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An effective alternative of pre-dawn meal using milk kefir

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Abstract. In this study, the nutritional composition of milk kefir cream and hunger resistance on its use as a menu of a pre-dawn meal were examined. The pre-experimental design of intact group comparison was used on 34 research subjects. The experimental group (n = 17) treated a pre-dawn meal using milk kefir cream and cereal while the control group used a regular predawn meal menu. The time of preparation, the implementation of the meal and hunger resistance were calculated and recorded. Based on the results of the study, in terms of methods, consuming 250 mL of milk kefir cream and cereal only takes about 7.9 minutes with a hunger resistance of up to 9.4 hours. With this composition and method, it is suggested that the results of this study can be useful to be an effective alternative of the pre-dawn meal both in Ramadan and other Sunnah fasting.

1. Introduction

Wellbeing is the way to joy, and what we devour straightforwardly influences our wellbeing. Islam encourages to ensure that they are aware of their health, as stated by Rasulullah PBUH: "Use your health before your illness comes." Muslims are also encouraged to choose a healthy way of life that incorporates a regular eating routine, normal mental and physical exercise and harmony among physical and spiritual needs. One of them is by carrying out fasting worship which begins with performing predawn meal called sahur. As an activity worthy of worship, a pre-dawn meal is often overlooked by Muslims, some people are lazy in carrying out the pre-dawn meal for reasons of feeling strong to endure hunger and thirst from dawn to sunset. Even though there are at least eight urgencies and benefits of pre-dawn meal, including 1) containing blessings from the world and the hereafter, 2) preserving the traditions / Sunnah of Rasulullah PBUH, 3) differentiating between muslims fasting models and scribes, 4) obtaining prayers from angels and obtaining blessings of Allah, 5) reminders of intentions for those who will fast 6) the opening of goodness, causes of worship of the sunnah, remembrance, and prayer at the time of peace, 7) functioning to drive out demons from within, 8) more ready to run fast and stimulate activity [1].

Meanwhile, nutrition needs when fasting and not fasting are not different, requiring carbohydrates, proteins, fats, and vitamins in a balanced amount. Given the importance of pre-dawn meal in carrying out fasting and the need for balanced nutrition during the process, it is necessary to have a method that is quick to carry out dawn while still meeting nutritional requirements. One way that can be taken is by utilizing milk kefir which is rich in nutrients and probiotics that are good for human digestion [2]. Kefir is a fermented milk product with a distinctive taste that is a mixture of sour and carbonic flavors



produced from bacterial and yeast fermentation. Starter culture has a role in the formation of kefir taste and structure. Bacteria cause acids while yeast produces alcohol and CO₂ in the fermentation process [3]. The microbial composition in kefir grains can vary so that the final kefir results sometimes vary in terms of aroma. *Lactobacillus acidophilus*, *Lactobacillus kefir*, *Lactobacillus kefirgranum*, and *Lactobacillus parakefir* species which are used to convert lactose to lactic acid. *Lactobacillus kefiranofaciens* as the formation of kefir granular matrix lenders, *Leuconostoc* sp. forming diacetyl from citrate, and *Candida kefir* forming ethanol and carbon dioxide from lactose [4]. Milk kefir cream contains carbohydrates, protein, fat, and fiber needed by the body [5].

2. Method

In this study, a pre-experimental method was used on 34 participants 20-21 years old undergraduate students who were selected purposively with a series experimental design. The experiment was carried out three times by recording the length of time the pre-dawn meal was implemented and the interval of hunger resistance after dawn using milk kefir. The data obtained were then processed and analyzed using the SPSS 16.0 application for parametric statistics on normally distributed data and continued with paired T-tests at a confidence level of 5% so that the significance of differences in implementation time and hunger endurance was obtained.

The material used in the form of 250 mL of milk kefir obtained from the fermentation of 24 hours of cow's milk with 5% kefir grain [5] and a sachet of commercial cereal namely energen.

