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The Effect Of Addition Of Fruit Sari (Dimorcarpus Longan) To Skim Milk In Yoghurt Drink

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Abstrak.
Suatu Upaya dalam produk olahan susu saat ini semakin berkembang, hal ini juga dikarenakan susu yaitu produk yang mudah mengalami kerusakan. yoghurt merupakan salah satu jenis susu fermentasi yang telah dikenal oleh masyarakat secara luas. teknologi fermentasi susu berkembang cukup pesat dengan banyak memanfaatkan kultur murni secara tunggal maupun campuran serta penggunaan bakteri asam laktat lain yang dapat memberi mutu produk lebih baik. Penelitian ini bertujuan untuk mengetahui:1) pengaruh jumlah ekstrak sari buah kelengkeng terhadap susu skim; 2) pengaruh jumlah susu skim terhadap sifat yakult. Metode yang digunakan adalah metode eksperimen yang menggunakan dua faktor yaitu penambahan jumlah ekstrak buah kelengkeng dan susu skim. Hasil penelitian menunjukan bahwa terdapat pengaruh dari penambahan sari buah kelengkeng berupa rasa, warna, dan kekentalan. Berdasarkan hasil penelitian dapat disimpulkan bahwa penambahan ekstrak buah kelengkeng pada yoghurt tidak mempengaruhi tingkat keasaman pada yougurt, karena kadar dari ekstrak buah kelengkeng sedikit, sehinggga tingkat keasaman pada yougurt masih tinggi.

Kata kunci : *yogurt, ekstra sari buah kelengkeng*

Abstract
An effort in dairy products is currently growing, this is also because milk is a product that is easily damaged. Yogurt is one type of fermented milk that has been widely known by the public. Milk fermentation technology is developing quite rapidly by utilizing many pure and single cultures as well as the use of other lactic acid bacteria that can provide better product quality. This study aims to determine: 1) the effect of the amount of longan extract on skim milk; 2) the effect of the amount of skim milk on the nature of yakult. The method used is an experimental method that uses two factors, namely the addition of longan fruit extract and skim milk. The results showed that there was an effect of the addition of longan juice in the form of taste, color, and thickness. Based on the results of the study it can be concluded that the addition of longan fruit extract to yogurt does not affect the acidity of yougurt, because the levels of longan fruit extract are small, so that the acidity level on yougurt is still high

Keywords: *yogurt, extra longan fruit juice*

INTRODUCTION

An effort in dairy products is currently growing, this too because milk is a product that is easily damaged One of the efforts to reduce damage to dairy products is by fermenting milk.

Milk is a complete nutrient because it contains water, protein, fat, carbohydrates, minerals, enzymes, gas and vitamins A, C and D in sufficient quantities *(Astawan, 2005 in Setiawan, 2009).*

Milk has the property of being more easily damaged than other livestock products, so handling milk must be precise and fast. Simple milk processing is one of the off-harvest handling that needs to be developed because to expand milk marketing as an effort to improve the nutrition of the community besides the farmers are not too dependent on the Milk Processing Industry. Diversification of dairy products as an effort to get added value of dairy products

Fermentation is the process of changing carbohydrates into alcohol. Substances that work in the fermentation process are enzymes made by bacterial cells. Fermented food is a product made with the help of microorganisms *(Effendi, Supli. 2009).* Yogurt is useful for people who are not resistant to milk sugar (lactose) in the acid content of yogurt is quite high, contains little or no alcohol at all, has a semi-solid or smooth texture, compact, and fresh sour taste

Yogurt is a food derived from cow's milk and can also be made from skim milk which has a slightly sour taste as a result of fermentation by certain bacteria. Fermentation of milk into yogurt is done with lactic acid bacteria namely Lactobacillus bulgaricus and Streptococcus thermophillus*(Saleh, 2004).*

Yogurt is often consumed because of its freshness, distinctive aroma and texture. Fermentation can cause new flavors and form the texture of some foods so that it can improve the acceptance of yougurt products. At the time of the fermentation process organic acids will form which cause a distinctive flavor in yogurt. The important thing to consider in making yogurt is the type of carbohydrates in skim milk. carbohydrates in skim milk consist of oligosaccharides. sugar content contained in skim milk that can be utilized by microorganisms that play a role in the process of making yogurt is very limited, therefore it is necessary to add another sugar source. If skim milk is directly inoculated without the addition of sugar it will not produce good quality yogurt, this is indicated by the high pH value and protein clumping does not occur. Sources of sugar that can be added are sucrose, lactose, glucose or fructose. Different types of sugar will produce different organic acids which will ultimately lead to differences in the quality of the resulting yogurt. The results of the metabolism of carbohydrates (sugars) in the form of organic acids will affect the flavor and also determine the quality of yogurt.

