ISSN: 2597-8713 (Online)
ISSN: 2598-5167 (Print)
AGRICULTURAL SCIENCE
Journal Of Agricultural Science And Agriculture Engineering
ISSN : 2597-8713 (Online) - 2598-5167 (Print)
Available on :
http://agriscience.scientific-work.org/index.php/agriscience

Processing of Red Velvet Cake Using Natural Dyes of Red Bitter Fruit (*Beta Vulgaris)* And Red Spinach (*Amaranthus Tricolor Linn)*

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ABSTRACT

The red velvet that many people like is a pastry food that is usually found in restaurants and cafes. Red Velvet, which usually uses red food coloring, in this study replaced it with red beet and spinach coloring. Beets, which have high nutrition, are very useful and suitable to be processed into natural dyes in the home industry that are easy to process. One of the products to apply it is Red Velvet cake. Red Velvet cake basically uses a mixture of food coloring. This research tries to replace red food coloring by utilizing beet and red spinach which are very good for the body. This study aims to provide a new alternative to natural dyes in the making of Red Velvet cake. Experimental research was carried out by conducting systematic and planned experiments and tests on Red Velvet cake and collecting primary and secondary data as well. All data were presented descriptively with SPSS. From the mean results, it can be concluded that the Red Velvet Cake using red beet and red spinach dye is acceptable to the public.

***Keywords*:** Organoleptic Result, Red velvet cake, Beets, Red Spinach

1. INTRODUCTION

Today, many people make meeting business partners or just spending time with friends in a café as a way of life. Order coffee accompanied by a piece of cake. There are so many kinds of cakes provided in a café, and the cakes that are sold are not monotonous the same cake. The cafe will try to attract visitors by making cakes that are attractive and in demand. Beautiful and varied cakes will always attract the attention of consumers, whether cakes with various colors or with interesting shapes and decorations. The cake that is still often sought after by café visitors is *Red Velvet*. *Red Velvet* is a cake with a basic ingredient of butter cake. Red velvet Has a dense texture and is not soft. *Red Velvet* is a cake that is indeed red in color.

From the above background, an experiment in making dye from beets with spinach was carried out to make *Red Velvet* as a natural dye. The manufacture of *red velvet* has 2 methods, namely: *no bake* and *bake*, in this study themethod is used *no bake* . *The red velvet cake* has a *smooth* and *creamy* texture and has atexture *crunchy* on the basis of the butter cake (*butter cake* themethod *no bake* has a *base layer* made of biscuit crumbs) and has a unique taste consisting of sweetness (Hariyadi et al., 2019). *Red velvet* currently widely favored by the people, mostly teenagers and *red velvet* is served as a dessert.

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Beetroot is included in theclass *Beta vulgaris* and the subspecies of thegroup *Conditiva vulgaris*. Due to its strong purplish red color, in addition to food, it is also used as a food coloring and medicine. Meanwhile, red spinach or *Amaranthus tricolor Linn* from thetribe *Amaranthaceae* does have a million benefits. Plants originating from America were originally known as ornamental plants but were later promoted as food sources of protein, especially for developing countries and are thought to have entered Indonesia in the 19th century when the trafficking of foreigners entered Indonesian territory. Benefits of spinach in general are to improve kidney work and improve digestion.

The processing of *red velvet cake* uses natural dyes with two different treatments, namely: (1) using naturaldyes *red velvet* made from red beets, and (2)dyes *red velvet* naturalmade from red spinach. The research objective of using natural dyes in making the cake is to find out how to make *red velvet cake* with natural dyes.

2. RESEARCH METHODS

This research was conducted in the Agroindustry Laboratory of the UNTAG Vocational Faculty, Surabaya, November - February 2021. The tools used in this study were plastic spatulas, bowls / bowls, digital scales, measuring cups, mixers, stoves, unloading tin pan, pounder. / wooden lumping, blender, sauce pan, fine strainer / fine filter, *chiller*/ refrigerator. The ingredients used are beets and red spinach, biscuits, vanilla shield, gelatin, margarine, refined sugar, water, butter cream. The manufacturing procedure can be seen in Figure 1.

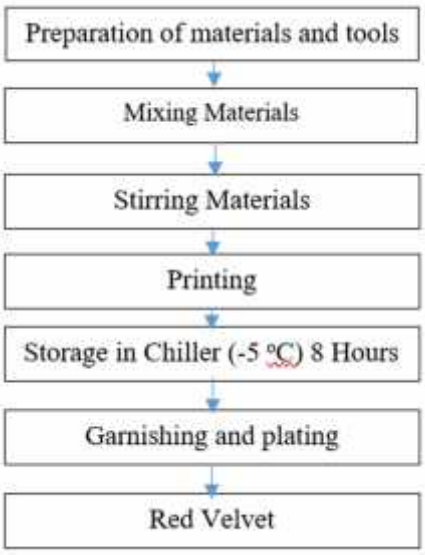

Figure 1: Diagram Red Velvet Procedur

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Beetroot and red spinach, biscuits, vanilla shield, gelatin, margarine, powdered sugar, water, butter cream. According to Waysima and Adawiyah (2010), organoleptic test or sensory evaluation is a scientific measurement used in measuring and analyzing the characteristics of a food item that can be accepted by the senses of sight, taste, smell and touch. The reaction of the sensing process carried out by humans is interpreted in a measuring instrument called a panelist.