3. Result and discussion

3.1. Duration of pre-dawn meal

Duration of pre-dawn meal shows the length of time needed to carry out the meal both using and without milk kefir. The results of this study indicate the time needed to carry out a pre-dawn meal without kefir milk (using the menu as usual) on average for 25.8 minutes. While the implementation of the pre-dawn meal uses milk kefir as the main menu data obtained by an average time of 7.9 minutes. Hunger endurance after eating pre-dawn meal reaches an average of 9.4 hours, this means 2.4 hours longer than a pre-dawn meal without milk kefir which only reaches an average of 7 hours after a pre-dawn meal as shown in table 1.

Table 1. Average comparison of time for implementation of pre-dawn meal and hunger durability.

Type of Pre-dawn meal	Average preparation time (minutes)	Average Hunger Durability (hours)	Sig.
Milk kefir	7.9	9.4	0,949
Regular menu	25.8	7.0	0,803

The data in table 1 shows a very significant difference ($p < 0.05$) between the time needed to implement a pre-dawn meal with and without milk kefir. The length of time required to chew food is related to the mechanical function to smooth nourishment with the goal that its supplements can be assimilated easily because chewing causes food to break down into smaller particles, increases saliva and mixes food with enzymes in saliva causing hydrolysis of carbohydrates in the mouth and digestion thus increasing glucose levels in the blood [6]. Therefore, the size of the chewed food will affect the time of mastication. This provides an explanation of why pre-dawn meal using kefir is much faster than pre-dawn meal using the usual food menu. The milk kefir is a soft semi-solid cream [7], so it does not require a mastication process, so it can be drunk or swallowed directly. Also, the oral organ contains the ptyaline enzyme which functions to convert starch to glucose and the amylase enzyme produced by the salivary gland (parotid) in the mouth and pancreatic gland which converts starch to maltose. In terms of preparing for the pre-dawn meal, which is faster and more economical at a cost using milk kefir plus cereal. When

compared with the usual meal menu, it is usually consumed in terms of preparation longer and with a variety of different menus. For students with many activities, it takes a short time and fast pre-dawn meal. Whereas the proximate results of milk kefir show the composition as presented in table 2.

Table 2. Milk kefir and regular menu nutrition composition.

Nutrition	Menu	
	Milk Kefir	Regular
Protein (%)	1.97	23.91
Carbohydrate (%)	5.08	63.46
Fat (%)	2.71	8.47
Fiber (%)	0.024	1.58
Total energy bruto (kcal/kg)	558	3665

3.2. Hungry durability

In the aspect of hunger resistance, the data in table 1 shows pre-dawn meal using prime kefir having an average of 2.4 hours longer than a pre-dawn meal with no prime kefir. This longer resistance to hunger is understandable considering that 24-hour fermented prime kefir has the nutrient content as listed in Table 2, including 1.97% protein, 2.71% fat, and 5.08% carbohydrate and 0.024% fiber. The three types of nutrients have energy equivalent to 139.5 calories, plus one sachet of cereal containing 125 kcal per serving, bringing the total to 1389.5 calories per serving. Personal caloric needs are based on age and weight, but when viewed from the age of the sample taken between 20-21 years the student level is categorized as adolescents to adults with calorie needs of 2000-2500 calories [8]. Although the needs of each person differ based on age, activity, body weight and gender, physiological factors. Just like what was done by Read et al. [9] carried out an analysis of the content of cow's milk obtained by carbohydrates 7.2867%, fat 10.6% and protein 3.75%.

The nutritional content of milk kefir (table 2) is dominated by carbohydrates, fats, and proteins, while on the regular menu (consisting of rice, fried chicken, tempeh, tofu, and vegetables) shows high amounts of carbohydrates and proteins while three times less fat. Fat with a sufficient number of calories can provide strength for the body to be able to withstand hunger and protein content because protein and fat are nutrients that are long digested. Fat will begin to be digested in the stomach in a limited amount starting the hydrolysis of triglycerides into diglycerides and fatty acids with the help of limited lipase enzymes, then in the small intestine fat emulsions are carried out into glycerides, monoglycerides, glycerol, and fatty acids, while absorption occurs in jejunum [10]. Each gram of fat has a total of 9 calories, which serves as an energy reserve in the form of fat tissue that is piled up in certain places such as kidneys and eyes, maintaining body temperature, giving a sense of satiety, transporting fat-soluble vitamins [11]. In addition, the glycemic index of kefir milk also includes low to moderate, causing a longer feeling of satiety [12].

