



Case Report: Effect of Ajwa Date Consumption on LDL Levels in Perimenopausal Women

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Article Info

Article history:

Received 18 May 2024

Received in revised form 17 June 2024

Accepted 6 July 2024

Keywords:

Ajwa Dates

LDL Levels

Perimenopausal Women

Abstract

During perimenopause, there can be a decrease in estrogen production, which indicates the end of a woman's reproductive years. The production of the hormone estrogen that continues to decrease will cause hypercholesterolemia. Decrease in LDL cholesterol levels can be increased by giving antioxidant properties, which are rich in vitamin C and contain flavanoids and phenolics that function as antioxidants. The method used in this study is Literature Review with Design Narrative Review. The result from the literature it was found the effect of giving ajwa dates (*Phoenix Dactylifera L*) before and after administration showed a change, namely a decrease in LDL levels after giving ajwa dates. This is because ajwa dates contain flavanoids, phenolics, and plant sterols that function as antioxidant that can prevent the formation of lipid peroxidation. The conclusion based on the results of the literature review, it can be concluded that giving ajwa dates to perimenopause women decreased LDL levels where ajwa dates have antioxidant functions to prevent lipid peroxidation to reduce LDL. The suggestion from the study is necessary to conduct further research on the effect of consumption of ajwa dates on LDL levels in perimenopause women using experimental methods of pretest and posttest design.

Introduction

Perimenopause is a term that can encompass the years during the menstrual cycle that develop from regular ovulation and a pattern that can predict becoming irregular and further increasing the anovulatory cycle until finally menstruation stops. Starting with the first onset of menstrual irregularities and ending after 1 year amenorrhea occurs by determining the last menstrual period (FMP). There are two stages of perimenopause, namely the initial transition where the cycle is mostly regular with few interruptions and the second stage is the final transition where amenorrhea becomes longer and lasts at least 60 days until the Final Menstrual Period (FMP). Women who had perimenopause at the time of first reporting frequent symptoms had the longest duration (median > 11.8 years) and post-Final Menstrual Period (median 9.4 years). There are some who disagree that mood swings are a response to hormonal fluctuations during perimenopause (Santoro, 2016; Taylor et al., 2020).

The perimenopause period generally starts at the age of 40. The population census conducted by the Central Statistics Agency shows that the life expectancy of elderly women increased

from 54 years in 1980 to 65 years in 2000. The Central Statistics Agency stated that the number of elderly women is greater than that of men, especially because it is 52.42%. As a result, older women are more likely to experience health problems, such as an increase in menopause-related complaints (Huff et al., 2023; Kuntarti et al., 2017).

Estrogen production will decrease during perimenopause, signaling the end of the reproductive cycle. A continuous decrease in the production of the chemical estrogen will lead to hypercholesterolemia. Fatty streak is the result of the accumulation of Low Density Lipoprotein (LDL) cholesterol on the artery walls, and atherosclerosis is the result of oxidation. With the help of the enzyme Lecithine Cholesterol Acyltransferase (LCAT), High Density Lipoprotein (HDL) will return to the liver and convert cholesterol into cholesterol esters. These cholesterol esters will then be transferred to other lipoproteins through the intermediate Cholesterol Ester Transfer Protein (CETP). The lipoprotein particles will carry cholesterol esters to the liver (Delamater & Santoro, 2018; Huff et al., 2023; Kuntarti et al., 2017).

Antioxidants can help lower LDL cholesterol levels more effectively. In addition to repairing some of the damage caused by free radical attack, these antioxidants are able to prevent the formation of lipid and oxidizing peroxidation. Prevention of exogenous cancer can also be obtained from nutrients, one of which is L-ascorbic acid. This is due to the fact that vitamin C keeps LDL levels within the normal range. In addition, vitamin C is an antioxidant that helps hydroxylation reactions that lead to the formation of bile salts. Increased bile salt production will lead to an increase in cholesterol release so that it can lower low cholesterol levels. Low Thickness Lipoprotein (LDL) or bad cholesterol if found in the blood is in tons so that it causes fat stores to accumulate in the hallways so that blood flow becomes limited. There are two ways to check LDL cholesterol: the direct method and the indirect method. HDL fat and cholesterol levels are actually seen early on and then determined using Friedewald's recipe (Eisenberg, 1983; Rahmani et al., 2014; Khalid et al., 2017; Djasang, 2017; Hapsari & Kusumastuti, 2014).

