

Effect of Date Fruit ‘Ajwah’ in Seven Number and Six Number to Blood Glucose in Female Adolescent

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Abstract. Ajwah dates are commonly consumed by Prophet Muhammad. In hadith mentions the virtue of consuming Ajwah dates in an odd number of 7 dates. This research was conducted to determine the effect of date in introduction of odd number (7 dates) and even number (6 dates) to blood glucose. There 2 group was divided in this research group 1 was consuming Ajwah dates in odd number and group 2 was consuming Ajwah dates in even number. Sample was taken consecutive sampling, there were 20 respondents. Respondents fasted for 12 hours from 20.00 to 08.00. Respondents would be taken fasting blood glucose and then given Ajwah dates to be consumed. Subsequent intake of blood glucose in the 30 minutes, 60, 90, and postprandial blood glucose (120 minutes). The results showed that the average fasting blood glucose group 1 is 70.90 ± 8.77 and group 2 is 70.70 ± 10.45 , while on blood glucose postprandial (minute 120) group 1 is 66.50 ± 13.73 and group 2 is 76 ± 13.25 . Postprandial blood glucose in group 1 indicates it should not wait for 2 hours to consume other types of food because before 2 hours, blood glucose has dropped beyond fasting blood glucose.

Keywords: Ajwah dates, Fasting Blood Glucose, Postprandial blood glucose 2 hours after meal.

1. Introduction

Fruits are one type of food which is highly recommended by WHO for human consumption. One fruit that is recommended for consumption is the Ajwah date palm. Ajwah date is a fruit that is widely cultivated in the Al Madinah region of western Saudi Arabia which has nutraceutical properties for human health (Khalid et al., 2017). The nutritional content of dates includes carbohydrates, glucose, fructose, sucrose, magnesium, calcium, phosphorus, folate, protein, iron, vitamin A, thiamine (B1), riboflavin (B6), niacin (B3), niacin (B3), pantothenic acid (B5), pyridoxine (B6) and folic acid (B9) (Al-alawi et al., 2017)

Based on previous studies showed that the largest component of carbohydrates in Ajwa dates is sugar amounting to 77% consisting of 0.5% sucrose, 34.5% glucose and 25.6% fructose. The total sugar content in 100 grams of Ajwah is 74.3 g which is included in the high category (Khalid et al., 2017), but based on the results of the study AlGeffari et al (2016) shows that

the levels of the Ajwah date palm glycemic index are relatively low (55, 9). The results of the study showed that the consumption of ajwah dates did not cause a significant increase in the glycemic response and concentration of blood glucose levels. Blood glucose level is the amount of glucose in blood plasma which is the main substrate for energy production during the perinatal, neonatal and postnatal periods (Dorland, 2010) (Güemes et al., 2015). The risk of high blood sugar levels in women is 2.95 compared to men (Pibriyanti & Hidayati, 2018).

Based on Ruslan's study (2015) showed that Ajwah has the same benefits and advantages as brown rice which can reduce blood glucose levels and inhibit glucose absorption so that it helps in controlling blood glucose levels in people with Diabetes Mellitus (DM). The results of the study (Indrayani et al., 2018) showed that the consumption of Ajwa dates based on the advice of the Prophet Muhammad was consumed in odd amounts. As narrated by Bukhari from Murajja bin Raja 'said; *"Ubaidullah has told me that Anas said, the Prophet SAW eaten some dates with odd numbers"* (Hadith narrated by Bukhari no. 990). Ajwah consumption is recommended in odd numbers such as 1, 3, 5 or 7 because Allah SWT likes odd numbers.

Febrianti's study (2018) showed that there was no significant difference between the consumption of Ajwa dates with the number of dates 3, 5, and 7 pieces and delivery date on pregnant mice of 7 pieces is the most optimal dose to prevent the increase in blood sugar levels, as in the hadith of the Prophet Muhammad also suggested to consume 7 dates as narrated by Bukhari and Abu Daud from Amir bin Sa'd bin Abu Waqqash that the Prophet (SAW) said *"anyone who consumes 7 Ajwah dates in the morning, then he will not be exposed poison or magic on that day"* (Hadith narrated by Bukhari no. 5025 and Abu Daud no. 3378) (Indrayani et al., 2018). Based on this background, this study wants to prove whether there are significant differences in odd and even numbers, especially in the amount of 7 pieces and 6 pieces.

