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Original Research Article

A STUDY ON THE EFFECT OF GREEN TEA EXTRACT ON THE LIPID PROFILE OF POST MYOCARDIAL INFARCTION PATIENTS ON HYPOLIPIDAEMIC AND ANTIPLATELET THERAPY

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ABSTRACT

This open randomized controlled trial was conducted on post MI patients receiving hypolipidaemic and antiplatelet therapy to assess the effect of Green Tea Extract on their lipid profiles. The 102 patients who were enrolled for the study were divided in to two groups at random and categorized as Group 1 and Group 2. Their baseline serum lipid profiles were measured and documented on the patient data sheet. Then Group 1 was given atorvastatin 40 mg/day and clopidogrel 75 mg/day as they were already taking that along with drugs for diabetes and/or hypertension. Group 2 patients additionally received Green Tea Extract 75 mg/day orally. Both the groups of patients were monitored for compliance, and for ADRs and side effects. At the end of 6 months the lipid profiles of Group 1 were measured and compared with those of Group 2. The results showed that the reduction in serum total cholesterol, and LDL, were much higher in Group 2, compared to Group 1. There were no significant changes in triglyceride, HDL, and VLDL levels in both the groups. The study gives a strong evidence for the lipid lowering action of Green Tea Extract.

Key words: Green Tea Extract, Cholesterol, Atorvastatin, LDL, Lipid profile.

INTRODUCTION

Green Tea is widely considered an A+ antioxidant due to its high concentration of polyphenols, which are compounds that help destroy potentially harmful free radicals. Green tea significantly reduces the risk of death from many causes, including heart disease [1]. Green Tea Extract Increases Metabolism, and May Aid in Weight Loss [2]. In 2006, Patti et al studied the medicinal effectiveness of green tea [3]. In 2003, Li et al studied the cholesterol-lowering effect of a theaflavin-enriched green tea extract [4]. In 2012, Anna et al studied the effect of 2-Month Controlled Green Tea Intervention on Lipoprotein Cholesterol, Glucose, and Hormone Levels in Healthy Postmenopausal Women [5]. In 2007, Sang et al studied the role of Green Tea as Inhibitor of the Intestinal Absorption of Lipids [6]. In 2008, Karen et al studied the effect of tea consumption on carotid plaques in women [7].

OBJECTIVES OF THE STUDY

The objectives of this study were

1.To find whether Green Tea Extract has lipid lowering effect in hyperlipidaemic patients who receive hypolipidaemic and antiplatelet therapy.

2.To compare the level of changes in the serum lipid levels between a group treated without Green Tea Extract (Group 1) and a group treated with Green Tea Extract (Group 2).

MATERIALS AND METHODS

This study was performed in the cardiology department of Meenakshi Mission Hospital and Research Centre (MMHRC), Madurai, under the co-guidance of Dr. S. Selvamani, M.D., DNB (internal medicine)., DNB (cardiology) [interventional cardiologist] Approval from the Ethics Committee and consent from the enrolled patients were obtained before the start of the study.

Design of Study: Open Randomized Controlled Study.

Sample Size : 102 patients

Study Duration : 6 months (180 days)

No. of Groups : 2

Drugs Used

Group 1 (51 patients): Atorvastatin 40 mg/day (Aztor 40 mg tablets) + Clopidogrel75 mg/day (Clopilet 75 mg tablets)

Group 2 (51 patients): Atorvastatin 40 mg/day (Aztor 40 mg tablets) + Clopidogrel 75 mg/day (Clopilet 75 mg tablets) + Green Tea Extract 75 mg/day (Green Tea Extract 75 mg tablets)

Parameter Measured: Serum Lipid Profile

All the 102 patients enrolled for the study were divided in to two groups randomly. Group 1 and Group 2, 51 patients each. The patients were tested for all parameters of blood; also they were subjected to Ultrasound Scanning to ensure that the patients were not having any infectious diseases and other disorders like hypothyroidism, e.t.c.

Then the baseline lipid profile was taken for all the 102 patients and documented. Then Group 1 was given Atorvastatin 40 mg/day, and Clopidogrel 75 mg/day as they were already taking that along with drugs for diabetes and/or hypertension. Group 2 patients additionally received Green Tea Extract 75 mg/day orally.

Both the groups of patients were monitored for compliance, and for ADRs and side effects.

At the end of 6 months the lipid profile of the patients were taken again as the end point. Then the lipid profiles of Group 1 were compared with those of Group 2.