Ajwa dates (*Phoenix Dactylifera* L) are one of the fruits that have antioxidant compounds and are rich in vitamins. The results of the research by Royani et al. (2019) show that ajwa dates have many properties such as some hepatoprotective agents, antioxidants and prevent cardiovascular diseases. It was revealed that the highest levels of phenol were found in ajwa dates. However, the potential of ajwa dates is not fully explained in pregnant women. Magnesium and calcium can be increased by consuming ajwa dates. These two compounds are minerals that play a role in controlling muscle contractions, blood pressure, and normal heart rhythms. Potassium also has a function as the main regulator of blood vessels to maintain the elasticity of the artery walls to prevent damage to blood vessels due to high blood pressure. Ajwa dates contain high potassium and low sodium which is suitable for someone with hypertension. Then the magnesium in ajwa dates also functions to activate the Na^+ pump which results in a decrease in diastolic blood pressure (Royani et al., 2019).

Ajwa dates are the most commercially important crop in the hot and dry tropics of the world, especially Indonesia and also other countries including Saudi Arabia, the Emirates, and Egypt. In these countries, dates are commonly used for human consumption such as a mixture of cosmetic, pharmaceutical or medicinal ingredients, carpentry and firewood. Dates are also commonly used for consumption in animals. Many date palms are known but until now only a few have been evaluated for their nutritional qualities and chemical composition. Ajwa dates (*Phoenix Dactylifera* L) have nutritional and therapeutic significance. Ajwa dates are a rich source of sugar, vitamins, minerals, and fiber (Musa, 2018; Nurul, 2020).

This date has antioxidant and antimutagenic properties have been done and it was found that the total phenolic content ranges from 172 to 246 mg of gallic acid or 100g in 3 varieties of dates grown in Oman. As a result of another study from Yousif et al., they have observed that

dates have high levels of vitamins such as ascorbic acid (2.4 to 17.5 mg or 100 grams), thiamine (0.08 to 14 mg or 100 grams) and riboflavin (0.13 to 17.5 mg or 100 grams) (Ulya, 2018).

Dates are rich in fiber foods (6.4% to 11.5%) which will further increase the nutritional value and therapeutic usefulness of the extract in dates also shows antifungal and antibacterial properties. The importance of date nutrition is that studying some of the composition and nutritional qualities is increasingly known as a viable task. Referring to the above mistakes, it is necessary to conduct research on the effect of giving ajwa dates (*Phoenix Dactylifera L*) on LDL levels in perimenopausal women. The study aimed to find out whether ajwa dates have a good effect on LDL levels in perimenopausal women (Tyas, 2018; Simatupang et al., 2018).

Methods

This study uses a descriptive method with a case study approach to examine the effect of Ajwa date consumption on LDL levels in perimenopausal women. The subject of the study was women aged 45-55 years who were in the perimenopausal phase. Measurements are carried out using standard laboratory equipment to ensure the accuracy of the data obtained. In addition, semi-structured interviews were conducted to understand the physical activity of the participants to control other variables that might affect the results of the study.

Data analysis was carried out by comparing LDL levels before and after the intervention using a descriptive analysis method. The data obtained were analyzed to see changes in LDL levels individually and overall. The results of each subject were interpreted descriptively to understand the variation in response to Ajawa date consumption. The findings from this study are expected to provide insight into the potential of Ajwa dates as a natural intervention in managing LDL levels in perimenopausal women, as well as be the basis for further research with larger samples and more complex study designs.