2. Methods

This research was held in the Nutrition Laboratory of University of Darussalam Gontor in November until December 2019. The population were student of University of Darussalam Gontor for Girls. The samples were taken by 10 people in each group. There were 20 female student collage gained. Sample was taken consecutive sampling method

The research draft to be used by researchers was experimental. In research, the collected data was a variable related to fasting blood glucose and postprandial. The results of this study in the form of blood sugar charts ranging from fasting blood glucose and postprandial blood sugar 2 hours after meals. Measurement of blood glucose was started by 0, 30, 60, 90, 120 minutes (Istiqomah & Rustant, 2015).

In the respondents conducted anamnesis which includes self-identity, history of the disease, measurement of body weight and height. Respondents who have fulfilled all the criteria of inclusion and are willing to follow this research then fill in the Informed consent sheet.

The criteria inclusion are:

1. Under normal conditions seen from vital conditions.
2. BMI18.5-22.9 (based on Asia Pasific Standart).

3. Not being consumed or using certain medications such as insulin and oral hypoglycemic drugs.
4. Fasting blood glucose 70-110mg/dL (Sutedjo, 2009).

Exclusion criteria:

1. Suffer from chronic pain such as chronic kidney, diabetes mellitus, chronic heart and so on during interventions.
2. Has an allergic history to test food

Tools and material were used in this study is SF 400 10 kg digital kitchen scales was the scales used to weight Ajwah dates. Blood glucose intake using glucometer and blood glucose strips with the Easy Touch brand GCU. Respondents measured the weight of the electric body scale with the accuracy of 1 digit behind a comma. The respondent's height were measured using a microtoa with a General Care brand and a long accuracy up to 200 meters. Ajwah Date used to be bought from Riyadh, Saudi Arabia. Ajwah dates stored in the refrigerator with a temperature 10 degrees celsius. Before given to the respondent, the date of Ajwah removed in advance the seeds, then weighed and inserted into small plastic according to the number of dates, then distributed to each responden. This research has been through the level of ethical licensing of research in the dr. Moewardi's hospital, Surakarta No: 1.262/ XII/HREC/2019

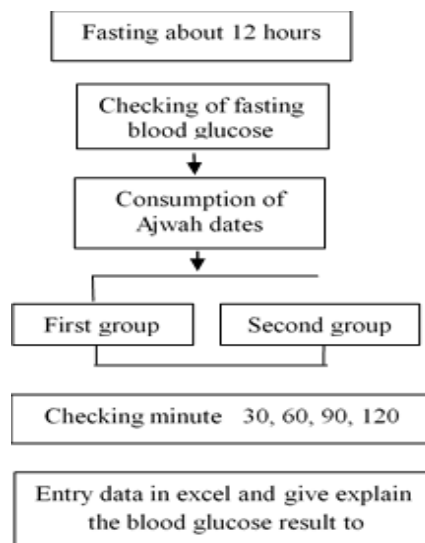


Figure 1. Research Flow

Data is presented in form of quantitative analysis. Data obtained in the form of ratio data and will be first tested using the normality test using Shapiro-Wilk. If the data is a normal distribution, it will be followed by a homogeneity test. After that, the data is homogeneous then done data processing using the One Way Anova to know the difference of each group.

3. Result and Discussion

2.1 Result

Table 1. Characteristic of Subject

Variable	Mean	Max	Min	n	%
Age	19,79 ± 1,68	23	18	20	100
Odd number	44,90 ± 1,85	48	43	10	50
Even number	38,40 ± 1,57	40	36	10	50
BMI	21,09± 1,10	22,9	19	20	100

According to Table 1 the average of respondents was 19 years, and was dominated by 18 years old respondents, there are 6 person. The difference in weight of dates on odd number and even number is 6,5 grams. The average of Body Mass Index (BMI) is 21,09, and it was categorized by normal nutritional status based on Asia Pasific.

