

EFFECTIVENESS OF USING MORINGA LEAVES AS AN ANTI-CHLESTROL INGREDIENT IN WOMEN

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Abstract

Moringa leaves are a plant that can be used to prevent and treat cholesterol. The increasing number of cholesterol sufferers must be taken seriously and addressed. Cholesterol sufferers are also found in Blang Weu Baroh Village, where the number of cholesterol sufferers is 126 people, with 30 suffering from hypercholesterolemia. This problem must be addressed. The community is unaware that Moringa leaves can be used as a medicine for hypercholesterolemia, with only 15% knowing the benefits of Moringa leaves. Therefore, researchers need to see the effectiveness of the use of Moringa leaves as an anti-cholesterol agent. The purpose of this study was to determine the effectiveness of the use of Moringa leaves as an anti-cholesterol agent in women in Blang Weu Baroh Village, Blang Mangat District, Lhokseumawe City. This study used a quasi-experimental design, namely conducting *pretest* and *posttest testing*, with a sample size of 30 people. The results of the study showed that the results of the *paired sample t-test* obtained a significance value of $0.000 < 0.05$, which means there is effectiveness in using Moringa leaves as an anti-cholesterol agent for women in the Blang Weu Baroh Village area. The community's cholesterol levels decreased by 18.7 mg/dL after being given Moringa leaves, so it can be interpreted that Moringa leaves are quite effective in reducing community cholesterol levels.

Keywords: Effectiveness, moringa leaves, cholesterol, non-pharmacological therapy, women

INTRODUCTION

As time goes by, people's lives have undergone significant changes. One of these is unhealthy lifestyles, which have led to various diseases, particularly those related to blood cholesterol levels. An unhealthy lifestyle, such as uncontrolled consumption of high-fat foods, is a major contributing factor. increased cholesterol levels (Safitri *et al.*, 2023). Elevated cholesterol levels are also known as hypercholesterolemia, a condition where cholesterol levels exceed the normal limit, which is >240 mg/dL. High cholesterol levels can increase the risk of atherosclerosis, which is characterized by the buildup of fatty plaque on artery walls. This results in blocked blood vessels, increasing resistance to blood flow, which then leads to increased blood pressure (Salwan *et al.*, 2022).

Uncontrolled cholesterol is a risk factor for various diseases, as high cholesterol levels have been shown to be associated with an increased risk of coronary heart disease, stroke, hypertension, and obesity. Cholesterol is estimated to cause 2.6 million deaths and 29.7 million disabilities annually, demonstrating that cholesterol is a major concern for the public (Karwiti *et al.*, 2022). Currently, the prevalence of hypercholesterolemia is still quite alarming, making it a serious concern and a major concern in the health sector. The prevalence of hypercholesterolemia in the world reaches 45%, in Southeast Asia the prevalence rate reaches 40%, and in Indonesia the prevalence rate reaches 35%. In Aceh Province, the prevalence rate of hypercholesterolemia was found to be 47.9%, and furthermore in one of the cities in Aceh Province, namely Lhokseumawe City, the prevalence rate of hypercholesterolemia reached 7.3% (Az-Zuhra *et al.*, 2024).

Cholesterol can be controlled in various ways. Besides improving your lifestyle through physical activity, managing cholesterol levels can be done using plants or herbs. Herbal plants are an alternative treatment option, in addition to making lifestyle changes for the better. They offer minimal risk and optimal results, and are believed to be effective in curing diseases (Husnayanti & Zahriah, 2021). One of the herbal plants that can be used to prevent and treat cholesterol is the Moringa leaf or known as *Moringa olifer L.* Moringa is a plant that is considered to have many benefits and is nicknamed a miracle tree, Moringa is believed to be able to lower cholesterol levels because it contains flavonoids, saponins, ascorbic acid, carotenoids, phenolics, alkaloids, and

antarkinones, which function to ward off free radicals of heavy metal cadmium and act as natural metal ion binders (Rahayuningsih & Agustin, 2023). The use of moringa leaves to reduce cholesterol levels is currently generally under-recognized. This is likely due to the limited public knowledge about their use as a cholesterol-preventing agent. As is known, people in almost every region of Indonesia experience high cholesterol levels, so awareness of moringa leaves should be increased.

One area where people also suffer from hypercholesterolemia is Blang Weu Baroh Village, Blang Mangat District. Based on initial observations, researchers found that there were 126 people with high cholesterol in Blang Weu Baroh Village, Blang Mangat District, with 87 women and 39 men. Meanwhile, 30 people in the village had hypercholesterolemia.

