THE UTILIZATION OF ENREKANG TRADITIONAL CHEESE (DANGKE) IN CHEESE CAKE PRODUCTION AS AN ALTERNATIVE SPECIFIC CULINARY OF SOUTH SULAWESI

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ABSTRACT

Dangke is a kind of cheese made from cow’s milk coagulated with papaya sap. This is traditional cheese from Kabupaten Enrekang, South Sulawesi. The texture itself similar to a tofu, chewy with yellowish white color and wrap with banana leaves. This cheese is a local ingredients that can be introduced to the other community outside of South Sulawesi. The problem is the product shelf life, so dangke should be brought in other form of product to add value. The product in this research is cheese cake which never been made before with dangke. The experiment shows that dangke cheese cake with chilled method is similar with chilled cheese cake that made with light cream cheese and more preferable by the panelist in the interview session. Dangke is potential to be the main ingredients in other pastry product.

KEYWORDS: culinary, pastry, experiment, dangke, cheese cake, local ingredients

1. INTRODUCTION

The raw material in the manufacture of pastry products in Indonesia still relies on imported materials, whereas a lot of local raw materials can be used to make a dessert or cake dish. Cheese is one of the raw materials needed as a support ingredient in making cakes. In its development, cheese is widely used as the main ingredient in the manufacture of various types of pastry products, because it produces a savory taste so as to balance the sweet taste of the typical processed pastry products. The cheese texture required in cake making is fresh cheese.

Dangke is one of the processed products made from buffalo’s milk or cow’s milk, where the milk is coagulated by using the sap of papaya, then the whey is separated. This process is done through traditional methods by communities in Enrekang District, South Sulawesi. The result obtained from this process is a dairy product similar to fresh cheese texture. The coagulant material used in the manufacture of this cheese is papaya sap, which is then discarded between curd and whey with the help of coconut shells as filters and shaped the dangke cheese (Hatta, 2013). Dangke has a white color with a chewy texture and savory taste. Local people prefer to consume it directly as a side dish by frying or toasting.

The utilization of this traditional cheese can still be optimized to increase the local variety culinary, however, so far, dangke can only be processed into chips as a durable souvenir for tourists. If dangke can be utilized more in a raw material processed products, especially easily recognized by people, then
dangke will be more easily accepted and recognized as an Indonesian typical cheese.

There are other dairy products in form of cheese like from Indonesia such as dali (North Sumatra), dadiah (West Sumatra), colo ganti (Nusa Tenggara) or perah (East Lombok) that produce soft cheese-like textures (Pratomodjati, 2012). Looking from making method and the final texture, dangke is more similar to other fresh cheese that has been used in making cheese cake. Fresh cheese or cheese that can be consumed directly after the processed, known as fresh cheese. The contains of dangke can be seen in table 1 that compares dangke with other fresh cheese contents derived from the region in Indonesia and fresh cheese in general. In this study the authors chose to use cow's milk dangke with the consideration of a more common sense than the buffalo's milk.

<table>
<thead>
<tr>
<th>Dairy Product</th>
<th>Water (%)</th>
<th>Fat (%)</th>
<th>Protein (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dangke (cow's milk)</td>
<td>55,0</td>
<td>14,8</td>
<td>23,8</td>
</tr>
<tr>
<td>Dali (buffalo's milk)</td>
<td>62,9</td>
<td>23,3</td>
<td>11,5</td>
</tr>
<tr>
<td>Dali (cow's milk)</td>
<td>64,9</td>
<td>20,4</td>
<td>11,2</td>
</tr>
<tr>
<td>Cottage Uncreamed</td>
<td>79,5</td>
<td>0,3</td>
<td>15,0</td>
</tr>
<tr>
<td>Cottage Cream</td>
<td>79,2</td>
<td>4,3</td>
<td>13,2</td>
</tr>
<tr>
<td>Cream cheese</td>
<td>54,0</td>
<td>35,0</td>
<td>9,2</td>
</tr>
<tr>
<td>Neufchatel</td>
<td>55,0</td>
<td>25,0</td>
<td>16,0</td>
</tr>
</tbody>
</table>

Source: Hatta et al, 2014

One of pastry products which main ingredient uses fresh cheese is cheese cake. Dangke, as a typical Indonesian cheese, should be the main ingredient in making cheese cake which later can be recommended as Indonesian Cheese Cake. This product can add variety of Indonesia culinary in general and South Sulawesi in particular.

