Study on the effects of fast food on the glucose and lipid profile aims to provide a platform to advocate a healthier lifestyle and better eating habits

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Abstract

Foods that contain saturated fat can cause an increase in cholesterol. Saturated fat is mostly found in animal-based food products such: cheese, milk, butter and steak. Some plant-based foods, such as palm oil and coconut oil, also contain saturated fats. Transfats, or trans-fatty acids, have undergone a hydrogenation process. Some transfats are found in animal products. These fats are often found in peanut butter, margarine, and potato chips. High cholesterol and high triglycerides affect the heart and can put you at increased risk for heart disease, heart attack, and stroke. Making healthy lifestyle choices and knowing your genetics can also help you avoid a lipid disorder.(2)

Fast food includes those food items, which can prepare and serve quickly. Nutritional analysis shows that generally fast foods are high in fat value specially saturated fat, energy density, fructose and glycemic index, but poor in fiber, vitamins A and C and calcium(3) According to Bowman(4) children who eat fast food consume more total energy than those who do not**.** Consumption of fast food increasing rapidly throughout the world. According to Zive(5) consumption of spreads in fast food all segments of society including local communities, public schools and hospitals. Most Fasts food is delicious but it is supposed to be dangerous to health and may cause clogget heart, hypertension**,** high blood pressure, diabetes, cholesterol, cancer, gall bladder disease, liver damage, vomiting, headaches, depression etc**.** Looking to the important of fast food in causing the health problems, present work was undertaken to study the impact of French fries on the lipid profile of mice**.**

Keywords: Fast Foods**,** Saturated fats, Lipids**,** hypertension**,** High blood pressure and diabetes.

Introduction

Consumption of fast food has increased over recent years due to the fast-moving lifestyle lead by the current population. Long term fast food intake has been shown to cause obesity and/or drastic health problems associated with cardiovascular diseases. A study included 406 Middle-Eastern Bedouins. (median age: 37 years, 58.6% females). The average total cholesterol and low-density lipoprotein (LDL) levels were 10 mg/dl Average triglycerides levels were 36 mg/dl Average HDL levels were 3 mg/dl.[6] A study of postprandial lipid profile and glucose was done on 44 volunteers aged 20-25.

Drawing of blood samples was conducted at a two hour postprandial following the ingestion of the specified fast food meal. Blood samples were analysed, obtaining results for the glucose levels and lipid profile. The differences between the meals were accessed. Results showed significant changes in the triglyceride (ANOVA; $p < 0.001$) and glucose (ANOVA; $p < 0.001$) parameters. Comparison of the results obtained from both genders was found to be significantly different for triglyceride (ANOVA; $p < 0.05$) and glucose (ANOVA; $p < 0.05$).(1)

Foods that contain saturated fat can cause an increase in cholesterol. Saturated fat is mostly found in animal-based food products such: cheese, milk, butter and steak. Some plant-based foods, such as palm oil and coconut oil, also contain saturated fats. Transfats, or trans-fatty acids, have undergone a hydrogenation process. Some transfats are found in animal products. These fats are often found in peanut butter, margarine, and potato chips. High cholesterol and high triglycerides affect the heart and can put you at increased risk for heart disease, heart attack, and stroke. Making healthy lifestyle choices and knowing your genetics can also help you avoid a lipid disorder.(2)

Fast food includes those food items, which can prepare and serve quickly. Nutritional analysis shows that generally fast foods are high in fat value specially saturated fat, energy density, fructose and glycemic index, but poor in fiber, vitamins A and C and calcium(3) According to Bowman(4) children who eat fast food consume more total energy than those who do not. Consumption of fast food increasing rapidly throughout the world. According to Zive(5) consumption of spreads in fast food all segments of society including local communities, public schools and hospitals. Most Fasts food is delicious but it is supposed to be dangerous to health and may cause clogget heart, hypertension, high blood pressure, diabetes, cholesterol, cancer, gall bladder disease, liver damage, vomiting, headaches, depression etc. Looking to the important of fast food in causing the health problems, present work

was undertaken to study the impact of French fries on the lipid profile of mice.

Materials and Method

The present study was carried out at the Biochemistry Department, Faculty of Medicine, and University of Hail. Fasting blood samples were collected from 44 healthy patients in the early morning in clean tubes and allowed to clot. Then the samples were centrifuged at 3000 r.p.m for 5 minutes and sera were separated, then they were collected into plain containers and used in the evaluating blood parameters. The lipid profile parameter evaluated were total cholesterol, HDL, LDL and Triglyceride. High density lipoprotein-cholesterol (HDL-c) in the sample was determined according to the accelerator selective detergent method described by Warnick et al. (1995). The cholesterol concentration was estimated by an enzymatic method which measures the total cholesterol concentration in the serum as described by Richmond, (1973). Low density lipoprotein- cholesterol (LDL-c) was estimated in (mg/L) the following formula is used: LDL cholesterol = Total cholesterol –Triglycerides/5 - HDL cholesterol Triglycerides (TG) in the sample were determined according to the enzymatic colorimetric method described by Wybenga and Inkpen (1974).

Sample Collection: Blood samples from patients and controls were collected from anti-cubital vein with all aseptic precautions, using 10 ml polythene disposable syringe. 3.0ml blood was collected in the bulb with heparin as anticoagulant and remaining 7.0ml blood was collected in polythene tube to avoid glass containing. The institutional ethical committee approved this study. A total of 44 healthy individuals who had no complaint or any major illness in recent past were included in the study; medically compromised patients and patients with other systemic illness were excluded. Since investigation of Blood for diagnostic purposes has been used in various cardiovascular diseases as in the present study to assess the various lipid parameters.