Yogurt is one type of fermented milk that has been widely known by the public. Milk fermentation technology is developing quite rapidly by utilizing many pure and single cultures as well as the use of other lactic acid bacteria that can provide better product quality. *(Sunarlim dan Umiati, 2008).*

Yogurt is a fermented beverage formed due to the bacterium Streptococcus salivarius subsp. thermophilus and Lactobacillus delbrueckii subsp. bulgaricus which breaks down sugar in milk namely lactose into lactic acid. Lactic acid can preserve food. Low pH can inhibit pathogenic microorganisms, spoilage, and toxin-producing microorganisms will die. The function of probiotic bacteria contained in yogurt is its ability to kill bad bacteria found in the digestive tract.

Yogurt is a healthy drink made from fermented cow's milk. The term yogurt comes from the Turkish language, which means sour milk. Yogurt is defined as a food ingredient that comes from cow's milk with a shape resembling porridge or ice cream that tastes sour *(Shurtleff dan Aoyagi, 2007).*

When judged by its nutritional content, yogurt has advantages that are not possessed by whole milk, which is very suitable for consumption by people who are sensitive to milk, if consumed regularly can inhibit cholesterol levels in the blood, more durable storage compared with fresh milk, can increase endurance because it contains a lot of good bacteria so that it can automatically balance the bacteria.*(Widagdha, S., & Nisa, F. C. (2014).)*

Yogurt is one of the processed dairy products that utilize the results of the metabolism of Lactic Acid Bacteria (LAB). LAB commonly used for making yogurt there are two kinds, namely Lactobacillus bulgaricus and Streptococcus thermophiles. *(Tamime dan Robinson, 2007).*

Yogurt comes from the results of the second fermentation of Lactic Acid Bacteria (LAB) as a starter, namely Streptococcus thermophilus and Lactobacillus bulgaricus that live in symbiosis. The length of the fermentation process will result in a decrease in the pH of yogurt with a distinctive sour taste, in addition to that produced acetic acid, acetaldehyde, and other volatile ingredients. Yoghurt composition in general is 4-6% protein, 0.1-1% fat, lactose 2-3%, lactic acid 0.6 1.3%, pH 3.8-4.6%*(Weerathilake et al, 2014).*

Yogurt is divided into plain yogurt and fruit yogurt. Fruit yogurt is yogurt in the process of making the addition of fruit juice, fruit flesh, or other fruit parts to add flavor, color and aroma of yogurt. *(Tamime dan Robinson, 2007).*

The growing era of yogurt has several types, one of which is fruit yogurt. Fruit yogurt is yogurt added with fruit juice. Adding juice to yogurt can add nutrients *(Mahmood et al., 2008).*

There are important factors that influence the proliferation of lactic acid bacteria in the process of making yogurt. One of them is fermentation time, incubation needs to be considered in order to prevent the dominance of one of the culture lines or other species. Often you can find yogurt products on the market with a variety of flavors, but this is only limited to flavor. Adding juice to the process of making yogurt is a product innovation. One fruit that can be used as fruit juice for addition to the yogurt making process is longan fruit.

RESEARCH METHODS

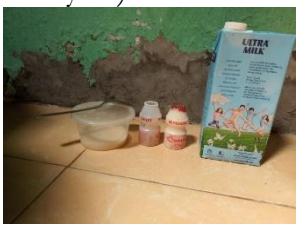
This research is an experimental study using two factors, namely the addition of longan fruit extract and skim milk. This research was conducted on 30 September 2019 on Jl. Telaga Dewa 10. The experimental design in this study was a 3x2 factorial design of the independent variable namely, Longan extract and Skim Milk. The dependent variable in this study is the organoleptic nature of milk yogurt which includes color, aroma, taste, thickness.

This research is an experimental study or an experiment in which we have conducted this experiment two (2) times. With the same method to produce yougurt from cow's milk with longan flavor. In the method of making longan fruit extract, the first thing to do is weighing the fruit without the skin and seeds as much as 250gram, then cut and smooth it with a blender, then filter the fruit extract using a cloth / napkin with tightness.

How to make plain yogurt

Yogurt Ingredients:

- 1 liter of whole milk (Can use packaged milk but preferably pure milk in a box and not identified by air)



- the amount of yogurt used is ½ liter of the amount of whole milk. (For 1/2 liter pure milk can use about 500 ml.