In terms of the way of making, cheese cake can be classified into chilled cheese cake and baked cheese cake. The author will try the baked and chilled cheese cake to see the different treatments to this type of cheese. The coagulated dangke using papaya sap has a slight bitterness. To cover this bitterness, it can be added other inclusion materials such as chocolate or coffee to make the taste bitterness becomes like part of the product itself. In addition, there is the possibility of bitterness to lose in the process of heating. The data presented in Table 1 also shows that the fat content of dairy cow's milk is lower than other types of cheese while the protein content is higher. Low fat content and high protein is an extra value owned by dangke and it can also affect the texture, flavor and taste of cheese cake.

The limitation of this study lies on the American style cheese cake making by baking and chilling to see the character of cheese cake. Sensory test is required to objectively view the characteristics of the product produced, in this case the author will look at the texture, flavor and appearance. In addition, the durability of the product will also be examined since the process of making dangke is still using traditional methods, so that there is no packaging indicates the expiration deadline.
2. LITERATURE REVIEW

"Dangke is one of the yellowish-white tofu-like cheese that is derived from buffalo milk from South Sulawesi" (Suryani, 2015). In Enrekang district, it has become a tradition of making this dangke by using buffalo's milk, but along with the difficulty of getting buffalo's milk, then a lot of dangke is now made with cow's milk (Hatta, 2013). In addition to absorb the abundant milk production, dangke is more favored by the Enrekang community because it can be used as a side dish of rice and sambal as a complement.

In contrast to cheese that is generally coagulated by the help of rennet enzyme-producing bacteria, the dangke is coagulated using papaya sap. "Clotting material used to coagulate milk is the sap of papaya or papaya leaf. Papaya sap that contains papain enzymes serves as a protease enzyme substitute rennet enzyme" (Pratomodjati, 2012). Another feature that can be seen from this dangke is a molding container used to separate the curds with whey, which is a coconut shell that is hollowed down the bottom, and then after the water content is reduced, dangke is wrapped by banana leaf. As a natural preservative, local people sprinkle salt on it in order to be more durable.

In this study, types of dangke that will be used by the author is cow's milk dangke, because of the availability so that it is more easily to be found. There has been no information on the nutritional content in this dangke, but the physical quality is sufficient, and it can be compared with fresh cheese in general. Characteristics of dangke received by the author is a solid cheese texture, with a fairly high water content. The seller stated that the dangke is smeared with salt water to keep more durable in sending the product. This salt water should be cleaned immediately from the cheese by soaking it briefly in hot water, then drained, so it doesn't absorb into the cheese.

After the dangke is cleaned, it will look like a little yellowish color and the cavities are not evenly on the surface. This cheese is quite hard and neat and it does not left flakes when it is cut, but if the cheese is felt by hand it will be easily crumbly. The scent of the cheese smells fresh like sticky rice tape that is freshly fermented, with a flavor that tend to bargain and has a mild bitter aftertaste. This cheese is 2-3 days old from the time of completion of the slicing process and delivery until received.

3.1 Cheese Cake Characteristics

Rinsky (2009) explains the definition of cheese cake as follows "a creamy cake made typically with cream cheese but other cheeses such as cottage cheese, ricotta, or mascarpone can be used". Characteristics of cheese cake is widely creamy because the content of cheese is quite a lot. Cheese cake is very popular in America because of the richness and strength of cheese flavor and unlimited flavor. Mostly, the ingredients of cheese cake is liquid and soft, so it is very fragile. In order to make the cake stand firmly when served, cheese cake needs a base. Base for this cheese cake can be made from short crust, sponge cake or even biscuit crumb (Tobing, 2004) and beans (Rinsky, 2009).

