



CODEN [USA]: IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.1298676>Available online at: <http://www.iajps.com>

Research Article

**COMPARISON OF SUGAR LEVEL AND BLOOD LIPIDS
WHILE FASTING IN 1st AND 4th WEEK OF HOLY MONTH OF
RAMADHAN AT SERVICES HOSPITAL, LAHORE**¹Dr. Muhammad Abubakar, ¹Dr. Ammara Hassan, ²Dr. Muhammad Usman Saddique,
³Joud M. Kossia Enabi¹THQ Thal, Mian Nawaz Sharif Hospital, Layyah²Medical officer, Basic Health Unit 92jb Gojra, Toba Tek Singh³Al-faisal University / College of Medicine, KSA.**Abstract:**

Objective: To evaluate the effects of fasting in the holy month of Ramadan on blood sugar and lipid profile. **Setting:** The research was conducted at Services Hospital, Lahore. **Subjects and Methods:** A total of 60 subjects who volunteered for the study were selected. The research was carried out in the Holy month of Ramadan, 2017 at Services Hospital, Lahore. The duration of fasting in that year was almost twelve hours. The sample consisted of sixty healthy adults. The blood specimens were collected in first and fourth week of the holy month. The blood was analyzed for VLDLc, LDLc, HDLc, blood sugar, TG and total cholesterol [TC]. **Results:** A reduction in the low-density lipoprotein cholesterol – LDLc was observed near sunset. The reduction was statistically highly significant with a P-value (< 0.005). Similarly, the readings for TC were marked with falling tendency but the values were not statistically significant P-value (< 0.16). However, the values for other blood parameters blood sugar, VLDLc, TG and HDLc raised insignificantly at the end of the fasting with p values of < 0.72 , < 0.71 , < 0.29 and < 0.36 respectively. **Conclusion:** The study concluded that the low-density lipoprotein is reduced significantly during Ramadan fasting and further reduces the risk of coronary heart diseases.

Key Words: Fasting, Blood Glucose, Lipid, Cholesterol.**Corresponding author:****Dr. Muhammad Abubakar,**
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Please cite this article in press Muhammad Abubakar et al., *Comparison of Sugar Level and Blood Lipids While Fasting in 1st and 4th Week of Holy Month of Ramadhan at Services Hospital, Lahore, Indo Am. J. P. Sci, 2018; 05(06).*

INTRODUCTION:

The Muslims observe fasting during the holy month of Ramadan all over the world. Besides spiritual attractions and benefits the Muslims have to refrain from drinking and eating during the period of fasting which starts from well before dawn and lasts till sunset. The type of food is almost the same with a little increase in the food which contain more fat. The eating pattern is slightly changed; people who fast take a pre-dawn meal and then refrain to swallow any solid or liquid diet till sunset (end of a fasting). Moreover, the fasting period varies according to the geographical location and shifting of Ramadan to different seasons based on moon sighting (Ranges between twelve hours to nineteen hours).

Many non-believers think that fasting is harmful to human beings. The study was aimed at evaluation of the effects of fasting on human's body. For this purpose, lipid profiles and blood sugar results of healthy adults were collected during the 1st and 4th weeks of Ramadan. The subjects volunteered for the research during fasting.

SUBJECTS AND METHODS:

The sample comprised of sixty (60) volunteers healthy and mature subjects. The mean age of the sample was calculated to be (34.3 ± 8.6) years. The research was conducted in 2017 (Islamic month of Ramadan). The fasting period (pre-dawn meal to sunset) was approx. 12

hours. After sunset, the subjects were free to eat the food of their choice in desired quantity. Finger sticks were used for the collection of blood samples from the left-hand index finger. The blood was then drawn up in cholestastic capillary tubes for presentation to laboratory test cassettes. The samples were taken on 1st, 5th, 6th and 7th days of first week of Ramadan and on 26th, 27th and 28th Ramadan (4th week). The blood amount taken a sample was 35 – 60 microliters.

The enzymatic method by employing the LDX analyzer was used for the processing of blood sugar, HDLc, TC, VLDLc and TG.

