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The Examination of HDL Cholesterol on Risk of Dyslipidemia Respondents

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Abstract **HDL (High Density Lipoprotein) is one of the lipoproteins in the human body. It acts like a vacuum cleaner that absorbs as much excessive cholesterol as possible. There are several risk factors that can cause cholesterol metabolism abnormalities in the body, one of which is a decrease of HDL levels in the blood. These risk factors include to smoking and the use of hormonal contraception in women. In this study, HDL cholesterol was examined on two groups of respondents who had the risk of dyslipidemia, to identify a description of HDL cholesterol levels in smokers and oral contraceptive users. This study uses a descriptive method, in which the sample is taken from 25 smokers and 30 fertile women by using hormonal pill contraception combined with purposive sample data collection techniques where the researcher determines the sampling by setting criteria according to those specified. While the HDL (High Density Lipoprotein) cholesterol examination method uses CHOD-PAP Phosphotunostic / MgCl2. The results of the study obtained that the smokers were 48% with low HDL and 52% with normal HDL, whereas in the group of women whom using combined hormonal contraceptive pills there were 66.7% with low HDL and 33.3% with normal HDL. It can be concluded that the results of HDL levels in both groups of respondents who have the risk of dyslipidemia are mostly low.**

Keywords: HDL (High Density Lipoprotein), smokers, hormonal contraceptive users

I. INTRODUCTION

Hyperlipopoteinemia is an increase of macro concentration on lipoprotein molecules that lead lipids into the plasma. Plasma lipid abnormalities can cause a bad influence (predisposition) to the vascular cerebro, and peripheral arterial disease (Sukandar et al, 2009). Fat consists of cholesterol, triglycerides, phospholipids, and free fatty acids. Because of cholesterol, triglycerides and phospholipids are not soluble, and then lipoprotein functions to circulate it throughout the body. Simply cholesterol in the blood is transported by lipoprotein into tissues and blood vessels. This type of lipoprotein is called Low Density. Lipoprotein (LDL) facilitates atherosclerosis, increasing LDL levels in the blood, the more piles of cholesterol in the walls of blood vessels. So that atherosclerosis is accelerated, conversely when High Density Lipoprotein (HDL) in the blood increases the better because HDL is atherosclerosis (Sithorus R, H, 2006: 16)

Atherosclerosis means blockage of arteries hardening in the heart due to a buildup of cholesterol levels caused by the low amount of HDL cholesterol and high amount of LDL cholesterol. HDL is a lipoprotein that has the highest density with the highest protein content and the lowest fat concentration (Adiyanto A1997: 65).

There are several risk factors that can cause dyslipidemia; age, smoking, family history, hypertension, obesity, alcohol consumption and consumption of certain drugs. One of the causes of decreasing HDL levels in the body is smoking; because the nicotine contained in cigarette smoke will stimulate the hormone adrenaline which consequently will disrupt fat metabolism which causes HDL levels in the body are decreased (Knight, J, K 1995: 19). Another factor is the use of hormonal contraception, where changes in fat metabolism occur due to the influence of hormones such as contraceptive users causing impaired lipid profile balance in the body or dyslipidemia so that long-term use of contraception can be a risk factor for atherosclerosis (Adam, 2003)

Therefore, this study will examine HDL cholesterol levels in both groups of respondents who have the risk of dyslipidemia. Respondents were taken in several areas in the City of Tasikmalaya by measuring cholesterol levels at the BTH STIKes Clinical Chemistry Laboratory using a photometer.

II. MATERIAL AND METHOD

Method

This research uses descriptive method, whereas the sample was taken from two groups of respondents who have a risk of dyslipidemia. The first group is fertile women who use hormonal contraceptive combination of 30 people. While the second group was taken from 25 smokers, they are respondents with the number of cigarettes smoked is more than 10 cigarettes per day. The sample taken was venous blood, then centrifuged and then separated and used for examination of HDL cholesterol levels.

Instruments and Materials

The instruments used in this study were Photometer, Spuit, Micropipette, Tip, Reaction Tube, Tube Rack and Torniquet. While the materials used in this study are

Alcohol Cotton, Plaster, Cholesterol Reagents, HDL Supernatant Reagents, Wipes and Serum Samples.

