

## Carbohydrate Content in Date Milk Juice (*Phoenix dactylifera* L.) to Facilitate Childbirth

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### ABSTRACT

Providing adequate nutrition is the main factor apart from other factors that supports a smooth delivery process. The nutritional needs of mothers in labor can be met by providing nutrition in the form of liquids that are easily digested and quickly absorbed into energy, delicious, practical, and suitable for the condition of the mother who is about to give birth. One way is to provide birth nutrition drinks in the form of juice. The aim of this research is to identify the carbohydrate content in date milk juice (*Phoenix dactylifera* L.) as an alternative effort to fulfill the energy needs of mothers in labor to facilitate labor. The method used is descriptive quantitative with a laboratory experimental approach to determine the carbohydrate content in date milk juice. The results of the carbohydrate content test carried out showed that 100 ml of date milk juice had a carbohydrate content of 51.83% and the analysis of carbohydrate content used the luff school method. It is hoped that the high carbohydrate content in 100 ml of date milk juice will provide energy and nutrition during labor so that it can help facilitate delivery.

**Keywords:** Carbohydrates, Childbirth, Date milk juice

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### INTRODUCTION

Childbirth is a normal process characterized by uterine contractions which cause significant cervical dilatation accompanied by the expulsion of the fetus and placenta from the woman's body (Azis et al., 2020; Begley et al., 2019). The birthing process requires a lot of energy and stamina, so additional energy sources are needed from outside the body which can help conserve the use of glycogen stores during labor (Giugliano et al., 2008).

Nutritional intake is prioritized to meet the energy needed for uterine contractions. The active phase of the first stage of labor involves a lot of energy, so the nutritional needs of the first stage need special attention from the birth manager (Pascawati et al., 2019). Nutrition for mothers giving birth, especially in the first stage of labor, can be obtained from foods that contain high levels of energy sources (Kamaruddin et al., 2019).

One fruit that contains quite a lot of energy is dates which contain fructose and glucose, all of which are sources of energy that are easily absorbed by the body (Kamaruddin et al., 2019). Dates contain lots of carbohydrates, affecting the progress and spontaneity of labor and reducing postpartum bleeding. Dates are a fortifying fruit that is rich in carbohydrates. These carbohydrates are simple sugars, absorbed and used by cells shortly after consumption. Dates also contain B vitamins, the minerals iron, calcium, magnesium and potassium. Currently, various studies have been carried out on different varieties of date fruits and their many nutritional and health benefits have been determined (Kordi et al., 2014).

Simple carbohydrates such as fructose and glucose are ketose and aldose sugars, each of which has different chemical structures and metabolic patterns. Both are monosaccharides with a tendency to burn quickly. Glucose is quickly metabolized and absorbed into the circulatory system to provide energy, but this energy is quickly burned out, while fructose absorption is slower and requires a longer metabolic stage before being converted as an energy source (fructose is released slowly into the bloodstream to produce sustainable energy, improving and maintaining homeostasis) (Mariyam & Mary, 2015; Astuti et al., 2014; Bogdanov et al., 2008; Etebu & Nwauzoma, 2014; Gutiérrez et al., 2008; Jahurul et al., 2015).

Apart from being high in carbohydrates, dates contain saturated and unsaturated fatty acids such as oleic, linoleic and linolenic acids. Fatty acids in addition to providing and reserving energy, contribute to the provision of prostaglandins. Therefore, dates can help save energy and strengthen the uterine muscles. It also contains hormones that help the uterus stretch and prepare for child birth (Kordi et al., 2014).

Providing adequate nutrition is the main factor apart from other factors that support a smooth delivery process, such as the mother's psychological factors, condition of the birth canal, condition of the fetus, support from birth companions and the mother's position during delivery. Lack of nutritional intake during labor can reduce blood glucose levels, cause muscle fatigue which is characterized by high levels of lactate in the blood, and inadequate uterine contractions. Lack of nutritional intake during the birth process can have detrimental effects on both the mother, baby and the progress of labor (Maharaj, 2009).

Energy requirements in labor are assumed to be similar to energy requirements for continuous moderate aerobic exercise. From several existing research journals, the energy needs of mothers in labor have been estimated at 50-100 kcal/hour (Malin et al., 2016). Rahmani et al., (2012) in their research stated that an average level of carbohydrate intake of 47 Kcal/hour can prevent ketosis.

