essential hyperlipidemic patients.*

Patients and Methods: *It was a solitary visually impaired fake treatment controlled exploratory study, conducted in Jinnah Hospital Karachi, from January 2009 to June 2009. Forty hyperlipidemic patients were incorporated into this investigation. Twenty patients were on fake treatment as control gathering, and twenty were on psyllium husk, ten grams every day in three separated portions, for three months. Patients with hypothyroidism, liquor abuse, renal and hepatic illness were prohibited from the examination. Serum complete cholesterol and triglycerides were assessed by the enzymatic calorimetric strategy. Serum High Density Lipoprotein (HDL) was dictated by direct technique, at the very beginning and on a day ago of the treatment. Low Density Lipoprotein, (LDL) was determined by Friedwald equation ($LDL-C = TC - (TG/5 + HDL-C)$). Information was broke down as the mean \pm standard deviation. To decide measurable importance of results, matched t-test was connected and $p < 0.05$ was taken as noteworthy.*

Results: *Two patients pulled back from the examination because of individual reasons. Psyllium diminished serum all out cholesterol from 228.27 ± 4.89 mg/dl to 199.22 ± 2.30 mg/dl, triglycerides from 169.27 ± 9.92 mg/dl to 164.5 ± 8.56 mg/dl, LDL from 159.72 ± 5.70 to 129.55 ± 2.81 mg/dl and expanded serum HDL from 34.61 ± 1.85 to 36.77 ± 1.96 mg/dl in three months of treatment. Aftereffects of all parameters were huge, aside from triglycerides, when paired 't' test was connected for hugeness.*

Conclusion: *It was concluded from this experimental study that psyllium husk fibers are effective in maintaining lipid profile at normal limits in hyperlipidemic patients.*

Key words: *Psyllium hydrophilic mucilloid, Cholesterol, Lipoproteins.*

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INTRODUCTION:

Psyllium hydrophilic mucilloid is produced using the husk of plants having a place with the Plantago family. These plants become worldwide and a solitary plant can deliver a great many seeds. The husk of these seeds produce adhesive, that retains water in the digestion tracts and adds mass to the stool.[1]. Psyllium hydrophilic mucilloid is likewise used to add fiber to the eating routine as it is a genuine fiber. The cumbersome stool at that point animates the digestive organs to create a gut movement.[2] This engrossing activity of Psyllium makes it advantageous in loose bowels also. Henceforth, Psyllium has a normalizing impact on the entrails in treating both obstruction and looseness of the bowels. Moreover, a high-fiber diet might be valuable in lessening cholesterol levels and adjusting glucose levels as fiber diminishes nourishment travel time in the digestion tracts. This may likewise diminish the frequency of colon malignancy. Psyllium is accessible in some morning meal oat items and some financially arranged diuretic items likewise contain it. Psyllium is effectively accessible in mass at numerous home grown or normal sustenance stores.[3,4]

It has been demonstrated by different lipid examine facilities in US and UK that psyllium filaments decrease serum all out cholesterol and LDL-cholesterol if 10 grams are utilized every day. Psyllium fiber has lesser impact on triglycerides and HDL-cholesterol. Raised lipids and lipid conveying lipoproteins cause atherosclerosis, in the end prompting myocardial dead tissue. Rise of LDL-cholesterol is especially connected with danger of coronary supply route disease.[5] Prevention and treatment of hyperlipidemia incorporate end of hazard factors, related to treatment of the particular lipid issue. For treating essential hyperlipidemia, HMG-CoA reductase inhibitors, fibric acids, niacin or nutrient B-3, bile corrosive restricting saps including psyllium hydrophilic mucilloid are the primary medications used.[6]

Psyllium strands tie with bile acids in the gastrointestinal tract (GIT), in this way interfering with the enterohepatic flow of bile acids and expanding the transformation of cholesterol into bile acids in the liver. The bile acids shaped go into the gut in the bile and are to a great extent reabsorbed at the terminal ileum. The complete bile corrosive pool is just 3 to 5 grams at the same time, on the grounds that such enterohepatic reusing happens 5 to 10 times each day, overall, 20-30 grams of bile corrosive is conveyed into the digestive system like clockwork.