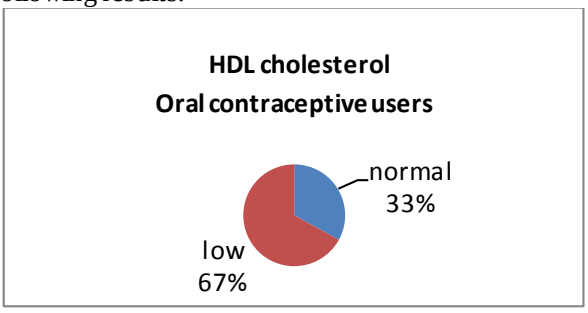
Work Procedures

The procedure was done by taking venous blood and centrifuging a clear light yellow layer at the top of the serum, immediately taken with a dropper pipette inserted to another clean and dry tube.

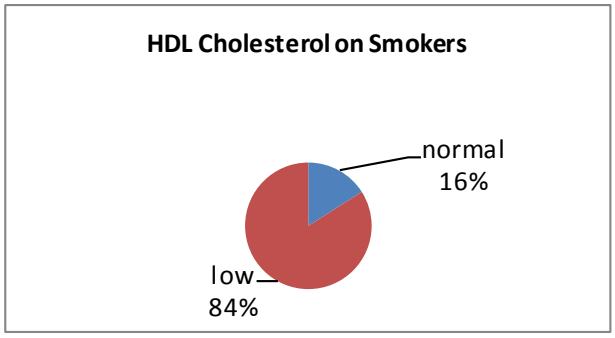
To examine of HDL levels was done by mixing serum with HDL reagents, incubating for 10 minutes at room temperature. Centrifuge for 10 minutes at 4000 rpm. After centrifuge, separate the clear supernatant from the precipitate in 1 hour and measure its HDL concentration by mixing the supernatant with cholesterol reagents, incubating for 5 minutes at 37 ° C or 20 minutes at 20-25 ° C . Measure the absorbance of the sample and their respective standards against the reagent blank in 60 minutes (ΔA), and calculate the concentration.

III. RESULTS

In this study cholesterol levels were examined in two groups of respondents at risk of dyslipidemia; the first groups were women whom using contraception, the following results:



Picture 1.
Percentage the Result of HDL Examination on Oral Contraceptive Users



Picture 2.
Percentage the Result of HDL examination on Smokers

IV. DISCUSSION

From the study that has been done on the group of oral contraceptive users, the results of normal HDL cholesterol levels were 10 respondents, while those who had low HDL levels were 20 respondents. The percentage obtained from the data above was normal as much as 33.3% and low was 66.7%. This is suitable to the theory that a decrease in levels of HDL (High Density Lipoprotein) can be caused by contraceptives containing steroid hormones namely estrogen and progesterone. Steroids which are proven to be effective in controlling reproduction, apparently also affect other physiological systems, including lipid metabolism (Glaciers and Gebbie, 2006).

Estrogen and progestin can affect the biochemical processes and physiological functions of the liver which are important organs in the metabolic process; the disorder is easy to occur in long-term use. One of the disorders in metabolism is a disturbance in fat metabolism where estrogen can increase cholesterol, triglycerides, HDL and LDL, while progestin decreases HDL (Sastrawinata, 2000).

In this study, the respondent taken was the length of use of the combined hormonal pill for a minimum of 6 months in a row. Because the results of previous studies indicate that the occurrences of hormonal changes are relatively permanent and can affect lipid metabolism only occur after being used for 6 months (Yen, 1999).

The results of the study in the second group of respondents or smokers obtained normal as much as 16% and low was 84%, where most of them are low. Cigarette contains nicotine and other components that facilitate the occurrence of atherosclerosis so that cigarette carries the danger of the tobacco content it produces. Then the nicotine contained in cigarette will stimulate the hormone adrenaline which will consequently change fat metabolism where HDL cholesterol levels will decrease. Adrenaline will also cause the stimulation of the work of the heart and narrowing of blood vessels (spasm).

IV. CONCLUSION

Based on the result of the study, the examination of HDL Cholesterol Levels in Oral Contraceptive Users and Smokers can be concluded that the majority of respondents have low HDL cholesterol levels.

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