In addition, based on preliminary research, researchers conducted interviews and found that out of 10 people, only 3 people understood that Moringa leaves could be used as a treatment for hypercholesterolemia, while 7 other people did not know that Moringa leaves were an herbal plant that could prevent increased cholesterol levels. Based on this, it means that only 15% of the community group is aware of the benefits of Moringa plants, so this makes the people of Blang Weu Baroh Village not consume or use (behavior) Moringa leaves as an alternative treatment.

As is known, Moringa leaves are very easy to obtain by the community, especially rural communities, because there are definitely people who plant Moringa leaves and even these Moringa plants can grow by themselves, so it would be a shame if the people of Blang Weu Baroh Village do not know the benefits of Moringa leaves and do not use them as a treatment for hypercholesterolemia.

According to the *World Health Organization* (WHO), moringa leaves or *moringa oleifera* have many health benefits because they contain many antioxidants, nutrients, anti-inflammatory, phenolic and flavonoid compounds, and are a source of vitamin C, so WHO calls the moringa tree a *miracle tree*. WHO also states that moringa leaves can be used to lower cholesterol levels, overcome inflammation, increase good cholesterol, improve memory, maintain heart health, lower blood sugar levels, and several other benefits.

As supported by research conducted by Husna *et al.* (2023), Azis *et al.* (2020), and Sulistyowati *et al.* (2023) which stated that Moringa leaves were proven effective in reducing cholesterol levels, there was a difference after being given Moringa leaves, namely that cholesterol levels decreased compared to before being given Moringa leaves.

LITERATURE REVIEW

Moringa Oleifera, better known as Moringa leaves, is a type of shrub plant.

It grows to a height ranging from 7 to 11 meters. This plant has a tough but easily broken stem, sparse but sturdy branches, and a strong root system. When it flowers, it produces yellowish-white, triangular flowers (Sari *et al.*, 2021).

Moringa leaves are a type of plant with small, oval leaves arranged neatly in a compound cluster on a single stem. These leaves are often used as a food ingredient or traditional medicine. Physically, moringa leaves resemble katuk leaves, are green, and are rich in nutrients and protein, making them often used as a food ingredient (Winarno, 2018).

In general, the moringa plant grows as a shrub or small tree with strong roots and a relatively long lifespan. Its stems are upright, break easily, and have a rough surface with thin bark. Its branches grow sparsely. This plant produces yellowish-white flowers that bloom year-round and have a distinctive aroma. The fruit is long and triangular. The fruit of the moringa plant is approximately 20 to 60 cm long. When young, the fruit is green, but it turns brown as it matures (Nugrahani *et al.*, 2021).

The Moringa plant is known by various names, including *The Miracle Tree*, *Tree for Life*, and *Amazing Tree*. These nicknames stem from its numerous extraordinary benefits. Furthermore, Moringa leaves contain important substances that make them highly potential for use in the food, cosmetics, and industrial sectors (Tjong *et al.*, 2021).

Based on the explanation above, it can be concluded that Moringa leaves are part of a medium-sized shrub (7-11 meters) that has a hard but easily broken stem, sparse but sturdy branches, and strong roots. The leaves are small, oval, and arranged compound on the stalk. Physically, Moringa leaves are green and similar to katuk leaves. Moringa leaves are widely known as *The Miracle Tree*, *Tree for Life*, because they are rich in nutrients and protein. The content of important substances in them makes them very potential to be used in various fields such as food, cosmetics, and industry. These leaves are also often used as food ingredients or traditional medicine.

Cholesterol is a fatty compound present in every cell of the human body. In biochemistry, cholesterol is classified as a lipid, an element that is insoluble in water but highly soluble in fat. Cholesterol has a wide variety of functions, including building cell membranes, maintaining hormone production, and supporting digestion (Saras, 2023) .

Cholesterol is a type of fat with a waxy texture. Most cholesterol is produced by the liver, while the rest comes from foods such as egg yolks, chicken, seafood, and dairy products. Cholesterol obtained from food is processed through the digestive system into fat, which is then broken down into triglycerides and free fatty acids before being absorbed by the body through the intestines (Ruslianti, 2020) .

According to the Indonesian Ministry of Health (2019) , cholesterol is a type of fat produced by various cells in the body, with the majority being produced by liver cells. Although cholesterol is needed by the body to support healthy functions, excessively high cholesterol levels can increase the risk of heart disease, stroke, and circulatory system disorders. Therefore, it is important to have your blood cholesterol levels checked to detect these risks early.