- then we put the bacteria in the yakult, where the comparison is 500 ml of milk equivalent to one bottle of yakult.

How yogurt works:

- Preheat water to soak tools such as stirring to stir milk, spoons, containers for milk and other tools used for making yogurt (this heating aims to neutralize the tool for making yogurt)

- Heat pure milk over low heat while continuing to stir for 30 minutes and keep the milk from boiling so that the milk protein is not damaged.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RESULTS AND DISCUSSION

Longan fruit yogurt is yogurt that is added with juice of Longan fruit (Dimorcarpus Longan.). The addition of longan juice to yogurt aims to utilize longan juice as a natural coloring agent and adds to the functional benefits of yogurt because it contains antioxidant compounds and polyphenols which can inhibit the growth of cancer cells, tumors, reduce blood sugar levels, prevent heart disease, and treat dysentery.*(Hernandez and Salazar, 2012).*

Yougurt has several ingredients such as 60 kcal calories, 15 grams of carbohydrates, 1.3 grams of protein, 1.1 grams of fiber, 83 grams of water, vitamin b1 (thiamine) 0.031 mg, vitamin b2 (riboflavin) 0.14 mg, vitamin b3 (niacin) 0, 3 mg, vitamin c 84 mg, calcium 1 mg, iron 0.13 mg, manganese 0.05 mg, magnesium 10 mg, phosphorus 21 mg, potassium 266 mg, which have benefits, as a sedative, for beauty, relax the nerves, as medicine.

Menurut Usmiati dan Utami (2008), the more glucose is metabolized, the higher the production of lactic acid. High amounts of lactic acid increase acidity and decrease pH. Added by *Wahyudi and Samsundari (2008),* at a low pH, milk protein will coagulate to form clots, which become more and more. It is this clot formation that will cause changes in texture and cause changes in viscosity.

The resulting yogurt is influenced by the addition of longan fruit extract containing monosaccharides which can be used to produce lactic acid.

From the results of the comparison shows that there is a difference in the addition of longan extract does not affect the acid taste in yogurt. The level of sour taste tends to be more acidic, while the level of sweetness to the addition of longan fruit extract in making yougurt.

Aroma

At the preferred level the aroma of the product of yougurt of longan juice is the most preferred is the concentration of skim milk Aroma in the drink of yougurt of longan fruit juice caused by compounds formed to give rise to the characteristic acid aroma. In addition to its role in gel formation, lactic acid also provides sharpness in taste and determines the distinctive aroma of yougurt drink. The researchers' favorite value for the aroma of probiotic drinks is still relatively low.

By feeling the aroma of the longan juice, aroma and flavor caused by the formation of lactic acid and other compounds such as acetaldehyde, acetic acid, acetone, carbonyl and diacetyl. In addition, lactic acid bacteria also produce a small portion of organic acids such as citric acid, succinic, malic and acetic as well as acetaldehyde, acetyl and acetone which act as very distinctive aroma components in the Yougurt.

The aroma of yogurt is obtained from the production of acids formed during the fermentation process. The aroma generated is generally caused by chemical changes and the form of compounds with other ingredients, for example between amino acids resulting from protein changes with reducing sugars that form compounds of flavor and aroma of food (Sinaga, 2007).

The content contained in carbohydrates in skim milk is higher than in cream powder. In this high carbohydrate content will be used by lactic acid bacteria as a source of substrate to produce lactic acid. So that the lactic acid produced in yogurt from skim milk will be higher and the pH produced will also be lower.

The aroma of yogurt on longan juice is obtained when from the production of acids formed during fermentation. Bacteria that can grow themselves due to temperature and food available, to meet skim milk is an added ingredient because in skim milk there is protein (nitrogen), nitrogen is needed by microorganisms to multiply. The use of skim milk in making yogurt aims to utilize high levels of lactose and protein in skim milk so that it makes the pH.

Color

To increase the amount of longan extract, yakult and skim milk did not affect the color of yogurt. Yougurt has a thick yellowish white texture. yellowish color because it has a high vitamin A content (Puspardoyo, 1997), and the formation of lumps that will cause changes in texture and cause changes in viscosity**.**

The researchers' higher level of preference for the color of yogurt is often due to the fact that the treatment tends to be a yellowish-white color.

