



Substitution of Tofu for Egg in Making Pound Cake

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ABSTRACT

The research objective of Substitution of Tofu for Egg in Making Pound Cake Bakery and cake shop business trends have increased significantly. Increased demand from customers for bakery and pastry products requires the bakery and cake shop industry to increase production to meet customer demand. However, there is a group of people who cannot enjoy pound cake because pound cake contains eggs as one of its basic ingredients so that those who are vegan and who have allergies to eggs cannot enjoy pound cake. Therefore, the author wishes to make a new innovation by substituting tofu for eggs so that pound cake can be enjoyed by those who are vegan or have allergies to eggs. The research method used is experimental. Data collection techniques used observation, literature study, panelis rating The answer to each instrument item that uses a Likert scale has gradations from very positive to very negative. The author conducted panelist tests on 10 professional panelists and 20 consumer panelists. The results of the assessment of the color aspect The results of the value of the color aspect, the experimental pound cake received 125. Assessment results from the aroma aspect The results of the value of the aroma aspect, the experimental pound cake received 124 points with an average value of 4.1. The results of the assessment of the taste aspect The results of the value of the taste aspect, the experimental pound cake received points of 118 with an average value of 3.9. The results of the assessment of the texture aspect The results of the value of the texture aspect, the experimental pound cake received points of 132 with an average value of 4.4.

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1. INTRODUCTION

Food is very influential in the tourism sector in Indonesia. It is not uncommon for tourists who visit an area would taste the specialties of that area. Indonesia is rich in regional culture, so it can be called a country rich in culinary delights. West Java also has many regions, and each of them has its own unique food. In fact, in each region, the food's raw materials are different from other regions. As time goes by, many foods have been differentiated by being added by various other ingredients in their manufacture without losing the taste and uniqueness of the original recipes. (Octavia, Ningsih, & Fajri, 2020)

Bakery and cake shop business trends have increased significantly. Increased demand from customers for bakery and pastry products requires the bakery and cake shop industry to increase production to meet customer demand.

The term cake, which was previously known as a food that has a bread-like shape with the addition of honey as a sweetener, became very diverse after the discovery of the cake developer. Based on the use of the main ingredients, namely flour, sugar, eggs and margarine in a ratio of 1:1:1:1, it is known as Pound Cake which developed in the United Kingdom. According to (Ningrum, 2012) "Cake is a baked dough made from four basic ingredients: flour, sugar, eggs and fat. Pound cake is a type of cake that has a dense texture with coarse crumbs".

In Indonesia, pound cake has many fans from all walks of life. However, there is a group of people who cannot enjoy pound cake because pound cake contains eggs as one of its basic ingredients so that those who are vegan and who have allergies to eggs cannot enjoy pound cake. Therefore, the author wishes to make a new innovation by substituting tofu for eggs so that pound cake can be enjoyed by those who are vegan or have allergies to eggs. Substitution is a grammatical cohesion. Substitution is the process of replacing a language element by another element to produce a distinguishing element or to explain a certain element. Substitution has the same structural function as what it replaces and can be replaced by a point of interpretation. Substitution is a grammatical relationship and is more of a word and meaning relationship (Junaiyah and Arifin, 2010: 37).

In accordance with the basic ingredients, cake is made using eggs. The use of eggs in the process of making cake has a role as a binder, emulsifier, developer, maintaining the robustness of the texture and giving color to the cake. As is known, eggs are one type of animal protein. From the previously mentioned conditions, there is a group of people called vegetarians who apply a diet without consuming food derived from animals. According to (Kamus Besar Bahasa Indonesia (KBBI), 2023), vegetarian is defined as a person who does not eat meat but consumes vegetables and other plant products.

In an effort to reduce production costs and minimize the loss of using eggs in cake making, research was conducted on materials that can replace eggs and have the same functional properties as eggs. Eggs are perfect food, because they contain nutrients needed for living things such as protein, fat, vitamins and minerals in sufficient quantities (Deptan, 2010).

Eggs contain protein, as well as lecithin. Lecithin acts as an emulsifier or agent that can unite various substances in the dough. This substance can also improve the texture of the cake so that it is softer. Tofu is an extract from soy protein that is coagulated with calcium ions, acids, and other coagulating ingredients. Tofu has various contents and one of them is the protein content and lecithin substances that are also found in eggs. Tofu is also an alternative source of protein for people with egg allergies that are easily obtained. Yellow tofu has a solid texture that is quite soft. Yellow tofu will not significantly affect the flavor

and aroma of the cake, so the cake remains with the desired taste and aroma. A quarter cup of yellow tofu (60 grams), can replace one egg that weighs 50 - 55 grams.