There are two types of American style cheese cake seen from the way of making, namely chilled cheese cake and baked cheese cake, although both still served cold. Chilled cheese cake does not go through the baking process first, so in some recipes requires gelatin to keep the resulting cheese cake firm when presented. In making baked cheese cake, baking process is done by putting a baking pan on a baking sheet containing water. This is done to keep the low
temperature when baking, so that the cheese cake surface remains smooth and not cracking. Once cooked, the cheese cake should be refrigerated in the refrigerator for a night to make the structure firm enough to be removed from the mold. “The cake must be thoroughly chilled before unmolding or it may not retain its shape”. (Rinsky, 2009)

### 3.2 Cheese Cake Durability

From the character of cheese cake where it must be served cold, then the storage of cheese cake should be in the refrigerator to keep the temperature remains low. Storage or shelf life is a measure that will determine the time limit of a food product can be safely consumed. The definition of shelf life according to Floros (1993) is “the time required by food products under conditions of storage, to arrive at a certain level or level of degradation”. The government regulation on saving power to create a responsible trading system is regulated in Law No.7 of 1996 on Food and Government Regulation no. 69 of 1999 on Food label and advertisement.

Herawati (2008) describes the expiration criteria for some food products including cheese as the main ingredient for cheese cake making. Heny explains the critical point as a reference for expired criteria. In these sources, the critical point in the quality of cheese is determined by the absorption of moisture and its exposure criteria can be seen from its texture.

### 4 RESEARCH METHOD

The research method used is experimental research, where most needed data obtained by created first, then, they were analyzed and compared with the control group which is the standard reference for the experimental group. The data needed in this research is qualitative data, that is in the form of sentence, word or picture (Sugiyono, 2010), while the analytic technique was used by using descriptive statistics, to give description to the object under study. To get the data, the author uses data collection techniques in the form of observation, interview and literature study.

Interviews were conducted to obtain opinions from expert panelists on the characteristics of cheese cake experiments. The resource for this interview are five people who have culinary education background and work in culinary field. The technique of data analysis is done by comparing the characteristics of experimental product that is cheese cake made from cheese dangke with control product and cheese cake made from cream cheese. This comparison is performed using the theoretical reference of sensory test characteristic of cheese cake, which includes appearance, flavor, and texture.

#### 4.1 The Sensory Test

“Evaluating food is not the same as eating for enjoyment. Sensory evaluation takes practice and deliberate concentration, because the perception of food is complex” (Figoni, 2011). This statement argues that food can not be objectively assessed, even the flavor can be described and analyzed in depth. A professional chef must be able to serve food that he does not even like to consumers with a quality that is maintained and a taste that is preferred by consumers. They should even be able to evaluate the food they make, so as to ensure that the food is worthy of serving.
Figoni (2011) specifically and in-depth describes the characteristics of pastry products into three important parts, in which the part is composed again from other parts. It is because in evaluating, it requires the ability that involves the five senses as well as to feel the changes when eating. The three aspects are appearance, flavor and texture.

1. Appearance.

“Appearance creates the first impression customers have of food, and first impressions are important” (Figoni, 2011). Appearance is the most important part that is firstly seen by consumers. Making the appearance of a food product as attractive as possible will make people become tasteful and be willing to try. In assessing the appearance of several aspects that can be evaluated are Color, Opacity, Sheen, Shape, Size, Visual texture.

2. Flavor

“Flavor includes the basic tastes, smell, and trigeminal effects (chemical feeling factors). These three sensations occur when food molecules (chemicals) stimulates receptors throughout the mouth and nose” (Figoni, 2011). Flavor is more complex than taste. Because when we are eating, these three things immediately work. The human tongue can only taste 5 basic taste, but the nose is able to taste more flavors that vary according to what it eats. The three aspects in evaluating the flavor are basic taste, smell, and trigeminal effect.