Bile acids bound to psyllium strands are lost in the excrement and the consumption of the bile corrosive pool invigorates transformation of cholesterol to bile corrosive: The outcome is a fall in intracellular cholesterol in hepatocytes, and an expansion or up guideline of LDL receptors prompting an increment in cholesterol amalgamation. LDL-cholesterol falls 20 to 25 % by up-guideline of LDL-receptors. In numerous patients there is some compensatory increment in hepatic triglyceride yield. Psyllium husk filaments in this way might be utilized as first line for SD hypercholesterolemia yet not when there is huge hypertriglyceridemia, which might be irritated in such patients.[7,8]

This investigation was directed to decide the impacts of psyllium husk on lipid profile of essential hyperlipidemic patients.

PATIENTS AND METHODS:

It was a solitary visually impaired fake treatment controlled trial examines, directed in Jinnah Hospital Karachi, from January 2009 to June 2009. Forty grown-up patients of essential hyperlipidemia were at first joined up with this examination, chose from wards and OPD of Jinnah Hospital. Patients with diabetes mellitus, peptic ulcer sickness, renal ailment, hepatic ailment, and hypothyroidism and liquor abuse were rejected from the examination by clinical examination, research center examinations and therapeutic history. Assent was acquired from all members on planned proforma and was affirmed by Ethical Committee for Research of Jinnah Hospital, Karachi.

The required data like name, age, sex, occupation, address, past prescription, date of follow up visit and research facility examinations, and so forth of every patient was recorded on a proforma. At first, restorative history and physical examination of every single partaking understanding was completed.

All the benchmark evaluations were assumed the day of consideration, for example Day-0 in the examination and a comparative appraisal was taken on Day-90. In the wake of satisfying the consideration criteria, patients were haphazardly isolated into two gatherings i.e. Group-1 (Psyllium husk 10gm/day) and Group-2 (fake treatment cases, containing measure up to measures of somewhat pounded wheat). Patients of Group-1 were encouraged to take psyllium husk 10 grams every day, in three isolated portions, previously or after every feast. Patients of Group 2 were given fake treatment cases for example one case, thrice every

day, after suppers for 90 days. Patients were called at regular intervals for follow up to check outward presentation, circulatory strain, and weight and heartbeat rate. Serum absolute cholesterol and triglycerides were evaluated by the enzymatic calorimetric strategy. Serum LDL-cholesterol was determined by Friedwald equation ($\text{LDL-Cholesterol} = \text{Total Cholesterol} - (\text{Triglycerides}/5 + \text{HDL-Cholesterol})$). Serum HDL-cholesterol was controlled by direct technique at day-0 and day-90.[3,5,7-9] Data was communicated as the mean \pm and "t" test was connected to decide measurable essentialness as the distinction in results. A p-esteem <0.05 was the farthest point of importance in this examination consider.

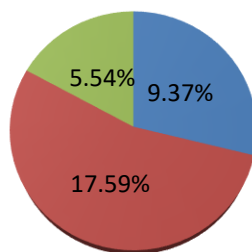
RESULTS:

In Group 1, out of twenty, eighteen hyperlipidemic patients kept on taking psyllium hydrophilic mucilloid for the time of 3 months. Two patients suspended it because of its metallic taste.

Table no: I: Comparison of changes in lipid profile parameters between Psyllium husk and Placebo group of patients in 3 months of treatment

Parameter	Placebo Group (n=20)			Psyllium Group (n=18)			
	Baseline	Post Treatment	p-value	Baseline	Post Treatment	p-value	% difference in groups
Triglyceride (TC)	215.95 \pm 2.47	208.70 \pm 5.38	>0.05	228.27 \pm 4.89	199.22 \pm 2.30	<0.001	9.37%
Low Density Lipoprotein (LDL)	150.75 \pm 2.67	148.80 \pm 2.28	>0.05	159.72 \pm 5.70	129.55 \pm 2.81	<0.001	17.59%
High Density Lipoprotein (HDL)	35.50 \pm 13	35.75 \pm 07	>0.05	34.61 \pm 85	36.77 \pm 96	<0.001	5.54%

Psyllium Group (n=18) % difference in groups



- Triglyceride (TC) 215.95 \pm 2.47 208.70 \pm 5.38 >0.05 228.27 \pm 4.89 199.22 \pm 2.30 <0.001
- Low Density Lipoprotein (LDL) 150.75 \pm 2.67 148.80 \pm 2.28 >0.05 159.72 \pm 5.70 129.55 \pm 2.81 <0.001

Table no: II Changes in lipid profile in psyllium husk group of patients (n=18)