Based on the explanation above, it can be concluded that cholesterol is a fatty compound (lipid) that is vital in every cell of the human body. Although insoluble in water, cholesterol is highly soluble in fat. Most cholesterol is produced by the liver, while the remainder is derived from dietary intake. Cholesterol has various important functions in the body, including building cell membranes, maintaining hormone production, and supporting digestion. However, it is important to remember that excessively high cholesterol levels can increase serious health risks, such as heart disease, stroke, and circulatory system disorders.

According to the Indonesian Ministry of Health (2024) , the factors that cause high cholesterol are as follows:

1) Foods Containing Fat

Excessive consumption of foods high in saturated fat, such as meat and dairy products, can cause cholesterol levels to spike. Approximately 10% of total daily calories typically come from saturated fat .

2) Lack of physical activity

Lack of activities such as moving will make cholesterol unbalanced and tend to rise. So it is recommended to do exercise to support daily activities.

3) Smoking habit

Smoking is known to lower good cholesterol (HDL) and increase bad cholesterol (LDL), especially in women. This negatively impacts heart and blood vessel health.

4) Excessive stress

Stressful conditions can trigger an increase in hormones such as corticosteroids. Excessive levels of these hormones can cause LDL cholesterol to build up in body tissues .

5) Drinks that contain a lot of alcohol

High consumption of alcoholic beverages can increase total cholesterol levels.

6) Family history

A family history of high cholesterol may indicate a genetic predisposition to elevated LDL (bad) cholesterol levels. This condition is known as familial hypercholesterolemia.

7) Risk of increasing cholesterol levels

being overweight , obesity, sleep apnea , diabetes, Thyroid disorders (hypothyroidism), lupus, HIV infection, chronic kidney disease, and polycystic ovary syndrome can potentially increase a person's risk of developing high cholesterol levels.

8) The influence of drugs

Certain medications can cause a spike in cholesterol levels. Examples include medications for heart rhythm disorders like amiodarone, beta-blockers, chemotherapy, diuretics, immunosuppressants like cyclosporine, and steroids and retinoids .

9) Age

High cholesterol levels generally begin to appear in individuals between the ages of 40 and 59. As we age, the liver's ability to process and remove LDL cholesterol can decline, but overall cholesterol levels can increase from an early age.

10) Gender

Men aged 20 to 39 are at higher risk of elevated cholesterol than women. Meanwhile, women who have entered menopause tend to experience a more significant increase in LDL cholesterol levels .

According to the Indonesian Ministry of Health (2019) , the methods or efforts that can be taken to prevent cholesterol are as follows:

- 1) Adopting a healthy diet
Reduce your intake of foods high in cholesterol and avoid alcoholic beverages. It's best to increase your consumption of vegetables, fruits, and fish .
- 2) Lose weight
Weight loss can contribute to lowering total cholesterol levels in the body.
- 3) Regular exercise
Physical activity plays a crucial role in helping lower cholesterol levels. It's recommended to exercise for 30-60 minutes daily, such as jogging, running, cycling, or swimming.
- 4) Stop smoking habit.
Smoking habits can increase the risk of coronary heart disease and accelerate the process of plaque deposition in the arteries.

METHOD

This research design is a quasi-experimental type, where the implementation method does not involve random subject assignment, but rather uses pre-formed groups. The approach applied in this quasi-experimental is a one-group pretest-posttest design, which means there is no comparison group. However, initial observations (pretest) are conducted to measure changes that occur after the intervention (posttest) (Notoatmodjo, 2018) . In this study, cholesterol levels were examined in people with cholesterol before being given Moringa leaves. Afterwards, the people with cholesterol were given Moringa leaves and cholesterol levels were examined again on the sample for further observation, namely:



Figure 1. Conceptual framework

A population is a group of subjects targeted in a study and helps researchers determine an appropriate sample. The population in this study consisted of women living in Blang Weu Baroh Village, located in Blang Mangat District, in Lhokseumawe City, who experienced hypercholesterolemia (high cholesterol levels). The number of individuals with this condition in the area was recorded at 30 people. The population size was determined based on data received by researchers from the local community health center and of course by establishing criteria, so that the population size was 30 people.

Sampling used *total sampling* , meaning all members of the population were used as the research sample. Therefore, in this study, the sample size was 30 respondents.