Statistical Tool

All the data were recorded in the Master Chart. The Data Analysis was done using GraphPad InStat 3. Mean, Standard Deviation, Student unpaired t-test and 'p' values were calculated for quantitative variables. The 'p' values were two-tailed and obtained by using the student's unpaired t-test, with the standard deviations of each value to be different. The 'p' value less than 0.05 was considered to imply a significant relationship. The comparative charts were drawn using the mean of the values of different parameters.

RESULTS

Changes in Serum Total Cholesterol Level

Fig.1 and Table 1 imply that the Mean change in serum total cholesterol level in Group 1 was not significant and that of Group 2 was significant.

Table.1. Changes in Serum Total Cholesterol Level

Study Groups	Serum Total Cholesterol (mg/dL) [mean]		'p' value
	Base-line	End-point	
Group 1	253.47 ± 16.55	239.1 ± 16.62	0.0693
Group 2	275.82 ± 15.8	250.34 ± 15.74	0.0378

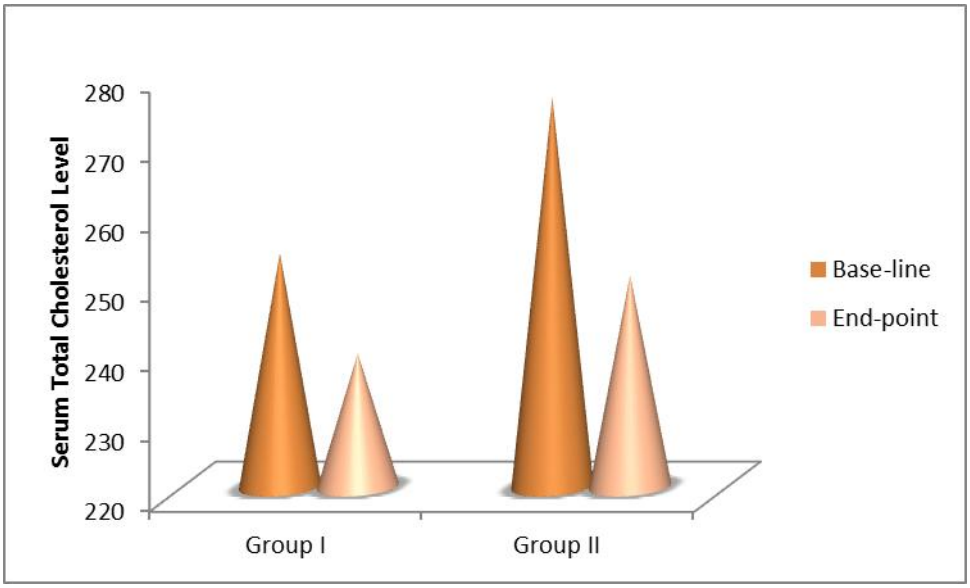

Fig.1. Changes in Serum Total Cholesterol Level

Changes in Serum LDL Level

There was decrease in serum LDL level in both Group 1 and 2. Fig.2 and Table 2 imply that the Mean change in serum LDL level in Group 1 was not significant and that of Group 2 was significant.

Table.2. Changes in Serum LDL Level

Study Groups	Serum LDL (mg/dL) [mean]		'p' value
	Base-line	End-point	
Group 1	184.36 ± 14.95	176.93 ± 14.99	0.2828
Group 2	192.61 ± 9.8	176.94 ± 8.12	0.0284

