



# Differences in Cholesterol Levels in Coffee Drinkers Without Sugar and Coffee Drinkers With Sugar in The Work Area

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**Abstract:** Indonesia is one of the coffee-producing countries as well as coffee bean exporters which ranks fourth in the world. Coffee is one of the most consumed beverages in the world which has become a major need for people without realizing it. Based on the results of previous studies that coffee drinkers using sugar can increase cholesterol levels. Excessive cholesterol in the body will accumulate in the walls of blood vessels and cause a condition called atherosclerosis, namely narrowing or hardening of the arteries. This condition is the forerunner of heart disease and stroke. This study aims to determine differences in cholesterol levels in coffee drinkers without sugar and coffee drinkers using sugar in the working area of Karang Pule. This research is an analytical observation using capillary blood samples of respondents who drink coffee without sugar and drink coffee with sugar. The data obtained in this study were recorded and presented in tabular form and analyzed descriptively. From the results of the study, it was found that the results of examining cholesterol levels in coffee drinkers without sugar were 15 people with an average cholesterol level of 169 mg/dl. Meanwhile, coffee drinkers using sugar were 15 people with an average cholesterol level examination of 242 mg/dl.

**Keywords:** Cholesterol; Coffee Drinkers; Sugar

## Introduction

Indonesia is one of the coffee-producing countries as well as exporters of coffee beans in the World which ranks fourth after Brazil, Vietnam, and Colombia (As'ad & Aji, 2020). Coffee is one of the most consumed beverages in the world. Since a few centuries ago, coffee has become a trading material, because coffee can be processed as a refresher of the body and mind which has unwittingly become a major need for people ranging from teenagers to adults who enjoy coffee as a drink to start the day and as a buffer for drowsiness (Khotimah, 2018; Darmayani, et.al., 2018).

The coffee drinking habits of Indonesians mostly use instant coffee and use added sugar or milk. However, some people do not use sugar or artificial sweeteners. Coffee without sugar is coffee that does not have a sugar content or mixture in the serving process. A cup of coffee without sugar does not contain

carbohydrates, protein, and calcium fiber even the caloric value of black coffee is zero calories so it stores a myriad of health benefits for the body (Prasetyo, 2020).

According to the *American Heart Association* (AHA), the safe amount of added sugar intake is 9 teaspoons (36 grams or equivalent to 150 calories) per day for men and 6 teaspoons (25 grams or equivalent to 100 calories) per day for women (Mamitoho, et.al., 2016; Sulistyowati, 2020; Selano, et.al., 2020). Coffee contains over a thousand molecules of different substances, including phenolic compounds, vitamins, minerals, and alkaloids. Caffeine, cafestol, kahweol, and chlorogenic acid are associated with lipid metabolism and may theoretically affect serum lipid profiles.

Clinical studies have reported the impact of caffeine or coffee on cardiac arrhythmias, liver function, serum cholesterol, and blood pressure (Zindany, 2017; Putri, 2022). Coffee drinking habits are correlated with various health problems, both beneficial and detrimental. Caffeine at low to moderate doses (50-300 mg) will

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increase alertness, energy, and the ability to concentrate. Consumption of caffeine in low doses has been shown to provide benefits. However, higher doses (> 300 mg). can cause anxiety, anxiety, insomnia, and tachycardia. Coffee consumption related to caffeine has long been known to increase cholesterol (Bistara & Kartini, 2018; Angga & Elon, 2021; Assegaf, et.al., 2021).

Cholesterol is a waxy fat produced by the liver. The body needs cholesterol to produce healthy cells and several hormones (Nuraeni & Erniyetty, 2022). Besides being produced by the liver, cholesterol can also be obtained from food. There are various components, such as triglycerides, phospholipids, free fatty acids, and cholesterol. In general, cholesterol serves to build walls inside cells (cell membranes) in the body (Munawaroh, et.al., 2019; Naim, et.al., 2019). The prevalence of high cholesterol levels (hypercholesterolemia) in the world is around 45%, in Southeast Asia around 30%, and in Indonesia 35% (Subandrate, 2019).

Risk factors that can affect cholesterol levels in the blood include heredity, age, sex, smoking, alcohol consumption, lack of consumption of vegetables and fruits, obesity, diabetes mellitus, *stress*, and excessive coffee drinking habits (Naraswari, 2020). Excessive cholesterol in the body will accumulate in the walls of blood vessels and cause a condition called atherosclerosis, which is narrowing or hardening of the arteries. This condition is the forerunner of heart disease and stroke ( Solikin & Muradi, 2020; Saputri & Lilfitriyani, 2021; Puspita & Fitriani, 2021).

## Method

This study is *Observational Analytic* by using capillary blood samples of respondents who drank coffee without sugar and coffee drinkers who used sugar. The data obtained in this study were recorded and presented in tabular form and analyzed descriptively.