3. Texture.

“The main way texture is evaluated is by touch: how the food feels against the skin, how it feels as it melts from the heat of the mouth, and how it responds to touch as it squeezed, bitten and chewed” (Figoni, 2011). Evaluating textures requires not only a series of assessment aspects, but also the knowledge of the proper vocabulary to describe the texture. The aspect of the texture assessment is through two stages when held and when eaten by considering the mouth feel to the sound produced when chewing.

4.2 Experimental Design

In this study, the products are chilled cheese cake and baked cheese cake in order to see which product is more appropriate to process dangke cheese. Cream cheese commonly used in making cheese cake will be replaced 100% with dangke in order to see clearly the difference of product characteristics. The function of cheese in cheese cake making-process is as a forming of dominant cake and taste structure. When it is viewed from the physical characteristics and content of the ingredients, cream cheese and cheese dangke have similarities, which is white, slightly chewy and has a lot of water content.

<table>
<thead>
<tr>
<th>Type of cheese</th>
<th>Comparison Products A</th>
<th>Comparison Products B</th>
<th>Experiment Products A</th>
<th>Experiment Products B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cream cheese</td>
<td>100%</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dangke</td>
<td>100%</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Prepared by Writer, 2017
Information:
Comparison Product A: Chilled cheese cake made from cream cheese
Comparison Product B: Baked cheese cake made from cream cheese
Experiment Product A: Chilled cheese cake made from dangke.
Experiment Product B: Baked cheese cake made from dangke.

5 RESULT AND DISCUSSIONS

The process of making cheese cake using dangke as the main ingredient takes a longer time compared to making cheese cake with cream cheese. This is due to the different dangke texture which is harder than cream cheese. In addition, dangke can not melt as well as cream cheese. This is why dangke can not be made into cheese cake with Japanese method. Bitter taste on dangke can be lost without any addition of flavor, but compared to the savory taste of cheese cream then cheese cake made from dangke taste plain but with unique aroma.

The natural sour taste of dangke makes the cheese cake feel fresher.

The experimental product for an overall chilled cheese cake can resemble a cheese cake made from cream cheese. But there are some differences considering the character of the cheese that is different, so some of the findings in this study will be very useful for the manufacture of other pastry products that will use dangke cheese as the main ingredient.

At the stage of the making process, It is difficult to make dangke cheese become smooth, there are many small clumps that can not be destroyed even though the shaking process is done in a long time. However, in the process of creaming, the dangke cheese is able to trap the air so that the batter looks more pale color than before and the volume increases.

Other findings obtained in the process of making experimental product A (Figure 1) is the nature of cheese dangke which was more able to thicken the batter. This property is suspected because of the content of papaya sap contained in dangke. The pectin content contained in the papaya sap may have an effect on thickening the batter so that the texture should be dilute and must be added more liquid than the comparison product. The effect of pectin content in papaya sap used for coagulant in dangke production is needed further research to prove whether the pectin is what makes the batter becomes more viscous than it should be. From the three aspects in the characteristics of experiment product A, dangkedeserve to be used in chilled cheese cake production, because the
character of the resulting product is not much different from the comparison product A. Assessment from resource persons on experiment product A receives a fairly positive and preferred response. Some adjustments to the recipe need to be done to get a better product and more resembling in terms of texture and appearance, especially eliminating small clumps that will interfere with the eating quality of experiment products A.

Some suggestions from the resource persons to overcome the phenomenon above are by way of filtering, or longer creaming process. Screening can be done after the dangke is creamed, but the weakness is the weight of the cheese will be reduced so it is necessary to increase the amount of cheese to anticipate it. While the longer creaming process will increase the manufacturing time, as well as the amount of air that goes into the batter. This will make the product lighter and softer. The 4th source also expressed his opinion that the distinctive taste of a savory cream cheese flavor needs to be added to the product, so the percentage of cheese cream addition can be considered as well.