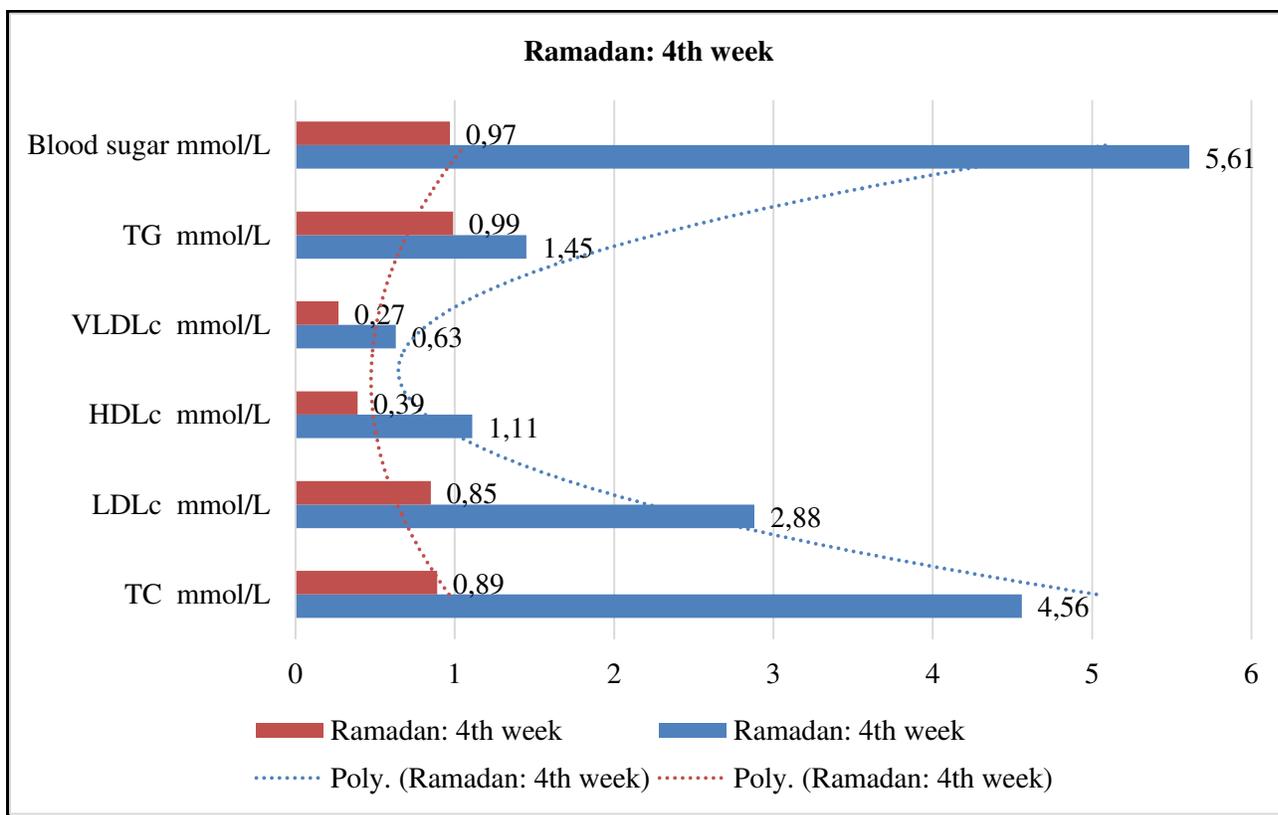
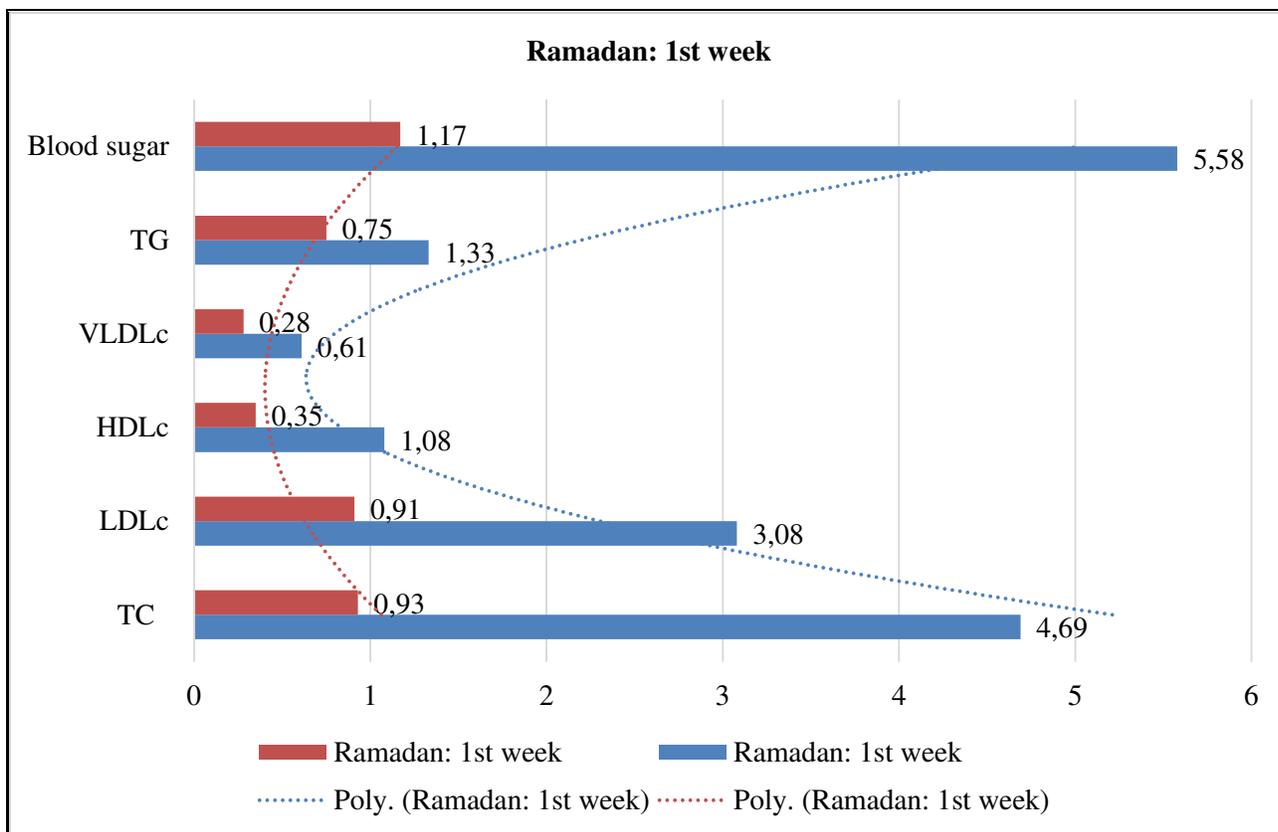
SPSS was used for analysis of data. The values were presented in mean and SD. Other statistical tools like t-test and chi-square test were conducted for statistical analysis. A P-value (< 0.05) was referred as the significant.