In this study, the preference test which is part of the organoleptic test was used. According to Djuju (2008) the liking test or hedonic test is a test that involves panelists giving personal responses about their likes or dislikes and their levels. The research design to be carried out is research by means of an experiment. Types and designs using quantitative design research. By using the hedonic test data analysis method approach (organoleptic test) and descriptive analysis.

This study consisted of two factors, namely, beets with the symbol X1 and X2 as a symbol of red spinach coloring. The sampling of this research was conducted using nonprobability sampling technique, namely, *convenience sampling* which means the technique of determining the sample based on chance, that is, whoever is able to take the sample. So that in this study the number of panelists to obtain data was 30 panelists.

Data analysis was carried out by organoleptic testing to determine which product was preferred by distributing questionnaires to obtain data and information in this study. The research treatments included:

X0 : Control (Using Food Coloring / Synthetic

X1 : Coloring using Beetroot

X2 : Coloring using red spinach

Next, the preference test (organoleptic test) was carried out to determine which product was preferred. By conducting an organoleptic test with the determination of several Samples can be generated data to determine the effect of natural dyes from beets and red spinach for the best treatment by conducting sample tests and assessments between: very dislike (1), dislike (2), like (3), and very like. (4) From the assessment indicators, namely the level of taste preference, aroma preference level, texture preference level, color preference level, the percentage can be determined including the formula:

$$P = \frac{F}{120} x\ 120$$

Information:

P = Percentage

F = Frequency of Answers

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3. RESULTS AND DISCUSSION

Table 1: Organoleptic Test Analysis Results

Indicator	Level Likes	Scor	
		X1	X2
Colour	Very Likes	36	-
	Likes	51	9
	Dislikes	8	40
	Very dislikes	-	7
Total		95	56
Taste	Very likes	88	4
	Likes	18	24
	Dislikes	4	24
	Very dislike	-	30
Total		110	64
Tekstur	Very likes	28	8
	Likes	57	48
	Dislikes	8	28
	Very dislike	-	-
Total		93	84
Aroma	Very likes	36	20
	Likes	33	18
	Dislikes	12	26
	Very dislike	4	6
Total		85	70

Graph 1.The color test results in organoleptics showed the panelist's response to the red velvetcolor *cake*, starting from the X1 treatment (using naturalcoloring *red velvet* beetroot) with an average score of 95 with a percentage result of 78% of all panelists, namely 30 people, X2 treatment (using naturaldyes *red velvet* spinach) with an average score of 56 with a percentage result of 47% of the total panelists, namely 30 people.

The beets used for the natural red velvet color process turn out to be pink compared to using synthetic food coloring. Because synthetic dyes are more practical than using natural dyes, but beetroot natural dyes are very good for health, and beetroot natural dyes are still very rarely used because the use of natural dyes for beets in food also has several drawbacks, namely (Petijo, 2009)

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: (1) The raw material for dyes is a lot. If you want to get natural dyes in large quantities you also need a lot of raw materials. (2) Results are not always exact. The results obtained from natural dyes will vary widely and vary or inconsistent (less stable). (3) Sensitive to heating. The heating process affects the color of food due to changes in the physical and chemical properties of food. (4) Sensitive to the acidity of the solution. There are several natural dyes that can be affected by the acidity of the solution and thus affect the result of the existing color. (5) Less economical. Natural dye raw materials usually have a higher price than artificial dyes. Synthetic / food dyes are dyes that are made based on the combination of chemical compounds. The use of artificial dyes is in great demand because these dyes are much more practical in sharing aspects compared to natural dyes, for example, such as, easier to obtain or buy, easy to use, measurable results and easy to detect residues in foods that use food coloring (Petijo, 2009).

The highest panelist response tocolor *red velvet cake* occurred in treatment X1 (using naturaldye *red velvet* beetroot), while the lowest panelist response to red spinach as a natural dye occurred in treatment X2 which did not approach red but was slightly pale brown in color. This is because the temperature of the extract is one of the factors that affect the effectiveness of the extraction, because the speed of the reaction depends on the type of reagent, the reaction temperature and the concentration of the reagents (Aryanti, 2015).

Graph 2.The results of the taste test in organoleptics show the panelist's response to the taste of red velvet *cake*, starting from the X1 treatment (using naturalcoloring *red velvet* beetroot) with an average score of 110 with a percentage result of 92% of the total panelists, namely 30 people. The taste with beetroot coloring was accepted by the panelists as a red velvet cake, but there was still a slight taste of the beetroot. While the X2 treatment (using naturaldyes *redred velvet* spinach) with an average score of 64 with the percentage result of 53% of the total panelists, namely 30 people. This means that the taste is still red spinach. This is because each panelist has a different sense of taste. Another factor that causes panelists to dislike red spinach leaf extract is because of the lack of public appeal to consume red spinach leaves, people are more familiar with green spinach leaves than red spinach leaves and for the development of the properties of red spinach leaf extract, only a few are using it (Aryanti 2015).