Parameter	At day-0	At day-90	Change
Triglyceride (TC)	228.27	199.22	-12.72%
Low Density Lipoprotein (LDL)	159.72	129.55	-18.88%
High Density Lipoprotein (HDL)	34.61	36.7	+6.24%

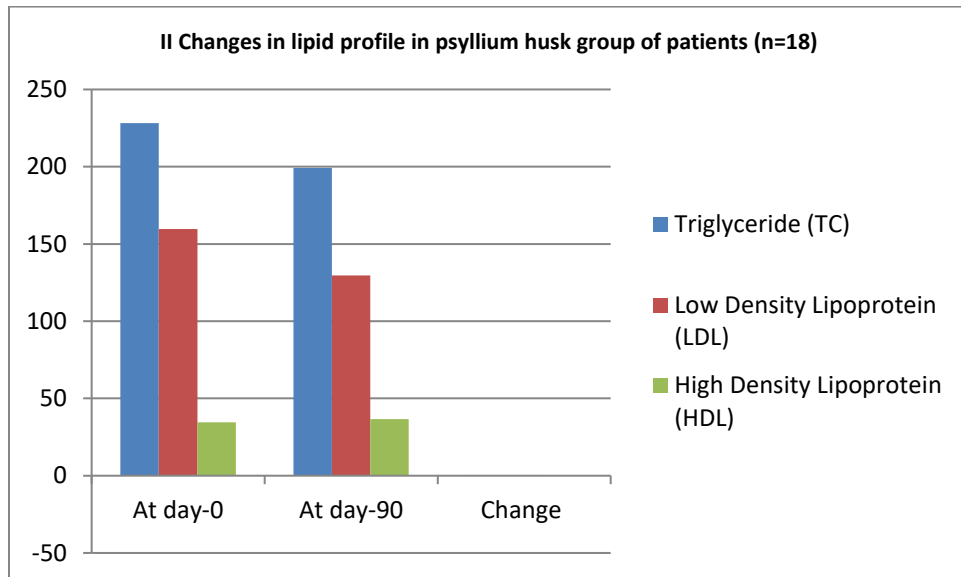
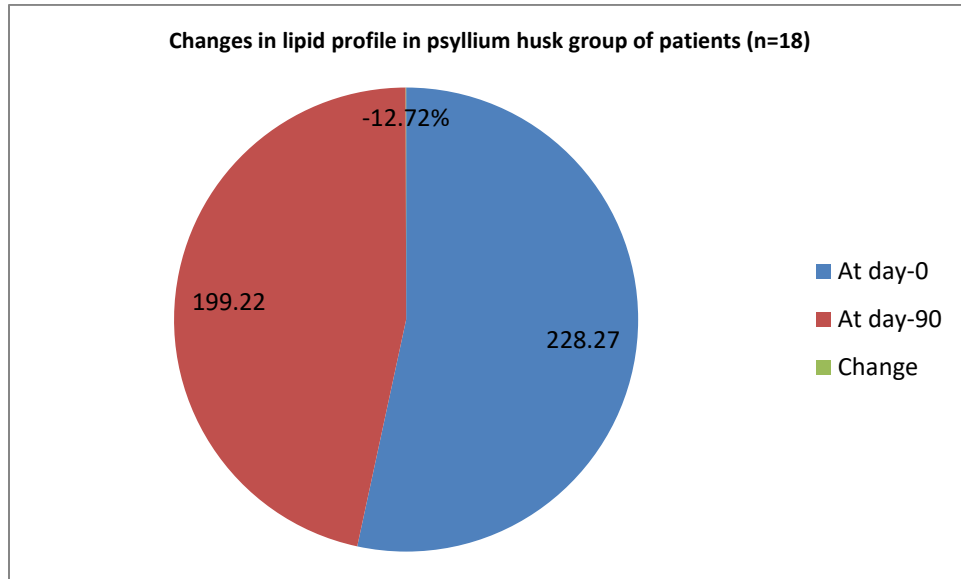
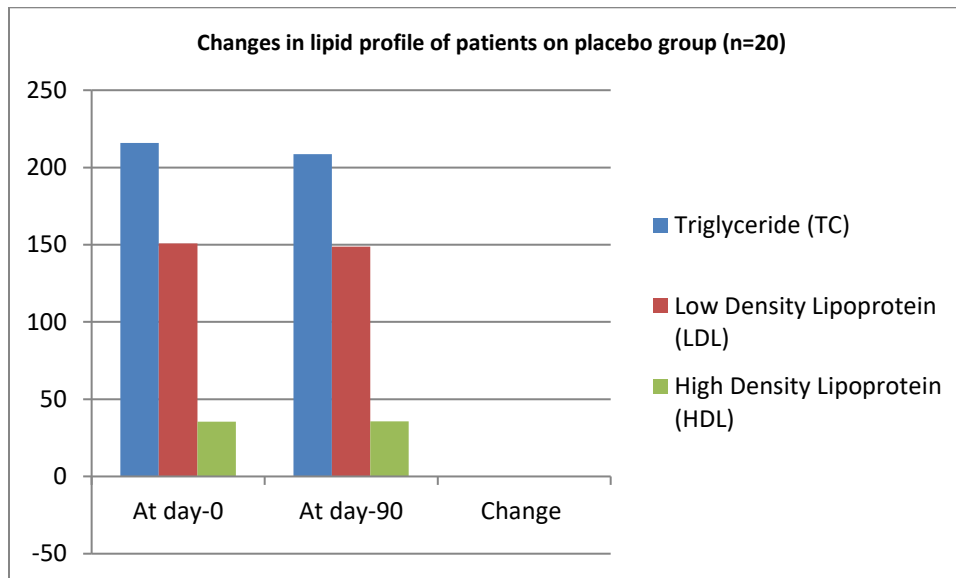
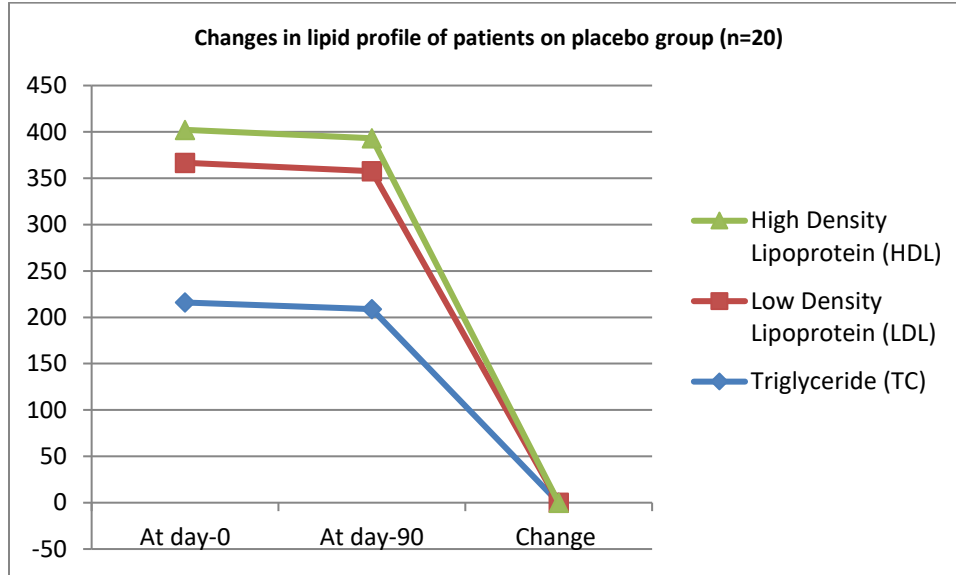