Table 1. Characteristics of research respondents

No	Respondent Characteristics	Criteria	Amount	Percentage (%)
1	Age	36-45 Years	2	6.7
		46-55 Years	13	43.3
		55-65 Years	13	43.3
		> 65 Years	2	6.7
Total			30	100
2	Gender	Woman	30	100
		Man	0	0
	Total		30	100
3	Last education	Elementary School (SD)	28	93.3
		Junior High School (SMP)	2	6.7
	Total		30	100
4	Work	Housewife (IRT)	30	100
Total			30	100

Based on table 1 shows that this study involved 30 respondents, whose ages were grouped into four categories: 36-45 years, 46-55 years, 55-65 years, and above 65 years. The age groups 46-55 years and 55-65 years constitute the majority of respondents, each contributing 13 people or 43.3% of the total respondents. On the other hand, respondents from the age groups 36-45 years and above 65 years are the least, with only 2 people each or 6.7% of the total respondents .

Furthermore, of the 30 respondents, all 30 were female, or 100%. There were no male respondents. This was because female respondents were more active and willing to undergo examinations than male respondents during the study, so no male respondents were found.

Furthermore, based on their highest level of education, the 30 respondents were divided into two categories: elementary school (SD) and junior high school (SMP). The most dominant respondents were those with an elementary school education (SD), totaling 28 respondents (93.3%). Meanwhile, only two respondents, or 6.7%, had a junior high school education.

Furthermore, based on occupational characteristics, all 30 respondents were found to be employed or housewives (IRT). In other words, 30 respondents, or 100%, were housewives. This is because all of the respondents in the study were female and predominantly over 45 years old, meaning they were unemployed and chose to be housewives.

Table 2. Comparison between before and after use of Moringa leaves

No	Characteristics	Amount	Minimum	Maximum	Mean
1	Cholesterol Level Before Using Moringa Leaves (mg/dl)	30	154	301	229.27
2	Cholesterol Levels After Consuming Moringa Leaves (mg/dl)	30	149	279	210.57

Based on table 2, it shows that from 30 respondents, it was found that the average cholesterol level of respondents before using Moringa leaves was 229.57 mg/dl with a minimum cholesterol level of 154 mg/dl and a maximum cholesterol level of 301 mg/dl. Meanwhile, the average cholesterol level of respondents after using Moringa leaves was 210.57 mg/dl with a minimum cholesterol level of 149 mg/dl and a maximum cholesterol level of 279 mg/dl. So the average difference in cholesterol levels before and after using Moringa leaves was 18.7 mg/dl.

Based on these results, it can be concluded that the cholesterol levels of the people in the Blang Weu Baroh Village area, located in the Blang Mangat District, in Lhokseumawe City, improved after being given or using Moringa leaves. This is because the community's cholesterol levels decreased between before and after treatment (the use of Moringa leaves). On average, the community's cholesterol levels decreased by 18.7 mg/dl. Although the decrease was not too large, the use of Moringa leaves can be said to be effective in lowering cholesterol levels or, in other words, can be used as an anti-cholesterol.

Next is the *paired sample t-test* . This test has decision-making criteria that can determine the research hypothesis. The following are the decision-making criteria for the *paired sample t-test* :

- If the significance value is <0.05 , then the hypothesis H_a is accepted and H_o is rejected, meaning that there is effectiveness in using Moringa leaves as an anti-cholesterol in women in the Blang Weu Baroh Village area . located in Blang Mangat District , in Lhokseumawe City.
- If the significance value is >0.05 , then the hypothesis H_a is rejected and H_o is accepted, meaning that there is no effectiveness in using Moringa leaves as an anti-cholesterol in women in the Blang Weu Baroh Village area . located in Blang Mangat District , in the City Lhokseumawe.

The following are the results of the *paired sample t-test* which can be seen in the table below:

Table 2. Paired Sample T-Test

Characteristics	Mean	t-table	Significance
Pair 1 Cholesterol Levels Before Using Moringa Leaves (pretest) and Cholesterol Levels After Using Moringa Leaves	18,700	5,184	0,000

Based on the data from table 5.3, the *paired sample t-test* shows a significance value of 0.000. Because this value (<0.05), the hypothesis H_a is accepted and H_o is rejected, indicating the effectiveness of using Moringa leaves as an anti-cholesterol agent in women in the Blang Weu Baroh Village area, located in the Blang Mangat District of Lhokseumawe City.