Maternity mothers basically still need all the nutrients they need in general, it's just that during labor physiological changes occur such as inhibition of gastric emptying and decreased gastrointestinal motility so that the absorption of nutrients takes longer. Apart from that, psychological changes also occur during labor, such as anxiety about giving birth so that the mother in labor does not have the desire to eat and drink. This is also due to the pain due to increasingly frequent contractions. The nutritional needs of mothers in labor can be met by providing intake in the form of liquids that are easily digested and quickly absorbed into energy, delicious (do not cause nausea), practical, and suitable for the condition of the mother who is about to give birth (Bobak L, Lowdermilk D, 2004). One way is to provide birth nutrition drinks in the form of juice. Juice is a mixture of several raw materials that have a complete nutritional composition with the aim of improving the taste and density of nutritional value so that all the benefits from the various mixed ingredients can be obtained (Codex, 2005).

Based on organoleptic test research on date milk juice products that have been studied previously, it was found that the parameters (color, taste, aroma and texture) have an average numerical scale that is not much different so that the resulting hedonic scale is still in the range preferred by the panelists. One of the panelists' acceptance criteria for date milk juice products is taste because taste is the sensory quality that is most easily assessed by panelists using sensory tools. So it is hoped that mothers in labor can consume date milk juice (*phoenix dactylifera* L.) easily, practically and deliciously as an alternative effort to fulfill the energy needs of mothers in labor to facilitate labor (Ulya et al., 2023).

From the explanation above, we are interested in conducting research on identifying the carbohydrate content in date milk juice (*phoenix dactylifera* L.) as an alternative effort to fulfill the energy needs of mothers in labor to facilitate childbirth.

## METHODS

The type of research used is descriptive quantitative with a laboratory experimental approach which aims to determine and analyze the carbohydrate content in date milk juice. This research was carried out at the Food Chemistry and Biochemistry Laboratory, Mataram University in January 2024.

The main ingredients used in this research were dates and milk. The dates used are sukari dates and 250 ml Indomilk Full Cream UHT milk.

The step for making date milk juice in this research is selecting/sorting dates based on their good appearance and texture and free from damage such as rot and mold. Inedible parts of dates such as seeds are discarded. After that, the date meat is washed using clean water and running water to remove dirt on the surface. Next, the date flesh was weighed at 100 grams (Pascawati et al., 2018). Blend the date meat until it is slightly crushed or smooth then add 250 ml of full cream UHT milk. Blend until everything is mixed.

Test the nutritional content of date milk juice using the luff schoorl method to determine carbohydrate levels.

## RESULTS

Table 1. Carbohydrate Levels

Sample	Method	Total Carbohydrate Levels (%)
100 ml Date Milk Juice	Luff Schoorl	51,83

The results of the carbohydrate content test carried out showed that 100 ml of date milk juice had a carbohydrate content of 51.83%. Analysis of carbohydrate levels uses the luff schoorl method, namely the principle of hydrolysis of carbohydrates into monosaccharides which can reduce  $\text{Cu}^{2+}$  to  $\text{Cu}^+$  and excess  $\text{Cu}^{2+}$  can be titrated using the iodometric (indirect) method. The procedure involves dissolving glucose (0,20,40,60,80) ppm, then adding a reagent with the color arsenomolybdate, then waiting for the precipitate to complete so that the relationship between the glucose concentration and absorption curves can be seen using the regression equation, then reading the scale and Brix value to determine the level. carbohydrates in 100 ml of date milk juice with a carbohydrate content of 51.83%.

## DISCUSSION

Childbirth is a process that requires a lot of energy and stamina, so additional energy sources are needed from outside the body which can help conserve the use of glycogen stores during labor (Giugliano et al., 2008). Lack of nutritional intake during labor can reduce blood glucose levels, cause muscle fatigue which is characterized by high levels of lactate in the blood, and inadequate uterine contractions. Lack of nutritional intake during the birth process can have detrimental effects on both the mother, baby and the progress of labor (Maharaj, 2009).

Fulfillment of nutrition is an important factor in the birthing process to ensure adequate energy. Based on a preliminary study that was carried out on 30 mothers in labor regarding patterns of nutritional fulfillment during the birthing process, it can be concluded that usually mothers in labor still consume food in the first stage of the latent phase, entering the first stage of the active phase and in the second stage, most mothers refuse to consume food because of the taste. pain that becomes more frequent. The average amount of energy they consume during the birthing process is only 30 Kcal/hour (Pascawati et al., 2018).