Table no: III Changes in lipid profile of patients on placebo group (n=20)

Parameter	At day-0	At day-90	Change
Triglyceride (TC)	215.95	208.70	-3.35%
Low Density Lipoprotein (LDL)	150.75	148.80	-1.29%
High Density Lipoprotein (HDL)	35.50	35.75	+0.70%

**DISCUSSION:**

In this examination work, in 18 essential hyperlipidemic patients, ten grams of psyllium hydrophilic mucilloid decreased Low Density Lipoprotein cholesterol by 18.88% and serum complete cholesterol by 12.72% in treatment period,

ie three months. High thickness lipoprotein cholesterol was expanded by 6.24%. Consequences of our examination work coordinate with a past research ponder which additionally watched practically same changes in lipid profile of 26 male patients when they were treated with 3.4 gram of

psyllium thrice day by day for eight weeks.[10] They watched a 19.66% and 13.54% decrease in C and serum complete cholesterol individually in months. HDL-C was brought by 4.89% up in their exploration. Our outcomes likewise coordinate with the investigation of Krista A Varady and Peter JH Jones in all parameters of lipid profile aside from change in LDL-cholesterol level which was higher than ours.[11] This distinction might be because of hereditary variety in patients experiencing essential hyperlipidemia. Results are likewise practically identical with those of Inar A Castro et al, in which 46 essential hyperlipidemics were treated by psyllium husk 12 gram every day in separated dosages for 4 months.[12] In their perception, triglyceride decrease was 3.71%, LDL was diminished upto 20.1%. HDL expanded from 36.12 ± 1.73 to 40.11 ± 3.33 mg/dl and serum all out cholesterol decrease was 14.81%.