Case Study: A 47-year-old woman came to RSIA Sitti Khadijah 1 Makassar with complaints of irregular menstruation since 3 months ago. Patients complain of experiencing dysmenorrhea during the menstrual cycle. Results of anamnesis: last menstruation 2 weeks ago, Hot Flush absent, palpitations present, insomnia absent, and psychosomatic disorders sometimes. The patient also felt that the complaint interfered with the patient's activities, where in addition to doing household activities, the patient was also a civil servant. The history of IUD insertion is approximately 2 years and has been revoked since 15 years ago. Now patients do not use birth control. History of abortion 1 time during the third pregnancy. A history of hypertension, diabetes is denied by the patient. The same family history of illness is denied. Medical history denied.

The results of the physical examination obtained the consciousness of the mentis compos, vital signs were obtained blood pressure: 100/90 mmHg, pulse: 85x/min, respiration: 24x/min, temperature 36.9 oC, weight: 74 kg, height: 147 cm, BMI: 34.7 kg/m², nutritional status obesity 2. Based on the results of the supporting examination, the results of LDL cholesterol levels: 145 mg/dL, HDL cholesterol: 59 mg/dl, and total cholesterol: 209 mg/dl were obtained.

Result and Discussion

A 47-year-old woman has experienced erratic periods for the past three months. Dysmenorrhea during menstruation is a patient's complaint. In addition, patients report that the pain in their neck fluctuates and sometimes improves as they rest. On the physical examination, it was found that the consciousness of the mentis compos, as well as the following vital signs: blood pressure 100/90 mmHg, pulse rate 85 times per minute, respiratory rate 24 times per minute, temperature 36.9 oC, body mass index of 34.7 kg/m², nutritional status of obesity 2. Based on the results of the supporting examination, the results of LDL cholesterol levels: 145 mg/dl, HDL cholesterol: 59mg/dl, and total cholesterol: 209 mg/dl were obtained. The above case is in

accordance with the theory that women in perimenopause can experience hypercholesterolemia.

Dates contain plant sterols and flavonoids (polyphenols) which are hypolipidic agents that can lower lipid levels. The sterol content of plants reduces body lipids by reducing cholesterol absorption and increasing cholesterol excretion through feces. Dates increase the catabolism of liver cholesterol into bile acids by stimulating the liver microsomal cytochrome P450. The activity of lipoprotein lipase, which converts triglycerides into fatty acids, is also associated with increased activity. So that cholesterol and fat levels will be reduced. Dates contain plant sterols and flavonoids (polyphenols) which are hypolipidic agents that can lower lipid levels.

The sterol content of plants reduces the absorption of cholesterol and increases its elimination from feces, thereby reducing body lipids. Dates stimulate the cytochrome microsomes of the liver P450 thereby increasing the catabolism of cholesterol into bile acids in the liver. The activity of lipoprotein lipase, which converts triglycerides into fatty acids, is also associated with increased activity. So that cholesterol and fat levels will be reduced.

The flavonoid content of dates plays a role in lowering blood LDL levels, including (1) changing lipid metabolism through the binding mechanism between the P450 enzyme and bile acids, thereby increasing the excretion of cholesterol and bile acids. Increased activity of Lecithin Cholesterol Acyl Transferase (LCAT) which forms cholesterol esters is then channeled to the liver through the rest of VLDL, IDL, or LDL, resulting in a decrease in blood lipid levels. It can also directly activate LDL receptors. The results of this study were that patients were asked to consume ajwa dates and assessed their blood cholesterol levels. Reduction in LDL cholesterol levels by giving ajwa dates as many as 49 grains for 1 week on July 22, 2021 then given again as many as 49 grains for 1 week on August 5, 2021 then given again as many as 49 grains for 1 week on August 12, 2021 so that the LDL cholesterol result was obtained which was 64.4 mg/dl. Where it can be said that the patient's LDL cholesterol level decreases. This is in accordance with the theory that the flavonoid content in ajwa dates can lower blood cholesterol levels.

Conclusion

Based on the results of the study, it can be concluded that date hypophilidemic agents such as plant sterols and flavonoids (polyphenols) can reduce lipid levels, so that ajwa dates have an effect on LDL levels. This impact occurs when ajwa dates are given to someone. The content of plant sterols lowers the body's cholesterol by reducing cholesterol absorption and increasing cholesterol excretion through feces.

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