RESULTS:

The fasting effects were studied on the blood glucose and lipid sketch of the sixty adults who volunteered for the study. The mean age of the ample was (34.3 ± 8.6) years. Table shows the blood composition of different parameters and their comparison during first and fourth week of Ramadan.

Table: Comparison of the Effect of Ramadan Fasting on various parameters

Variables (mmol/L)	Ramadan: 1 st week		Ramadan: 4 th week		P-Value
	Value	Variation (±)	Value	Variation (±)	
TC	4.69	0.93	4.56	0.89	< 0.16
LDLc	3.08	0.91	2.88	0.85	< 0.005
HDLc	1.08	0.35	1.11	0.39	< 0.36
VLDLc	0.61	0.28	0.63	0.27	< 0.71
TG	1.33	0.75	1.45	0.99	< 0.29
Blood sugar	5.58	1.17	5.61	0.97	< 0.72



A significant reduction in the low-density lipoprotein (LDLc) was observed at the end of fasting with a p value of less than 0.005. Total cholesterol (TC) also reduced to a certain extent but the reduction was not statistically significant (P-value < 0.16). Other parameters (blood sugar, P-value < 0.72), (VLDLc, P-value < 0.71), (TG, P-value < 0.29) and (HDLc, P-value < 0.36) increased slightly but were not statistically significant.

DISCUSSION:

The human body has some alternative controlling instruments which come in effect during fasting. The consumption of energy decelerates during fasting and the fat is utilized in an efficient manner [2]. The blood cholesterol was improved with the use of fatty diet in 36% of the total energy [3, 4].

The recommended fat intake per day is 30% or less energy consumed by any individual [5]. The fat intake during Ramadan and other months is similar with almost negligible change during Ramadan [6].

A study conducted by Nomani and Hallak analyzed the effects of low caloric diet on men with 30% fat content but no prominent change in TC levels was observed [7].

The significant reduction in the LDLc levels (P-value <0.005) in our analysis was supported by another study conducted by Aldouni et al. The reduction was maintained by the subjects a month after Ramadan [8].

The use of more fatty diets during Ramadan is obvious as the people tend to consume fried foods more as compared to other type of food. Amazingly, despite the increased use of rich fat foods, the LDLc levels are reduced significantly during Ramadan. The blood cholesterol is seemed to be regulated by fat intake during the month of Ramadan [9].

Aldouni et al delivered in another study that the eating habits during Ramadan decreases the risk of cardiac diseases by affecting the serum apolipoprotein metabolism in a positive manner [10].

Another scholar, A Temizhan found that the incidences of coronary heart diseases are reduced significantly during Ramadan as compared to other months [11].

We did not find any considerable changes in High Density Lipoprotein Cholesterol and Total Cholesterol in our study. The readings for triglycerides did rise up at the end of the fasting owing to lipolytic effect of fasting for a longer period. The findings were in line with the study conducted by S A

Nagra who reported the increased triglycerides level at the end of the fasting [12].

The impact of fasting has been deeply studied in relation to carbohydrate digestion system [13, 14]. The blood glucose level starts to decrease after a few hours of the fasting among adults. The process does not last for long and stops when the gluconeogenesis takes place in liver. It is attributed to decreases in insulin levels and increase in glucagon activity [15].

Some studies have reported the effects of fasting on serum glucose [16 – 20]. A study led by Azizi & Rasouli described that the concentrations of serum glucose were reduced during the beginning of the holy month, became normal in the middle of the Ramadan and were on the rise at the end of the month [17]. Some other studies have reported slight increase in glucose [18] or changes in the concentration of glucose [19, 20] but all the results were within the standard rang [17]. We observed an insignificant rise (P-value < 0.72) in the blood sugar at the end of the fasting which was similar to the findings reported by many other studies.

CONCLUSION:

The study concluded that the LDLc is considerably reduced in the people who observe fast which in turn reduces the risk of coronary heart diseases (CHD). However, the effects of fasting can better be analyzed by employing a more controlled set up and catering for other important variables such as race, gender, physical activity, sleep pattern and eating habits etc. during the Ramadan fasting.

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