RESULTS AND DISCUSSION

A study of 30 respondents with high cholesterol in Blang Weu Baroh Village, Blang Mangat District, Lhokseumawe City, found that all respondents were women. This suggests that women are more likely to suffer from or have high cholesterol levels, possibly because they are more active and health-conscious, and therefore routinely undergo cholesterol checks without coercion compared to men. However, high cholesterol levels in women do not necessarily mean that men do not have high cholesterol; rather, their awareness of the need to have their cholesterol checked is still lacking.

Furthermore, based on age characteristics, it was found that residents of Blang Weu Baroh Village aged 46-55 and 55-65 years were the most likely to suffer from high cholesterol, with 13 people each, or approximately 43.3%, experiencing high cholesterol. This is because people at these ages experience physiological and lifestyle changes that often occur with age, making them more susceptible to high cholesterol levels. Furthermore, their metabolism also tends to decline, which can increase the risk of high cholesterol.

Increasing age has a high percentage of increasing cholesterol, because with increasing age metabolic risk factors decrease. This is because the aging process and the decline in physiological function that occurs with increasing age can reduce the effectiveness of the receptors that control cholesterol levels in the body. so that gg a will be more susceptible to an increase in high cholesterol levels (Swastini, 2021).

The respondents of the study came from all hamlets in Blang Weu Baroh Village, namely Ampera, Mesjid Baru, Lhok Mukminin, Mon Dua, and Mesjin Lama. The community with the most cholesterol sufferers were from Ampera hamlet, namely 8 respondents or 26.7%. This could be because the community from Ampera Hamlet is more numerous (crowded) and more active in carrying out routine checks so that the number of people suffering from cholesterol is more visible, however, this is certainly a positive thing because the community is willing to have regular health checks which will prevent the risk of greater disease in the future.

As research conducted by Syauby *et al.* (2020) stated that of 98 people who frequently undergo routine cholesterol checks, 60 of them, or 61.2%, knew that they had high cholesterol levels and knew that they suffered from or had cholesterol, while the remaining 38 people, or 38.8%, did not know that they did not have cholesterol because they did not regularly carry out health checks. Regular cholesterol checks help detect high cholesterol levels early, so that individuals can know their health condition and take appropriate preventive or treatment measures.

Furthermore, the community suffering from cholesterol in terms of education is dominated by people who only have an elementary school education (SD) level, namely 28 respondents or 93.3%. This is because lower education is more vulnerable to an increased risk of high cholesterol levels, due to lack of access to health information and not knowing healthy eating patterns, although low education does not directly cause an increase in someone's cholesterol, but higher education will make people's lives better because they have better knowledge so they can maintain their health more consciously and better.

Because all respondents were female and had an average age of over 46, the average occupation of all residents of Blang Weu Baroh Village who suffered from high cholesterol was housewives. Thirty respondents, or 100%, were unemployed and chose to take care of their households. This is likely due to menopause and changes in lifestyle and diet. After menopause, women experience a decrease in estrogen levels, which can increase high cholesterol levels. Therefore, the risk of developing high cholesterol increases and increases, so it's important to pay attention to your health and have regular check-ups.

Based on the results of the bivariate analysis, it was found that from 30 residents of Blang Weu Baroh Village, there was a difference in cholesterol levels before and after the use of Moringa leaves. Before being given the use of Moringa leaves, the average community cholesterol level was 229.57 mg/dl, while after being given the use of Moringa leaves, the average community cholesterol level was 210.57 mg/dl. The difference in cholesterol levels was 18.7 mg/dl, this indicates that the use of Moringa leaves can reduce community cholesterol levels. The cholesterol levels of the community in the Blang Weu Baroh Village area, Blang Mangat District, in Lhokseumawe City were better after or after being given or using Moringa leaves. Because the community's cholesterol levels decreased between before and after treatment (use of Moringa leaves).

research results are supported by Irwandi's research (2024) which states that moringa leaves are effective in managing cholesterol. After ten days of being given moringa leaf tea, the average cholesterol in the intervention group dropped from 275.6 mg/dl to 261.58 mg/dl, while the control group experienced an increase. These results indicate the effectiveness of using moringa leaves in reducing cholesterol levels, thereby preventing people from experiencing disease or other health problems. To see the effectiveness or ineffectiveness of the use of Moringa leaves as an anti-cholesterol, a paired sample t-test was conducted. Based on the results of the *paired sample t-test*, the significance value was 0.000, a value of $0.000 < 0.05$, which means that there is effectiveness in the use of Moringa leaves as an anti-cholesterol in women in Blang Weu Baroh Village, Blang Mangat District, Lhokseumawe City or in other words, the hypothesis H_a is accepted.