Protein nutrients that function as building substances and maintain body cells and tissues. Digested protein in the stomach with the help of hydrochloric acid converts the inactive pepsinogen enzyme into an active form of pepsin because food stays briefly in the stomach, then protein digestion is only formed into a mixture of a polypeptide, and peptone [13]. Furthermore, in the small polypeptide intestine with the help of protease enzymes, enterokinase and trypsin are converted into dipeptides, tripeptides and amino acids that are readily absorbed. Then, peptides with the help of peptidase, mucous tripeptidase in the small intestine are converted into amino acids that are ready to be consumed, so that every gram of protein is equivalent to four calories of energy.

The content of carbohydrates in kefir has a vital role in the body as an energy source and has an energy amount of four calories per gram. Carbohydrates in the human body are digested in the mouth mechanically and enzymatically. Carbohydrates are converted into glucose and carried by the blood to other tissues as an energy source. While the excess glucose is stored in the form of glycogen in the liver. Muscle cells also store glucose in the form of glycogen as energy for muscle needs and cannot be

returned as glucose into the blood. The body can only store glycogen in a limited amount, namely for power needs several hours [13]. Therefore carbohydrates are more easily absorbed and need to be consumed every day in the appropriate amount, besides being converted into excess fat. Another ingredient in kefir in the form of fiber contributes to the body to help digestion to remove food digestion.

Kefir made from cow's milk is fermented with the help of lactic acid bacteria and yeast for 24 hours and a concentration of 5%. Lactic acid bacteria can convert glucose into lactic acid, while yeast converts glucose to alcohol and CO₂. Genera most commonly found in kefir are *Lactobacillus*, *Lactococcus*, *Leuconostoc*, *Acetobacter* and yeast such as *Saccharomyces cerevisiae* and *Kluyveromyces marxianus* [8].

People who are intolerant of lactose are safe to consume because the yeast in kefir (*Kluyveromyces marxianus*) can ferment the lactose [11]. Lactose is the fundamental starch found in milk and 5-8% in breast milk, less easily soluble in water when compared to other disaccharides and is not so sweet. In the body of the enzyme lactase converts lactose into monosaccharides that can be absorbed, but if there are large quantities, it will cause diarrhea [8]. Also, kefir functions as a probiotic because lactic acid bacteria produce some antimicrobial materials such as organic acids, ethanol, hydrogen peroxide and bacteriocins that can suppress pathogenic bacterial growth [13].

Pre-dawn meal is when charging energy and Sunnah is done so that it is fit when fasting. A pre-dawn meal should be done 45 minutes before the prayer so that 10 minutes after the prayer is ready to do the morning prayer activities and can immediately do the exercise. The meal menu should be able to meet all day's energy and nutrition needs. The pre-dawn meal menu is like breakfast because the pre-dawn meal is a substitute for breakfast with the amount that is needed. We recommend avoiding excessive fat intake, especially at dawn because it will cause thirst when fasting. It is also not recommended to consume foods that are high in sugar content. The choice of the type of food should have a different glycemic index, high, medium and low [14]. Glycemic index is a number that shows the potential increase in blood sugar from carbohydrates available in a portion of food or can be said as a food grade or ranking according to its effect on blood glucose levels [1]. Suitable with these needs, milk kefir has a moderate to low glycemic index [13], while cereals have a relative high glycemic index so they can meet energy needs quickly. When dawn, we should choose foods that are digested long enough to provide longer energy. So that it remains fit and fresh during fasting and others worship.

4. Conclusion

Kefir milk plus cereal can be used as an alternative substitution for a nutritious, thrifty, and hungry hunger menu for longer. Consuming 250 mL of milk kefir with cereals only takes about 7.9 minutes with hungry endurance of up to 9.4 hours or 2.4 hours more resistant than eating one serving of regular menu. With this composition and method, it is expected that the results of this study could be useful to be an effective alternative in implementing pre-dawn meal both in the month of Ramadan and other Sunnah fasting.

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