Table 2. The Average of blood glucose checking and ANNOVA test results according to nutritional status

	FSG (mg/dl)	30' (mg/dl)	60' (mg/dl)	90' (mg/dl)	PP (mg/dl)
G1	70,90 ± 8,77	114,20 ± 25,24	79,80 ± 12,65	73,40 ± 13,45	66,50 ± 13,73
G2	70,70 ± 10,45	96,90 ± 25,98	81,30 ± 13,08	71,10 ± 18,75	76 ± 13,25
<i>Sig.</i>	0,964	0,148	0,797	0,756	0,133

According to Table 2, group 1 has a fasting blood glucose higher than postprandial blood glucose, while group 2 have a fasting blood glucose lower than postprandial blood glucose. Data showed that the high of blood glucose was in minute 30, which the blood glucose increased after consumed Ajwah dates. Difference between fasting blood glucose and postprandial blood glucose in group 1 is 44,4 mg/dl, in group 2 is 5,3 mg/dl.

Data from each group is tested normality using Shapiro-Wilk obtained the results that the data of the was normal and homogeneous because $p > 0.05$. The analysis continued using the One Way ANOVA test. The results of the ANOVA test showed that there was no significant difference in blood glucose examinations between the group because $p > 0.05$.

2.2 Discussion

The range of respondent age in this study was 18-23 years old which known as adolescent. At those age is known to occur in the mass of fat-free tissues and increase in fat tissue mass. Age alteration is related to increased distribution of fat tissue marked increasing the size of one's waist circumference (Tchernof & Després, 2013). The use of dates in odd number has been studied by Febrianti *et al* (2018), which uses an extract of the date of fruit meat Ajwah 3 dates, 5 dates, 7 dates. Obtained the result that the lowest blood glucose and optimal in decreasing blood glucose after the administration of the date Ajwah extract contained in the group given in the number of 7 dates (dose 7.28 mg/kg weight).

The results of the analysis using the One Way ANOVA test showed that there is no significant difference between both of groups in blood glucose. This is due to the difference between dates is only 8-12 grams, so it does not pose a meaningful difference in blood glucose levels in both fasting blood glucose and postprandial blood glucose after meals. It relates to the glycemic index of food. That dates Ajwah with 50 g carbohydrates have a moderate glycemic index 55.9 (El-mergawi *et al.*, 2018).

Another study conducted by AlGeffari *et al* (2016) that 17 varieties of dates grown in Saudi Arabia once of them is Ajwah dates has a glycemic index 55,9 and glycemic load 8,5 or equivalent with 50g of carbohydrate. And it will informed to diabetic or health people to controlled their diet. Ajwah dates coterogised by medium range. According to food ingredients exchanger, 3 dates or equivalent to 15 g have a carbohydrate of 12 g (Damayanti *et al.*, 2017). Thus, when the consumption of dates in odd and even quantities according to the study amounted to 30-40 grams of Ajwah dates or equivalent to 37.5-40 grams of carbohydrates.

On the curve described by Kholidha *et al* (2017) in his research that the increase in blood glucose did occur in the 30 minute and will return down in minutes to 120 or 2 hours after food consumption. The Association of Indonesian Endocrinology or in Indonesia called (PERKENI) and American Diabetes Association (ADA) use the benchmark < 70 mg/dl in diabetics mellitus and in non-diabetic individuals symptoms of hypoglycemia will arise when blood glucose levels < 55 mg/dl. Can be concluded that the respondent involved in the study is not hypoglycemi, because postprandial glucose > 55 mg/dl (Mansyur, 2018).

Researchers advise to immediately consume other types of food before 2 hours after consuming dates to avoid postprandial hypoglycemia 2 hours after eating. So, without having to wait 2 hours after the consumption of dates in lowering blood glucose, respondents could consume other types of food. This is the causes an odd number of dates ajwa in the number of 7 grains have the biggest increase when compared with an even number of 6 grains (see Table 7) but will decrease in minute 90 so, respondents can eat the other type of food without afraid in increasing blood glucose.

4. Conclusions

According on this study, there were no significant differences between respondents who consumed Ajwah dates in odd number and even number to blood glucose, because $p=>0,05$.

But if consumed in odd number, without waiting until 2 hours for eating the other type of food, in minute 90

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