These results indicate that the use of moringa leaves is very effective in reducing cholesterol levels, making it suitable for use as an anti-cholesterol medication. The more frequently used moringa leaves are, the more controlled cholesterol levels will be, so it is highly recommended for people to use them regularly. Because moringa leaves contain compounds such as sitosterol, antioxidants, and flavonoids, which work by lowering LDL (bad) cholesterol and increasing HDL (good) cholesterol, they are quite effective as an anti-cholesterol medication. A study by Darmawan *et al.* (2020) corroborated these findings, showing a significant difference in cholesterol reduction in menopausal women who consumed moringa leaf capsules compared to the control group. The p-value before the intervention was 0.511 ($p > 0.05$), while after the intervention it decreased to 0.012 ($p < 0.05$), indicating a positive effect of the moringa leaf capsules. Irwandi's (2024) research confirmed that consuming moringa leaf tea has the potential to lower cholesterol levels in obese individuals. Average cholesterol in the intervention group dropped from 275.6 mg/dl to 261.58 mg/dl after ten days of drinking moringa leaf tea, while the control group experienced an increase. These results demonstrate the significant potential of moringa leaf tea in managing cholesterol, especially in obese individuals. The majority of cholesterol is produced by the body, with the remainder derived from food. An estimated 70-80% of cholesterol is synthesized naturally. High cholesterol levels increase the risk of heart disease, stroke, and circulatory problems. Moringa leaf tea is considered effective in lowering cholesterol, especially in the elderly and obese individuals.

Also supported by research by Oktavisa *et al.* (2022) which states that consuming moringa leaf tea is effective in reducing cholesterol levels in obese patients. Moringa leaves are effective because after treatment, differences in the effectiveness of moringa leaf tea in lowering cholesterol levels in patients with diabetes mellitus and obesity were demonstrated. Furthermore, the research is also supported by Zebua *et al.* (2021) which states that boiled moringa leaves have an effect on blood pressure in hypertensive patients. Administering 250 ml of boiled moringa leaves daily for 7 days will have an effect on blood pressure because the potassium content can relax blood vessels, reducing the heart's burden on pumping and circulating blood throughout the body, resulting in lower blood pressure. Next, it is also supported by research conducted by Dewi & Rakhmawati (2024) which states that there is a significant effect between Moringa leaf tea on reducing random blood sugar levels (GDS) in diabetes mellitus patients at the Palimanan Community Health Center, Cirebon Regency in 2024. before giving Moringa leaf tea therapy was 246.04 mg/dL and the average random blood sugar level (GDS) after giving Moringa leaf tea therapy was 188.50 mg/dL. The average reduction in random blood sugar levels (GDS) obtained from this group was 57.542 mg/dL. With the results of the *paired sample t-test*, the *Sig- (2-tailed)* value was $0.000 < 0.05$

According to researchers' assumptions, excess cholesterol levels in the body can have a negative impact on health. High cholesterol can lead to plaque buildup in blood vessels, disrupting blood flow, particularly in the veins, which is the most common cause of coronary heart disease and stroke. The effects of elevated blood cholesterol are so dangerous that it's recommended to have regular health checks, such as cholesterol tests. Because this can help determine whether your cholesterol levels are high, if you're concerned, it's best to regularly consume moringa leaves or drink processed moringa leaf products to control your cholesterol levels, which can ultimately prevent other health-threatening diseases

CONCLUSION

Based on the results of the research and discussion, the conclusion of this study is that the use of Moringa leaves that have been given to cholesterol sufferers in Blang Weu Baroh Village, Blang Mangat District shows effective results, proven by the results of the *paired sample t test*, the significance value is $0.000 < 0.05$, which means that there is an effectiveness of the use of Moringa leaves as an anti-cholesterol in women in Blang Weu Baroh Village, Blang Mangat District, Lhokseumawe City. Before being given Moringa leaves, the average cholesterol level was 229.57 mg / dl, while after being given Moringa leaves the average cholesterol level was 210.57 mg / dl, so this shows that cholesterol levels decreased by 18.7 mg / dl. Moringa leaves are quite effective and can be used as an anti-cholesterol, because Moringa leaves have many benefits that can prevent an increase in cholesterol so that women in Blang Weu Baroh Village can take advantage of the use of Moringa leaves as an anti-cholesterol drug.

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