## Result and Discussion

The results of cholesterol level examination from 30 samples of coffee drinkers obtained variations in cholesterol levels in coffee drinkers without sugar and coffee drinkers using sugar can be seen in the following table 1. In this study, results were obtained on coffee drinkers with high cholesterol levels and low cholesterol levels in coffee drinkers without sugar as many as 15 respondents with low cholesterol levels in coffee drinkers with average cholesterol levels of 169 mg/dl (Bhaktha, 2015; Lee, 2016; Kurnia & Malinti, 2020).

While checking cholesterol in coffee drinkers using sugar as many as 15 respondents obtained cholesterol levels with an average of 242 mg/dl (Krispila, et.al., 2022). According in Sihotang (2019) a study shows that 100-200 mg of caffeine (1-2.5 cups of coffee) every day is

the safe limit recommended by some doctors, but the amount differs from individual to individual and experts agree that 600 mg of caffeine (4-7 cups of coffee) or more every day is too much amount because caffeine overdose is dangerous and can kill (Winata, et.al., 2010; Melizza, et.al., 2021; Kristanto & Diyono, 2021).

**Table 1.** Data on the Results of Cholesterol Levels in Coffee Drinkers by Age

Blood Cholesterol Levels (mg/dl)			
Sample Code	Unsweetened Coffee Drinkers	Sample Code	Coffee drinkers with sugar
S1	123	S1	215
S2	145	S2	225
S3	164	S3	230
S4	161	S4	239
S5	149	S5	241
S6	158	S6	267
S7	176	S7	203
S8	188	S8	250
S9	171	S9	232
S10	191	S10	257
S11	177	S11	235
S12	186	S12	282
S13	182	S13	263
S14	155	S14	245
S15	167	S15	219
Average	169	Average	242

Based on the results of previous studies that coffee drinkers using sugar can increase cholesterol levels because the content in coffee, namely cafestol, and kahweol, can increase cholesterol levels by inhibiting the beta-oxidation mechanism to prevent the breakdown of cholesterol into energy (Diarti, et.al., 2016). Based on the results of interviews with respondents who drink coffee without sugar, some of them consume coffee without sugar because they have a history of diseases such as Diabetes Mellitus or Diabetes to reduce the risk of increasing cholesterol levels in order to still be able to consume coffee by not using sugar. While some of them who consume coffee do not use sugar because they do not want to remove the taste of the coffee itself and are more concerned with health (Bansal, et.al., 2014; Jember, et.al, 2017).

Lowering cholesterol levels in coffee drinkers without sugar occurs because coffee without sugar also has several health benefits, namely can lose weight, increase immunity, launch bowel movements, prevent cardiovascular disease, prevent cancer, reduce the risk of type 2 diabetes, reduce the risk of dementia, and reduce the risk of Alzheimer's disease (Amour, et.al., 2019). After all, coffee without sugar contains carbohydrates, lipids, nitrogen compounds, vitamins, minerals, alkaloids, phenolic compounds, and caffeine levels needed by the body (Rahma, et.al., 2022).

At an older age, total cholesterol levels are relatively higher than total cholesterol levels at a young age. This suggests that age can affect a person's total

cholesterol levels. In old age, the work of the metabolic system in the body will decrease, especially the function of the liver in cholesterol metabolism, as well as a decrease in the elasticity of blood vessels and a decrease in LDL receptor activity (Talumewo, et.al., 2018). Therefore, the process of formation and absorption of cholesterol in the body and from outside the body does not take place optimally (Diarti, et.al., 2016; Wahjoeni, et.al., 2016).

As a person gets older, physical activity also tends to decrease or lack of exercise. With less physical activity and exercise can allow in old age existing cholesterol can not experience a complete metabolic and burning process, in this case, the existing cholesterol accumulates in the blood vessels (Istiqamah, et.al., 2021). In addition, coupled with the consumption of coffee which according to several previous studies suggested that coffee consumption can increase levels of several types of blood lipids. Both of these can certainly increase the risk of cholesterol buildup in blood vessels known as atherosclerosis (Stanifer, et.al., 2016; Suci & Adnan, 2020).

Other factors that can increase cholesterol levels in coffee drinkers are not applying a healthy lifestyle and rarely exercising plus not paying too much attention to the food or drinks they consume, one of which comes from foods or drinks consumed such as processed coconut milk, foods that contain lots of oil, or sweet foods or drinks. And unwittingly can increase cholesterol levels (Naue, et.al., 2016; Tumanggor, et.al., 2022).

## Conclusion

In coffee drinkers without sugar, cholesterol levels were obtained with an average of 169 mg/dl. In coffee drinkers using sugar, the average cholesterol level results are more than 242 mg/dl. Coffee has a relationship with cholesterol because of the content in coffee, namely cafestol and kahweol which can increase cholesterol levels

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## Author Contributions

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## Conflicts of Interest

The author declares no conflict of interest

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