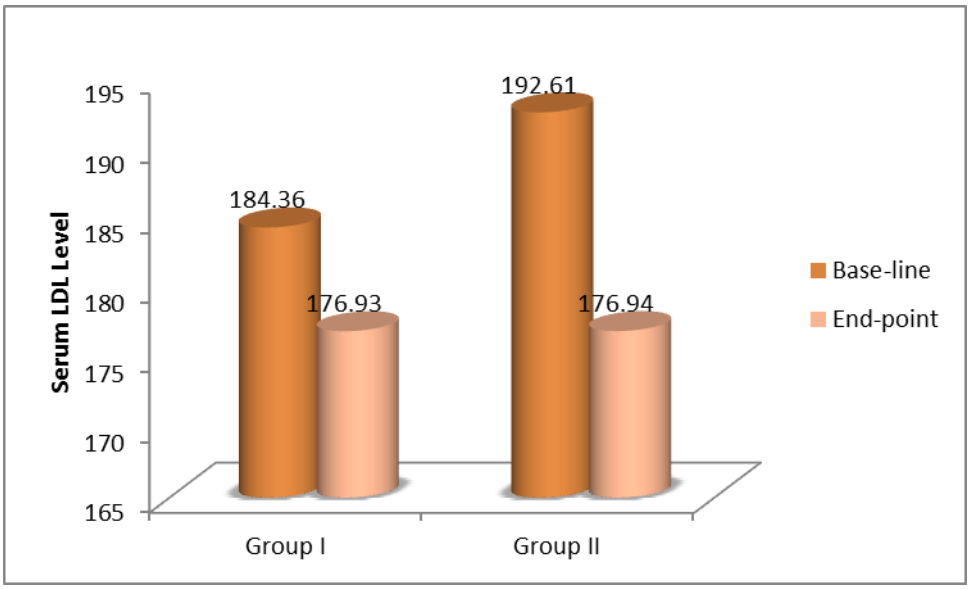

Fig.2. Changes in Serum LDL Level

Changes in Serum Triglyceride Level

Fig.3 and Table 3 imply that the Mean change in serum triglyceride levels in Group 1 and Group 2 were not significant.

Table.3. Changes in Serum Triglyceride Level

Study Groups	Serum Triglycerides (mg/dL) [mean]		'p' value
	Base-line	End-point	
Group 1	255.93 ± 17.65	247.5 ± 17.81	0.3023
Group 2	263.48 ± 22.77	245.69 ± 19.58	0.2270

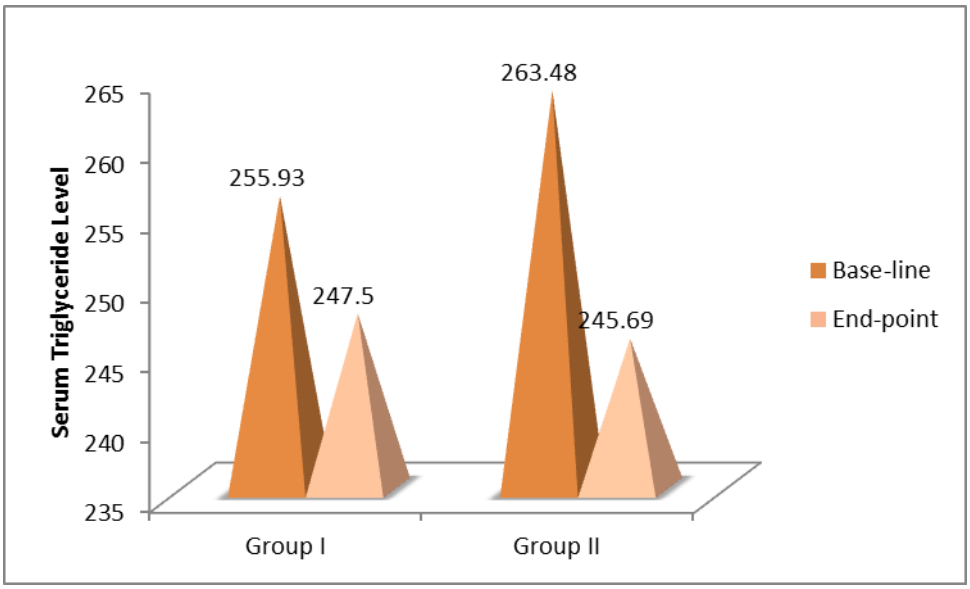

Fig.3. Statistical Representation of Changes in Serum Triglyceride Level

Changes in Serum HDL Level

Fig. 4 and Table 4 imply that the Mean change in serum HDL level in both Group 1 and Group 2 was not significant.

Table.4. Changes in Serum HDL Level

Study Groups	Serum HDL (mg/dL) [mean]		'p' value
	Base-line	End-point	
Group 1	30.85 ± 2.54	32.89 ± 2.18	0.0713
Group 2	32.29 ± 0.92	34.24 ± 1.61	0.0570

