



Original Research Article

A Comparative Study of Serum Lipid Profile in Short-Term, Moderate Alcohol Drinkers and Abstainers

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ABSTRACT

Background and Objectives: it is well known that, long-term alcohol abusers have altered lipid profile, but whether short-term, moderate alcohol drinkers have altered lipid profile or not has not been established. In the present study, we examined lipid profile in a group of short-term moderate drinkers and age matched controls.

Methods: we recruited thirty young (20-40 years) men with history of daily 2 to 3 units of alcohol intake for the past 1 to 3 years duration. They were non-smokers and non-obese. They were not having any nutritional deficiency or any pre-existing cardiopulmonary or hepatobiliary disorders. Another thirty age matched men, who were alcohol abstainers, served as controls. Two ml of blood was collected after 12 hours of fasting. Serum lipid profile was estimated by Random Access Clinical Chemistry Analyzer ERBA-XL-300. Data were presented as means \pm SD, and analysed using the one tailed unpaired (equal variance) 't' test. The level of significance was taken at P values < 0.05 .

Results: all lipid profile parameters except HDL-C were significantly higher in moderate drinkers compared to abstainers.

Conclusions: In conclusion, significantly altered lipid profile is found in short-term, moderate drinkers compared to abstainers, which indicates that, the short-term moderate drinkers have an increased risk of cardiovascular diseases.

Keywords: Lipid Profile; Alcohol; Moderate; Short-term

INTRODUCTION

Alcohol is a non-essential nutrient. It acts as a sedative, tranquillizer, hypnotic or anesthetic depending upon the quantity consumed. The consequences of alcohol consumption on health vary according to the extent and habits of usage (excessive or not, acute or chronic) and depend on numerous environmental and individual factors. Today, the effects of alcohol on human health are still taking their toll in public health terms. India has been identified as the third largest market for alcoholic beverages in the world. Changing social norms, urbanization, increased availability, high intensity mass marketing along with poor levels of awareness related to alcohol has contributed to increase in alcohol use. ^[1]

Various previous studies have shown that, long-term alcohol abusers have altered lipid profile, but whether short-term, moderate alcohol drinkers have altered lipid profile or not have not been established. In the present study, we examined lipid profile in a group of short-term, moderate alcohol drinkers and age matched controls. The results of these investigations form the basis of this report.

METHODS

This study was approved by ethics committee of the institute, KIMS, Hubli. We recruited thirty young (20-40 years) men with history of daily 2 to 3 units of alcohol intake for the past 1 to 3 years duration. [The definition of one unit of alcohol varies from one region in the world to another, but it is generally recognised that one glass of beer (250–300 ml), one glass of wine (150 ml), and one measure of spirits (30–50 ml) contain a similar quantity of alcohol, averaging 10 g of pure ethanol. Physicians operationally define “light” drinking as 1.2 drinks /day, “moderate” drinking as 2.2

drinks/ day, and “heavy” drinking as 3.5 drinks/day. Abusive drinking is defined as 5.4 drinks/day. They were non-smokers and non-obese. They were not having any nutritional deficiency or any pre-existing cardiopulmonary or hepatobiliary disorders. Diabetics and hypertensives were excluded from the study. Another thirty age matched men, who were alcohol abstainers, served as controls. All subjects provided written informed consent. This study conformed to the standards set by *Declaration of Helsinki* and the procedures followed were in accordance with the ethical standards as laid by the ICMR-Ethical Guidelines for Biomedical Research on Human Participants

The health status, the patterns and amounts of ethanol intake, and smoking habits were assessed with the use of specifically designed questionnaires. Participants who reported no alcohol intake in the past were classified as abstainers. Moderate drinkers were participants in whom the amount of alcohol consumed was 2 to 3 units of ethanol/d, and the maximum amount of alcohol during the past 24 hours before sampling was 2 standard drinks (each providing 10 g of ethanol). The survey excluded persons who had clinical or laboratory evidence of any current or recent illnesses or infections, had donated blood during the past 5 months, or had used any prescription drugs during the preceding 1 week. None of the moderate drinkers had any social or medical records of heavy drinking or associated medical disorders.