Rasa

The addition of longan fruit extract will improve the taste of yogurt and disguise the distinctive taste of pure milk on yogurt. With the addition of ultra-milk milk only improves the quality, flavor of yogurt and disguises the sweet taste caused by longan juice.

The tendency of the researchers' level of preference for the taste of the product of Yougurt Longan juice is due to the administration of a little Longan juice to skim milk whose main function is to give a slightly sweet taste, and can also provide nutrients to the lactic acid bacteria optimally so that the yakult is able to produce a flavor that is fit and not too sour / typical due to the formation of lactic acid and other organic acids as a result of its metabolites, giving rise to the right combination for researchers when testing the product of yougurt drinks longan fruit juice. Researchers feel the acid taste in yogurt by using the senses in the mouth. Taste can be interpreted as a combination of taste and odor obtained through the mouth and nose. Flavors are supported by chemical compounds that cause specific taste and aroma of food ingredients. The formation of lactic acid due to cellular metabolism activity of lactic acid bacteria will give sour taste to yogurt, because that is why yogurt has a distinctive sour taste.

The taste in youghrt is caused by having an acidic taste that comes from the conversion of lactose in skim milk to lactic acid. With the presence of lactic acid can cause low pH and cause acid taste in the product.

Glucose and lactose fermented by lactic acid bacteria will reduce the pH and give a specific taste to the product produced or (youghurt produced). The higher the concentration of lactic acid, the higher the acid taste found in lactic fermented drinks soursop juice, thereby reducing the panelist's preference for taste

Thickness

Good yogurt itself has a very soft texture like porridge, neither too runny nor too dense. The viscosity of yogurt is influenced by the clot that occurs when youghurt is fermented. In lumps or thickening is one of the most typical properties of milk. Clotting can be caused by enzyme activity or acid addition. On fermentation by the bacteria Streptococcus thermophilus and Lactobacillus bulgaricus which results in a yogurt consistency that closely resembles pudding. also states that lactose in whole milk is used by the bacteria Streptococcus thermophilus and Lactobacillus bulgaricus as the main source of carbon and energy for growth in bacteria. During the process of lactose fermentation it turns into pyruvic acid, which then turns into lactic acid. Lactic acid causes a decrease in milk pH, which means it increases acidity, so that casein becomes unstable, and is coagulated (clumping) to form a yogurt gel.

As for the addition of longan extract and pure milk extract, it is very influential on the thickness of yogurt. The texture of the resulting yogurt determines whether the yogurt is of good quality. Good yogurt has a soft texture such as porridge, neither too runny nor too dense. Factors

of various levels of temperature and type of milk and the interaction of these two factors on the texture of yogurt show very significant differences

Researcher's interest in the texture of yougurt longan juice includes the thickness, smoothness and softness of the granules observed by researchers. the increased concentration of skim milk will form the texture of a better yougurt drink with an increase in total solids and maximum protein clotting. The texture formed in the drink is caused by the protein that yougurt in the longan juice clumping due to the accumulation of acids due to the formation of lactic acid by bacteria on yakult. This is consistent with the statement of Miwada et al. (2006) that the ability of BAL is inseparable from its ability to convert sugar into organic acids. Sunarlim and Usmiati (2010) added in their study that the addition of starter S. thermophilus, L. bulgaricus and L. acidophilus showed better pH values at an incubation temperature of 370C, and produced a product with a fragrant aroma. In general, the increase in concentration of the addition of longan extract does not affect the level of researchers' preference for the texture of yogurt, whereas the higher the concentration of the addition of skim milk, the level of researcher preference for the texture of yogurt is increasing. This is because the increased concentration of the addition of skim milk is more dominant in producing better textures.

Yogurt from longan juice added to skim milk has a more compact, smooth, thicker texture and not much water is found on the surface of yogurt. The results of the analysis of variance showed that whey content was not significantly affected by the combination of a bacterial starter. The relatively same level of whey at each level of the starter combination is due to the same raw milk used and the liquid culture of the starter is added with the same concentration Skim milk has a high enough protein content so that if the addition of skim milk is high, the amount of protein extract of yogurt longan fruit will also be more and more. During the fermentation process, the protein will be coagulated so that the yogurt thickens and the texture is preferred by researchers. From the results of research on the effect of skim milk on the type of yogurt starter from longan juice obtained data on organoleptic tests which include aroma, color, taste, and thickness.

CONCLUSION

Based on the results of the study it can be concluded that the addition of longan fruit extract to yogurt does not affect the level of acidity in yougurt, because the levels of longan fruit extract are small, so the acidity level on yougurt is still high.

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