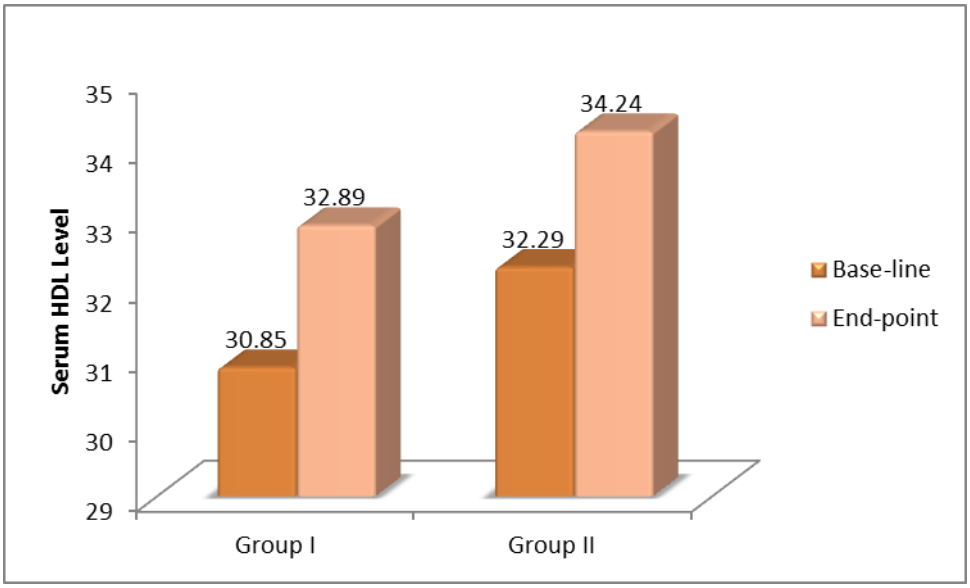

Fig.4. Statistical Representation of Changes in Serum HDL Level

Changes in Serum VLDL Level

VLDL levels decreased in both the groups. Fig.5 and Table 5 imply that the mean change in serum VLDL levels in Group 1 and Group 2 were not significant.

Table.5. Changes in Serum VLDL Level

Study Groups	Serum VLDL (mg/dL) [mean]		'p' value
	Base-line	End-point	
Group 1	74.06 ± 14.67	69.91 ± 15.04	0.5401
Group 2	84.97 ± 8.87	75.54 ± 8.58	0.1312

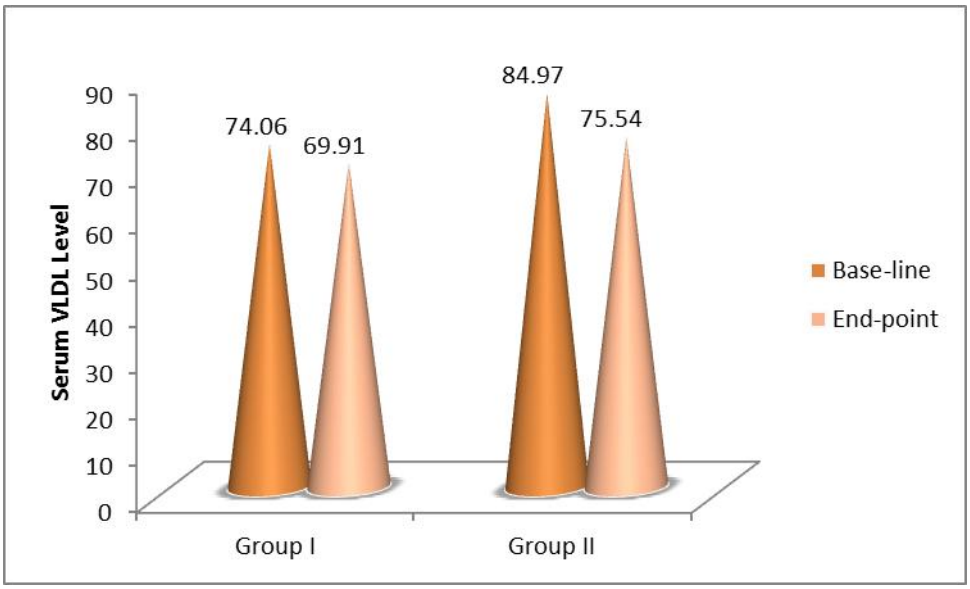

Fig.5. Statistical Representation of Changes in Serum VLDL Level

DISCUSSION

The study results show that the reduction of total cholesterol and LDL levels in Group II were statistically significant. But, there were no significant changes in other lipid parameters in either Group I or Group II. Hence it is clear that Green Tea Extract possesses power reducing serum total cholesterol and LDL levels, but ineffective in reducing triglycerides and VLDL, and raising HDL levels. Further

studies on higher doses of Green Tea Extract are to be done in different cardiac conditions to get the most of it.

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