Meanwhile, the authors also asked the opinion of the speakers about the feasibility of these products to be introduced to the general public, both in the region of origin, namely South Sulawesi and West Java. Resource 3 stated that this product might make indigenous people in Sulawesi surprised, but they are still able to accept the idea and even a chance to be a product that can be made by micro business actors. While informant 1 expressed his opinion that this product is more likely to be introduced in West Java society to consider higher purchasing power.

The result of observation of baked cheese cake characteristic of experiment product B is different from comparison product B and with respondent's expectation when interviewed. The experiment product B feels drier in terms of texture and taste so that the perception of panelist by expecting the character of baked cheese cake that is soft and moist is not found in the experiment product B (Figure 2). This makes the resource judgment of the experiment product B less good, although the product is still considered feasible for consumption or commercial sale but its character is not like baked cheese cake in general.

Experiment product B are characteristically more similar to fat-based cakes, such as butter cake or brownies. But the hallmark of dangke cheese in terms of taste is still there, it just feels drier when compared with baked cheese cake products in general. Baked cheese cake is included into the custard class, so it

Source: Prepared by Writer, 2017

Figure 2: Experiment Product B
should have a very moist texture and tend to get wet. In terms of appearance, the experiment product B looks shiny, as there is a sprinkling of sugar that gets exposed to heat when the product is baked. After the authors have observed it more closely, this happens because granules or insoluble cheese clumps gather at the surface so that they look like sugar. For volume, baked cheese cake does not increase the volume that occurs when baking process, because there is no meringue is added. In contrast to the manufacture of Japanese cheese cake that expects the addition of a lot of volume in the baking process. It can make it easier to approximate the placement of the batter into the mold because the volume of the product will not increase.

The experiment product B has a flat top but it is not as smooth as the comparison product. However, in terms of volume, both products are equally not increased after baking even on the experiment product B is seen to increase in volume when creamed. The volume increase in creaming process makes the experimental product yields more products than the comparison product. In terms of flavor, experiment product B still has original dangke fresh sour taste like fermentation process of sticky ricetape. This adds flavor, and reduces the sweetness that comes from sugar. As the opinion expressed by resource 5 who thought experimental product B will feel very sweet because the surface is shiny, but it turns out the sweetness is not too dominant when eating, even the fresh sour taste of dangke could counterbalance the sweetness.

Resource 1 assesses that experiment product B are less precise when compared to baked cheese cake in general, because the flavors produced by dangke are denser as are the cake made from fat like butter cake although it feels slightly more moist. The scent of natural acids does add a positive value to the experimental product, but only when the product is eaten, no scent is felt when the product is finished baking. In terms of texture, the experiment product B is judged to be different from the comparison product B. The custard type should be very moist like a pudding with a very high moisture content, soft and easily melt in the mouth. In contrast to experiment product B, the dry and camped texture makes it much different from the baked cheese cake in general. This may be due to the pectin content present in the papaya sap in the dangke cheese itself. Because as with the experiment product A, the experiment batter B also feels more solid compared to comparison product B. The authors' assumption that leads to the pectin content is due to the theoretical sources suggesting that the water content in dangke cheese and cream cheese is not far different.

6 CONCLUSIONS

Dangke cheese can be used as the main ingredient in making cheese cake, either by chilling method or by baked. Characteristics of dangke are different from cream cheese that does not make cheese cake with cooling method unless it will lose its original character as a cheese cake, but on bake method, if cheese cake uses dangke, it will become too dry, so it no longer resembles baked cheese cake in general.

Responses from the speakers in the interview by the authors show that dangke is very feasible to be introduced to the community both in the region of South Sulawesi and in West Java. The speakers also argued that the opportunity to use dangke cheese as a local ingredient is still very much, both in pastry and other processed products.
REFERENCES