Two ml of blood was collected from anterior cubital vein under all aseptic precautions. Subjects were fasted for 12 hours and rested for 10 minutes in the seated position prior to the venepuncture. Serum lipid profile was estimated by Random Access Clinical Chemistry Analyzer ERBA-XL-300.

Statistical analysis: Data are presented as means \pm SD, and analysed using the one tailed unpaired (equal variance) 't' test. The level of significance was taken at *P* value < 0.05.

RESULTS

The main clinical characteristics of the moderate alcoholics and abstainers are presented in the above section. All lipid profile parameters except HDL-C were significantly higher in moderate drinkers compared to abstainers (See Table 1).

Table 1. Lipid Profile of short-term moderate alcohol drinkers and abstainers

Parameters	Moderate Drinkers (Mean \pm SD) n = 30	Abstainers (Mean \pm SD) n = 30	<i>P</i> Value
TC (mg/dl)	221 \pm 43	201 \pm 46	< 0.001*
HDL-C (mg/dl)	48 \pm 9	46 \pm 8	> 0.05
LDL-C (mg/dl)	149 \pm 59	134 \pm 41	< 0.001*
VLDL-C (mg/dl)	35 \pm 13	29 \pm 12	< 0.001*
TG (mg/dl)	168 \pm 46	150 \pm 53	< 0.001*

TC Total Cholesterol, HDL-C High Density Lipoprotein Cholesterol, LDL-C Low Density lipoprotein Cholesterol, VLDL-C, Very Low Density Lipoprotein Cholesterol, TG Triglycerides, * Significant

DISCUSSION

The effects of alcohol intake on serum lipids and lipoproteins depend on the dose and mode of alcohol intake, individual susceptibility, genetic variables and dietary factors. In heavy drinkers, the synthesis of VLDL is stimulated. High VLDL and Low or subnormal LDL levels are the results of long-term heavy drinking. [2]

Our results are consistent with Vaswani M et al. [3] who observed that TC, VLDL-C, TG were higher in alcohol dependents as compared to non- dependent subjects. Our study result is in contrast with Vaswani M et al. in that, LDL-C was significantly increased in alcoholics and there was no significant difference in HDL-C levels between the two groups (Vaswani M et al. found increased HDL-C in alcoholics and no difference in LDL-C between the two groups). Similar study by

Whitfield JB et al. [4] showed that the TG levels increases with increased alcohol intake. However, studies by Riuidavets JB et al. [5] and Hans Hoffmeister et al. [6] found that blood levels of HDL-C increased with increased alcohol intake.

A study conducted by Barboriak JJ et al. [7] showed significantly higher HDL-C levels in the alcoholic group. They also noticed that, after 2weeks of alcohol abstinence, the HDL-C levels decreased to normal range. Choudhary Soheli R et al. [8] found higher Serum TG and HDL-C and lower LDL-C in heavy alcohol drinkers.

This finding is in contrast with the previous study done by Oduola T et al. [9] in which there were no association between alcohol intakes with total cholesterol levels. Similar observations were also found in a study conducted by Marita Passilta et al. [10] in which there was no difference in LDL-C concentrations between controls and in those

with highest alcohol intake. In a similar study by Seppa K et al. [11] it was found that the HDL-C/TC ratio between controls and heavy drinkers was unaltered.

The complex relationship between alcohol use and lipid profile has been documented by earlier studies. The influence of alcohol on lipid metabolism is to be attributed to the transient changes in lipid metabolism. The protective effects of alcohol consumption need to be weighed carefully against its considerable risk in the Indian population. The role of lipoproteins and lipid profile in defining the alcoholic status of an individual needs to be extensively explored.

CONCLUSIONS

In conclusion, significantly altered lipid profile is found in short-term, moderate drinkers compared to abstainers, which indicates that, the short-term moderate drinkers have an increased risk of cardiovascular diseases.

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