Childbirth is a physiological process that requires physical endurance and requires a lot of energy, so it requires additional calories of 50-100 kcal/hour during labor. Research by Rahmani et al., (2012), found that the average level of energy intake in the group given carbohydrates was 44 kcal/hour until delivery (Ebrahimzadeh et al., 2012; Nordström, 2004; Rahmani et al., 2012; Tzeng et al., 2008).

One factor that can influence the progress of labor is power (uterine contractions). The more adequate uterine smooth muscle contractions will result in progressive thinning and widening of the cervix (Arya et al., 2007; Eslamian et al., 2006; Malin et al., 2016; Reyes-Lagos et al., 2014). One factor that can influence adequate uterine contractions is nutritional intake. If nutrition during childbirth is not met adequately, it can result in disruption of the physiological process of childbirth, so providing nutrition in the form of food and drink is care that must be fulfilled. Inadequate nutritional intake in a person's body indicates inadequate carbohydrate availability in the body. The availability of sufficient carbohydrates can prevent incomplete fat oxidation which can leave behind ketone materials in the form of acetoacetic acid, acetone, and beta hydroxy butyric acid (Chackowicz et al., 2016).

During labor, nutrition is needed that is high in carbohydrates, low in fat, low in residue and in liquid or semi-solid form so that the nutrients are easily absorbed and quickly produce energy, thus affecting the structure and strength of uterine muscle contractions (ACNM, 2016; Maharaj, 2009).

Carbohydrates are the main source of energy that can be digested by the human body and the glucose contained in carbohydrates is the main source of energy in the body, because several organs in the body only utilize glucose, such as the brain and red blood cells. If there is excess glucose intake in the body, food will be converted into fat. Carbohydrates are divided into monosaccharides, disaccharides, oligosaccharides and polysaccharides (Asif et al., 2011).

Kordi et al., (2014), showed in their research that dates contain lots of carbohydrates as an energy source, influencing the progress of labor, spontaneity of labor and reducing postpartum bleeding. Carbohydrates as supplements are sugars that are absorbed and used by body cells shortly after consumption. Dates also contain B vitamins, minerals, iron, calcium, magnesium, potassium, saturated fatty acids and unsaturated fatty acids. Fatty acids also provide energy for prostaglandins. Fatty acids can help store energy and strengthen the muscles of the uterus.

Similar research shows that dates contain a hormone which is often called the potuchin hormone, which according to medical experts, this hormone functions to bind the uterus and uterine muscles so that it can help reduce postpartum bleeding. Apart from that, there is the hormone oxytocin which can help stimulate contractions of the uterine muscles, making labor easier. This hormone will also help stimulate contractions in the veins around the mother's breasts, thereby encouraging the mammary glands to produce breast milk (Kuswati & Handayani, 2019).

The results of research by Martasari et al., (2019), combined dates into a mix-juice with a mixture of fruit, Tunisian dates, honey and red beans, which was given to 30 mothers giving birth during the first stage of the latent phase. The results showed that giving mixed date juice during the first stage of labor had an effect on the progress of uterine contractions and cervical opening.

Apart from research in the medical field about the benefits of dates for pregnant women, in the Al-Qur'an, Surah Maryam verse 23, the benefits of dates are explained. The verse explains that, when the pain of childbirth appeared, Maryam leaned against a date palm tree and was then ordered to shake the tree so that the dates on it fell towards her. Maryam ate the fallen dates as a source of energy for power when she was about to give birth (Romadloniyah et al., 2020).

In this study, the carbohydrate content in 100 ml of date milk juice contained high carbohydrate levels, namely 51.83%, so that it could meet the mother's nutritional needs during labor to facilitate delivery.

WHO recommends not limiting the mother's food and fluid intake during labor because of the enormous energy requirements for pushing. There are many efforts to make contraction (power) effective, including; ambulation techniques, changing positions, emptying the bladder, nipple stimulation, and providing nutrition and reducing stressors in the mother. One effort is to provide good nutrition, whether given during delivery or before delivery (Putri & Satriyandari, 2020).

## CONCLUSION

Fulfillment of nutrition is an important factor in the birthing process to ensure adequate energy. Lack of nutritional intake during the birth process can have detrimental effects on both the mother, baby and the progress of labor. In this study, there was 51.83% carbohydrate content in 100 ml of date milk juice which is expected to provide energy and nutrition during labor so that it can help facilitate labor.

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