After obtaining prior informed written consent, the detailed history of the patients was taken and examination was done and subsequently recorded. Blood (3 ml) samples were collected from each participant after overnight fasting (12-14 h). Blood samples were drawn from antecubital vein with minimal trauma under aseptic conditions.

The volunteers were given detailed information about the collection protocol: the importance of the exact timing of the samples, for the estimation of lipoproteins in cardiovascular dysfunctions 5 Biochemical investigations were carried out with sample of each subject according to the protocol mentioned below

In this study, Lipid analysis was done on a fully automated analyzer based on spectrophotometric principle using kits obtained from UDI diagnostics (United Diagnostics Industry, Dammam, Saudi Arabian).

The serum lipid profile was analyzed on the same day of the withdrawal of blood.

The serum TC was estimated by taking 10 µl of distilled water, 10 µl of sample and 10 µl of cholesterol standard in separate test tubes. In all, 1000 µl of cholesterol reagent was added to all test tubes. The mixtures were incubated at 37°C for 10 min and the absorbance of standard and sample was measured against the blank at 505 nm in the analyzer.

The serum TGL was estimated by taking 10 µl of distilled water, 10 µl of sample and 10 µl of TGL standard in separate test tubes. 1000 µl of TGL reagent was added to all test tubes. The mixtures were incubated at 37°C for 10 min and the absorbance of standard and sample was measured against the blank at 505 nm in the analyzer.

The Serum HDLC was estimated by mixing 250 µl of serum sample with 500 µl of HDL-precipitating reagent in separate test tubes, followed by 10 min incubation at room temperature. Mixtures were centrifuged at 4000 rpm for 10 min to obtain a clear supernatant. In all, 50 µl of distilled water, 50 µl of supernatant and 50 µl of HDLC standard were taken in separate test tubes. In all, 1000 µl of cholesterol reagent was added to all test tubes. The mixtures were incubated at 37°C for 10 min and the absorbance of standard and sample was measured against the blank at 505 nm in the analyzer.

Serum LDLC levels were calculated as shown below:

LDLC = total cholesterol−(triglycerides/5)−(HDLC)

Results

Table 1: The study was done on 44 in age group of 20-25yrs and no dividing groups

	Q3	N	Mean	Std. Deviation	Std. Error Mean
Glucose	.00	30	65.99	24.55	4.48
	1.00	14	68.36	16.65	4.45
Cholesterol	.00	30	93.96	75.07	13.70
	1.00	14	61.39	23.45	6.26
HDL	.00	30	43.72	16.45	3.00

	1.00	14	76.13	91.62	24.48
LDL	.00	30	41.81	68.12	12.43
	1.00	14	29.71	12.77	3.41
Triglyceride	.00	30	79.87	71.96	13.13
	1.00	14	69.90	42.43	11.34

Table 2: **This table is about the number of fast food meals intake in a week**

Report					
Q9	**Glucose**	**Cholesterol**	**HDL**	**LDL**	**Triglyceride**
Mean	60.23	72.31	63.53	22.94	76.08
Std. Deviation N	17.82	17.82	73.58	18.19	45.28
Mean	69.73	79.03	39.21	36.78	99.27
Std. Deviation N	24.30	34.34	10.99	16.31	121.19
Mean	75.94	134.21	47.38	80.63	62.38
Std. Deviation N	25.70	149.26	15.21	133.68	22.32
Mean	91.26	85.00	45.95	48.75	62.43
Std. Deviation N	28.79	53.03	14.12	37.42	24.15
Mean	59.20	54.60	46.87	39.00	53.75
Std. Deviation N	15.83	16.26	21.72	32.52	9.40
Total Mean	66.74	83.59	54.03	37.96	76.70
Std. Deviation N	22.17	64.83	54.34	56.67	63.71

Table 3: This table about the number of fast foods intake in a year

Report					
Q10	**Glucose**	**Cholesterol**	**HDL**	**LDL**	**Triglyceride**
Mean	68.00	89.40	50.81	23.55	75.15
Std. Deviation N	8.90	39.31	17.26	20.58	7.28
Mean	83.66	62.80	75.31	26.71	56.02
Std. Deviation N	12.77	10.79	81.84	14.56	36.81
Mean	63.33	74.29	67.38	32.44	105.43
Std. Deviation N	24.30	20.19	85.48	19.45	96.100
Mean	67.71	123.62	44.01	73.93	67.40
Std. Deviation N	17.15	141.38	16.20	125.90	30.33
Mean	63.58	76.91	41.95	29.78	64.66
Std. Deviation N	25.19	33.32	13.29	23.77	48.94
Total Mean	66.74	83.59	54.03	37.96	76.70
Std. Deviation N	22.17	64.83	54.34	56.67	63.71

Discussion

The increasing rates of obesity and dyslipidemia is reported worldwide with associated history of junk food consumption, nil or low physical activity and above all family history of obesity that eventually leads to coronary artery disease at an early age of life.

Table 2 shows that the colsterol, and LDL is increase with increase of fast food meals in a week.

Table 3 Shows that the colstrol, and LDL is increased with increase of fast food meals in a year the plasma level of VLDL-C, LDL-C, Triglyceride are increased. In our study total cholesterol, triglyceride,

LDL-C is increased. The HDL-C in study group is variable the glucose level is variable also and no relation between it and fast food intake.

Conclusion

Almost everybody is aware that fast food or street food is generally unhealthy. Just because of low cost and faster availability people prefer to go to fast food center rather than eating home food. Working people and students prefer eating in fast food centers during their working hours as it saves their time. Hence people should be made aware of the deleterious effects of fast food on health and they should be motivated to get their lipid profile and blood sugar level done at least once in a year for early detection of dyslipidemias. Parents and teachers should emphasize on the importance of homemade, healthy, nutritious and hygienic fiber rich food.

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