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Serum Lipid Profile in Healthy Collegian Women During Consumption of 25 and 13 G of Ukrainian Walnut

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ABSTRACT

Objective: Nuts offer many health benefits, this study conducted to estimate the effect of different dose and period of Ukrainian walnut consumption on lipid profile parameters among healthy young collegian women. subjects of this study were feed on two different dose of walnut including 13 g and 25 g for 10 days to each dose, fasting blood sample had been drawn pre- and post-walnut consuming, entirely period of this experiment last for 20 days, tested parameters included Total cholesterol (TCH), high density Lipoprotein (HDL), low density lipoprotein (LDL) and triglyceride (TG). Body mass index (BMI) was conducted for study population pre and post consumption of walnut. highly significant decrease ($p< 0.001$) was detected in the serum total cholesterol, Triglyceride and LDL- cholesterol level in the women when eat 25g of walnut for 10 days interval pre- consumption of walnut. Highly significant increase ($p<0.01$, $p<0.05$, $p<0.01$) respectively was found in the total cholesterol, LDL- cholesterol and Triglyceride after the same subjects were had 13 g of walnut for the other 10 days. HDL- cholesterol level was non-significantly ($p>0.05$) difference neither eat 25g nor 13 g of walnut consumption against pre- take walnut.

Keywords: *lipid profile, collegian women, Ukrainian walnut.*

Introduction

There is a significant amount of research now which highlights the importance of eating nuts regularly for health benefits, nuts are a particularly nutrient dense food [1, 2]. A large number of clinical studies has been conducted looking at the effect of walnut consumption on blood fats, and showed that regular inclusion of nut in the diet can lower both total and LDL- cholesterol [3,4], other studies revealed the role of nuts in weight management [5,6]. This study was concerned on Ukrainian walnut to evaluate whether the different quantity of walnut nourishment if have the same effect on lipid profile and body weight management on the healthy young women.

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Methodology

This study conducted in college of science for women in Babylon University, features of subjects participated in the present study were young women their age arranged between 20-26 years, free of chronic disease, non– smoker, and not have allergic to walnut. At first, the fasting blood samples have been taken from women pre-consumption walnut, after that, population study were feed with 25 g of walnut plus their normal meal lasting for 10 days, then blood fasting sample was withdrawal, the same subjects feed with 13 g of walnut lasting for further 10 days, thereafter fasting blood sample has been withdrawal and separated by device centrifuge to get serum protein.

The TG, cholesterol, HDL- cholesterol were measured by using (BIOLABO Kits), but LDL-cholesterol was calculated depending on friedwald formula [7].

Body mass index BMI for subjects were twice calculated after body weight and height measured for women [8] on pre and post walnut consumption.

Statistical Analysis: Data were analyzed with spss software version 24.0 used repeated measurement ANOVA test, and paired T-test method have been done to data analysis.

Results and Discussion

The data of lipid profile as consuming walnut or without walnut eating were plotted in figure (1).

Decrease significant p<0.001 was exhibited in the mean level of total cholesterol (109.9 ± 39.4 mg/dl) and triglyceride (29.2 ± 14.5 mg/dl) and LDL- cholesterol (59.1 ± 25.1 mg/dl) after had 25 g of walnut for 10 days period in comparison to the same parameters when estimated pre- consumption of walnut, TCH (213.9 ± 79.1 mg/dl), TG (52.2 ± 20.1 mg/dl) and LDL- cholesterol (154.5 ± 74.2 mg/dl). While the same subjects when had 13 g of walnut for the other 10 days highly significant increase was found (p<0.01, p<0.05, p<0.01) for total cholesterol(136.5 ± 30.5 mg/dl) and LDL- cholesterol (72.9 ± 27.3 mg/dl) as well TG (59.8 ± 22.7 mg/dl) upon their level after consumption of 25 g walnut. Neither consuming of 25 g nor 13 g from walnut significantly impact (p>0.05) on the HDL- cholesterol level (45.1 ± 18.0 mg/dl), (51.1 ± 16.1 mg/dl) respectively opposite pre- consumption of walnut (49.3 ± 19.6 mg/dl).

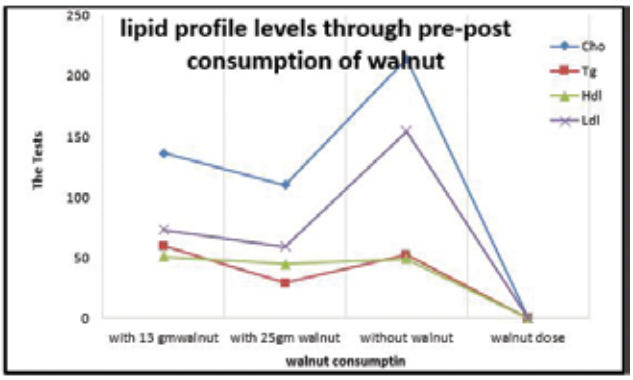

Figure 1: Lipid profile levels pre and post consumption of walnut

Our result agreement with studies which suggested that fatty acids found in walnut would lower serum cholesterol levels, as nuts contain plant sterols including beta-sitosterol, canpesterol and stigmasterol [9,10,11] since the plant sterols can reduce total and LDL cholesterol [4,5] by lowering cholesterol reabsorption from gut. Although walnut are high in fat, but most of fatty acids are poly-unsaturated fatty acid and free of trans fatty acids and is unique due to having alpha- linolenic acid ALA[3,4] notable, walnut is a rich source of fiber in which there is almost 9.7 g of fiber per 100 g of it, it was shown that fiber rich foods can reduce cholesterol levels and prevent heart disease and strakes[6], another previous study accordance with us results noted that nuts are rich source of mineral including magnesium, copper, zinc, potassium and selenium, all of which may play a role in heart health [6,18] accordingly, there was decreased in TG level as women consumed 25 g of walnut but increased level in TG as eating 13 g of walnut, this occur may owing to that 13 g was not enough to show positive effect on TG concentration, but in the same time there was increase HDL level in accordance with increased TG level during eating 13 g of walnut, this may due to protective role of unsaturated fat as reported by Balk *et al* [12] who confirmed that marine sources of omega -3 fatty acid such as fish oil have higher hypotriglyceridemic effects, as well as another study [13,16] confirmed that walnut intake reduce TG level in healthy people. In concerning with HDL level there were non- significant difference in pre and post consumption of walnut, previous literature was founded increase in HDL level as eating 30 g of black walnut per day for an eight- week period [12] this disagreement with our results may owing to that different kind of walnut and to long period of eating, however our results agreement with Rose *et al* [14] in which reported that walnut consuming per day regularly for four weeks, the good cholesterol in participants remained the same. The present study don't showed significant difference (p>0.005) in BMI between pre- and post-consumption of walnut (22.9 ± 2.6 kg/m$^{2)}$ (23.0 ± 2.7 kg/m^2) respectively as reveled in table 1, these finding are supported by researches [14,15, 17] in which has shown that nuts do not cause weight gain when included as part of cholesterol lowering diet.

Table 1: body mass index value pre-post consumption of walnut in study population

BMI	Pre-consumption of walnut	Post-consumption of walnut	T-value	sig
Kg/m^2	22.9 ± 2.6	23.0 ± 2.7	0.402	0.69

Conclusion

Regular daily consuming for walnut have active role on lipid profile and may get better benefit while dose and period of walnut consuming are amplified.

Source of Funding: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of biology, Faculty of Science for women, University of Babylon, Al- Hila, Iraq and all experiments were carried out in accordance with approved guidelines.

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