Egg is a basic ingredient that can be replaced with yellow tofu because it has lecithin and protein substances that are not less high. In addition, yellow tofu also has a very high digestibility because fiber and water-soluble carbohydrates are mostly dissolved in the manufacturing process. Therefore, researchers are interested in maximizing processed tofu products by using it as an egg substitute in making pound cake. Based on the explanation above, the author will conduct a study where the role of eggs in pound cake will be replaced by tofu so that pound cake can be consumed by all groups including vegans and those who have allergies to eggs. This research will focus on aspects of taste that include flavor, aroma, texture and appearance. This research will be raised as a final project with the title: "Tofu Substitution for Eggs in Making Pound Cake".

2. LITERATUR REVIEW

2.1. Pound Cake

Cake is a baked dough made from four basic ingredients: flour, sugar, eggs and fat. Pound cake is a type of cake that has a dense texture with coarse crumbs (Ningrum, 2012). Cake is quite popular in Indonesia, whether baked or steamed. One of the attractions of cake is that it tastes delicious and is easy to make (Rafika, Nurjanah, & Hidayati, 2012).

2.2. Tofu

Serving Size	
100 grams (100g)	
Calories	
144	
% Daily Value *	
Total Fat 8.7g	11%
Saturated Fat 1.3g	6%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 14mg	1%
Total Carbohydrate 2.8g	1%
Dietary Fiber 2.3g	8%
Total Sugars --g	--%
Includes --g Added Sugars	--%
Protein 17.3g	35%
Vitamin C 0.2mg	0%
Vitamin D 0mcg	0%
Iron 2.7mg	15%
Calcium 683mg	53%
Potassium 237mg	5%
Phosphorus 190mg	15%

*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Figure 1. Nutrition Facts of Tofu

Source: <https://tools.myfooddata.com/nutrition-facts/172475/100g/1#>

Tofu, also known as bean curd, is a highly admired food of plant origin with great nutritional and health benefits. It was first discovered by a Chinese cook about 2000 years ago. Tofu is a versatile form of soybeans that is made by curdling soymilk so that its proteins become coagulated and then pressed into a sliceable cake. There are regional variations in production methods, flavor, texture, and usage of tofu. Tofu is a natural, inexpensive, and nourishing food, which is consumed by people of developed as well as developing nations.

(Pal, Devrani, & Ayele, 2019)

2.3. Standard Recipe

According to Sulastiyono (2006) standard recipes are a reference for instructions in implementing the process and coaching in cooking. Recipe standards can also guarantee the standardization of each menu served to guests. From this theory it can be concluded that a chef must be able to use standard recipes as a reference in cooking so that the food produced is in accordance with the standardization of the product served to guests (Rina, 2020).

2.4. Flour

Wheat flour is the main ingredient in making cakes. Wheat flour is widely used as a basic ingredient for making dry cakes, biscuits, noodles, cakes, bread, etc. Wheat flour is obtained from the process of milling wheat (*Triticum sativum*) which has a carbohydrate content of 67-70%, protein 10-14%, and fat 1-3% (Riganakos and Kontominas, 1995).

2.5. Milk

According to (BIRT, 2017) in milk bread products used to improve texture and mouthfeel. Milk protein also provides a soft crumb texture to cakes, and contributes to the moisture, color and flavor of bakery products. Cakes containing milk also have a longer shelf life.

2.6. Sugar

According to (Astawan, 2009), sugar functions to provide a sweet taste, help form the structure of the product, improve texture and tenderness, extend shelf life by binding water and triggering good color formation.

2.7. Butter

Butter is made from cream and has a fat content of at least 80 percent. The remaining 20 percent is water with some milk solids. Butter imparts a good flavor without a greasy mouthfeel to baked goods because it melts at body temperature (Lauterbach & Albrecht, 1994).

2.8. Egg

Eggs are an almost perfect source of animal protein. Chicken eggs are a perfect food that contain nutrients such as protein (12.8%) and fat (11.8%). 100 grams of whole eggs also contain 327.0 IU of vitamin A and 256.0 mg of minerals (Wulandari, Z., & Arief, I. I., 2022).

Eggs contribute structure to a baked product. They may serve to do this through their contribution of heat denatured proteins, steam for leavening, or moisture for starch gelatinization. Egg white has the ability to form foams that are stable enough to support large quantities of flour or sugar (Summu & Sahin, 2008).

3. METHODS

3.1. Methods

The research method used is experimental. Where this method explains the engineering / manipulation of products / materials / methods / tools, compared to aspects

that have been done before. The description of research and development in this writing is described through an experimental approach, where according to Putra (2019: 130) "that research and development is closely related to experiments, because research and development is very focused on effectiveness, efficiency and productivity". This is in line with Creswell's opinion (2008: 299) which states that "experimental writing as a systematic, systemic, structured, rigorous and accurate writing stage in explaining procedures and ensuring certainty of results due to control, measurement and consistency that accompany the implementation of the writing stage." (Putra, 2019: 130).

3.2. Data Collection Technique

Data collection techniques used observation, literature study, panelis rating.