Another examination was led by Charland SL and Malone DC on fake treatment based preliminaries in which 13 essential hyperlipidemic patients of either sex were treated with 10 gram psyllium husk in separated portions, thrice day by day for the time of two months.[13] Results of the preliminary are in concordance with our outcomes. In their investigation, absolute cholesterol decrease was 17.1%, triglycerides diminished from 162.73 ± 0.72 mg/dl to 149 ± 9.71 mg/dl. In rate, it was - 4.87%. Watched LDL-C decrease was 17.83%.

Our investigation results are conversely with the consequences of the examination led by Pereira MA et al, who watched less percentile changes in LDL-C, HDL-C and absolute cholesterol.[14] This distinction might be because of choice of both diabetic and non-diabetic patients. We barred diabetic patients, as we were chipping away at essential hyperlipidemics. As we would see it, serum cholesterol and lipoprotein reaction is diverse in essential and auxiliary hyperlipidemia. For essential hyperlipidemia, one of the cholesterol decrease LDL-systems is that psyllium animates bile corrosive two amalgamations through 7 α -hydroxylase movement. Another method of activity of psyllium strands in lessening cholesterol is preoccupation of hepatic cholesterol union to bile corrosive creation. Different methods of activity of psyllium incorporate hindrance of hepatic cholesterol combination by propionate and auxiliary impacts of moderating glucose assimilation from GIT Results of our examination are conversely with research work consequences of Moreyra AE et al, who watched considerably more increment in HDL-cholesterol and less diminished dimensions of plasma all out cholesterol, LDL-Cholesterol.[15] They watched a 10.03% expansion in dimensions of HDL-

C. All out cholesterol and LDL-C and triglycerides were diminished by 19.23%, 30.01% and 5.01% separately. This distinction might be because of vast example measure and extensive stretch of medication preliminary in their examination. In that review, test estimate was 98 male and female essential hyperlipidemic patients who utilized psyllium husk 7 grams every day, in two separated dosages, day by day for one year. Vast example estimate, look into study configuration, very much controlled development, directing on psyllium husk admission and consistence to medication may change the outcomes in various research works. Reid R et al examined the utilization of psyllium hydrophilic mucilloid in 30 male essential hyperlipidemic patients, with age extend from 30 to 70 years for the time of five weeks.[16] They utilized psyllium husk 12 grams every day, in partitioned portions with customary exercise and low calorie diet. They saw that psyllium husk diminished LDL-cholesterol by 21.03% and serum all out cholesterol by 20.72%. HDL-Cholesterol was expanded a lot when contrasted with our perceptions. In their investigation, HDL-Cholesterol expanded by 7.68%. These outcomes don't coordinate with our outcomes. The reason might be ethnic choice of patients, age distinction, and just male patients.

These are demonstrated actualities that geographic determination of patients may change results in same sort of research in two distinctive topographical regions. Sexual orientation likewise influences the outcomes in same kind of research work, particularly nourishment based research. Our outcomes don't coordinate the consequences of research directed by Blackwood et al, who watched less increment in HDL-C, when 5 grams of psyllium was included customary eating routine of 16 hyperlipidemic patients for the time of 2 months. [17] The conspicuous explanation behind this distinction, may be because of lesser portion of medication utilized for two months as it were. Test size, portion and span of medication utilized may influence consequences of research work.

CONCLUSION:

We finish up from the consequences of this exploration work that psyllium hydrophilic mucilloid is powerful dietary fiber to diminish serum aggregate and low thickness lipoprotein cholesterol. These dietary strands likewise increment high thickness lipoprotein cholesterol essentially. Every one of these actualities recommend that psyllium husk is essential dietary fiber which can anticipate cardiovascular hazard being developed of atherosclerosis.

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