3.3. Measurement Scale and Data Analysis Techniques

According to (Sugiyono, 2016) the Likert scale is used to measure the attitudes, opinions and perceptions of a person or group of people about social phenomena. With a Likert scale, the variables to be measured are translated into variable indicators. Then the indicator is used as a starting point for compiling instrument items which can be in the form of statements or questions. The answer to each instrument item that uses a Likert scale has gradations from very positive to very negative.

4. RESULTS AND DISCUSSION

4.1. Pound Cake Discussion

Pound cake enthusiasts in Indonesia are quite high, this cake is much loved because it tastes simple but still delicious. Basically, pound cake has four main ingredients: flour, eggs, sugar and fat. Historically, pound cake was made with the same basic ingredients or 1:1:1:1, in the UK itself pound cake is made with a measure of 1 pound of each basic ingredient so it is called pound cake. Along with the times pound cake has several developments, ranging from the addition of ingredients, flavor variants and others. The author replaces one of the main ingredients for making pound cake, namely eggs using tofu with the aim that this pound cake can be consumed by all groups including vegans and those with allergies to eggs. Eggs themselves function as an emulsifier in making pound cake so that when the role of eggs is replaced by tofu, pound cake dough requires more developer ingredients to help the development of the cake to be maximized. However, this additional amount of developer will impact the flavor of the pound cake where there is a slight tartness from the baking powder used.

4.2. Experimental results

Pound cake recipes that use tofu have some differences compared to pound cakes that use eggs. The experimental pound cake has a slightly darker color than the comparison pound cake, where the color is influenced by the color of tofu which has a yellow base color. In terms of aroma, the experimental pound cake did not have a much different aroma from the comparison pound cake, where both had a prominent caramel aroma. While in terms of texture, the experimental pound cake has a softer texture than the comparison pound cake which is one of the advantages of the experimental pound cake.

The test results that the author conducted by conducting organoleptic tests in terms of color, aroma, taste, and texture. The author conducted panelist tests on 10 professional panelists and 20 consumer panelists.

After being assessed by 30 professional panelists and consumer panelists, the author has obtained the results of the assessment that the panelists have done. The following are the results of the assessment of professional panelists and consumer panelists on experimental writing products:

Based on data from the table of assessment results of pound cake experiments conducted by 30 professional panelists and consumer panelists above, the value of each aspect can be found as follows:

- a. The results of the assessment of the color aspect The results of the value of the color aspect, the experimental pound cake received 125 points with an average value of 4.1. Therefore, for the assessment of the color aspect, the experimental pound cake received an attractive rating.
- b. Assessment results from the aroma aspect The results of the value of the aroma aspect, the experimental pound cake received 124 points with an average value of 4.1. Therefore, for the assessment of the aroma aspect, the experimental pound cake received a fragrant score.
- c. The results of the assessment of the taste aspect The results of the value of the taste aspect, the experimental pound cake received points of 118 with an average value of 3.9. Therefore, for the assessment of the taste aspect, the experimental pound cake received a good score.
- d. The results of the assessment of the texture aspect The results of the value of the texture aspect, the experimental pound cake received points of 132 with an average value of 4.4. Therefore, for the assessment of the texture aspect, the experimental pound cake received a very soft score.

5. CONCLUSION

The taste of the experimental pound cake based on data obtained from the previous chapter, a total of 30 panelists consisting of 10 professional panelists and 20 consumer panelists assessed the taste of the comparison pound cake and experimental pound cake. It can be concluded that consumer panelists preferred the experimental pound cake because the experimental pound cake had higher points so that it could be concluded that the pound cake was attractive, fragrant, delicious, and soft. The professional panelists displayed the same results where the professional panelists preferred the experimental pound cake with results that could be interpreted that the pound cake was attractive, fragrant, very tasty, and soft.

The nutritional content of the experimental pound cake was superior to the comparison pound cake as seen from the lower fat and calorie values of the comparison pound cake. The advantage is because the experimental pound cake contains 134 g fat and 2328 kcal calories in one pan.

In terms of production costs in making pound cake comparison and experimental pound cake, the cost of experimental pound cake is lower when compared to pound cake comparison. This is due to differences in raw materials.

The recommendations/suggestions that the author can provide are related to the results of the writing and discussion as follows:

- a. Pound cake using tofu is considered good and favored by the public as evidenced by the organolaptic test. the community as evidenced by the organolaptic test so that it needs to be socialized or introduced to the community because tofu has a high to be socialized or introduced to the public because tofu has a good taste. 55 benefits and contains good nutrition and has a delicious taste which can be used as functional food.

which can be used as functional food.

- b. The author suggests that those who are interested in vegan pound cake can increase the variety of other flavors to make it more diverse and delicious. can increase the variety of other flavors so that it is more diverse and attractive for consumption for all people and increase the nutritional content in it. increase the nutritional content in it.
- c. The author hopes that the next author can increase variants of pound cake by using a more economical type of raw material so as not to greatly affect production costs without economical raw materials so as not to affect production costs too much without reducing the distinctive flavor of the pound cake itself.

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