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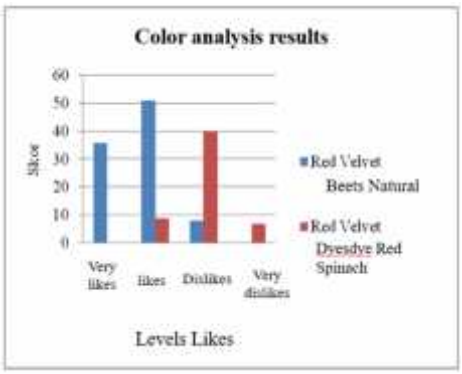
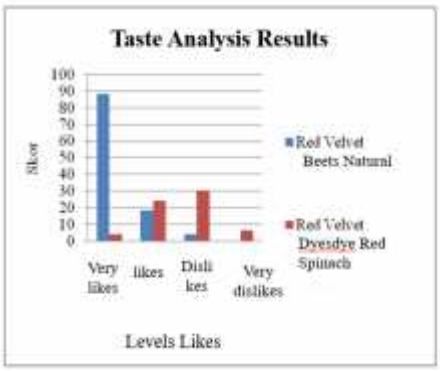
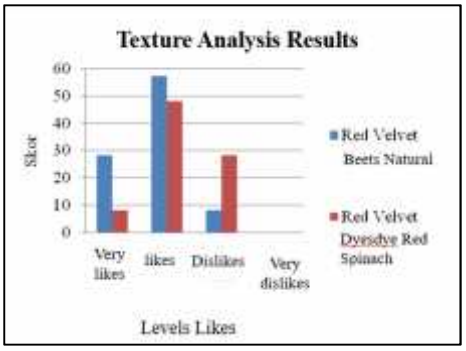


Graph 1.The color test results

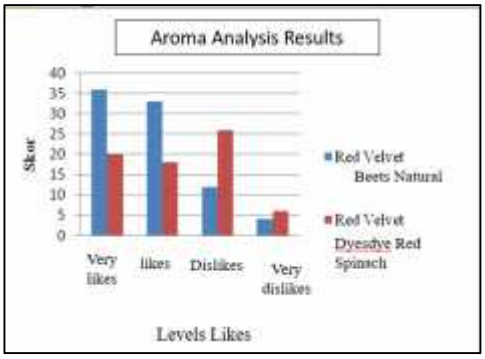


Graph 2.The taste test results

The panelist's highest response to the taste of *red velvet cake* occurred in treatment X1 (using naturaldye *red velvet* beetroot) because the taste was close to red velvet cake Xo. *Red Velvet* is a cake that is indeed red in color. The red color is obtained from beets which are mixed with synthetic red dye. If you only use beets, it will taste bitter if used too much (Wahyuningtiyas, 2015). So that the lowest panelist response to the taste of the *red velvet cake* occurred in the X2 treatment (usingnatural dyes *redred velvet* spinach).



Graph 3.The teksture test results



Graph 4.The aroma test results

Graph 3.The results of the organoleptic texture test showed the panelist's response to the taste of red velvet *cake*, X1 treatment (using naturaldye *red velvet* beetroot) with an average score of 93 with a percentage result of 78% of the total panelists, namely 30 people. The X2 treatment (using naturaldyes *redred velvet* spinach) with an average score of 84 with a percentage result of 70% of the total panelists, namely 30 people. On The texture of spinach and beets is not much different after the use of natural dyes for beets and red spinach due to the addition of gelatin to the *red velvet* so that it produces a dense and sturdy dough texture and a thin layer on the outer skin that makes the outside stronger. Gelatin is a simple protein produced by collagen hydrosil (components of bone and skin, especially the connective tissue) obtained by acid hydrolysis. Gelatin comes from the word "gelatus" which means strong, sturdy, or made physically frozen gelatin frozen or made frozen. Gelatin is physically solid, dry, tasteless, and transparent (Aryantie, 2017).

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Aroma is one of the most influencing parameters in the organoleptic test in collecting the product level that panelists / respondents are interested in. Graph 4.The results of the organoleptic aroma test show the panelist's response to the taste of red velvet *cake*, starting from the X1 treatment (using naturalcoloring *red velvet* beetroot) with an average score of 85 with a percentage result of 71% of the total panelists, namely 30 people, X2 treatment (using naturaldye *redred velvet* spinach) with an average score of 70 with a percentage result of 58% of the total panelists, namely 30 people.

The highest panelist response to the aroma of *red velvet cake* occurred in treatment X1 (using natural dyes for *red velvet* beetroot), while the lowest response of panelists to the taste of *red velvet cheesecake* was in treatment X2 (using naturaldyes *red velvet red* spinach). For the aroma, there is not too much influence in the *Red Velvet cake* because the aroma of the two samples uses *butter cream* so that it is strong enough and the aroma does not affect the aroma of *Red Velvet*.

4. CONCLUSION

Red velvet is the best of the X1 treatment with a color value: 95; taste: 110; Texture: 93; and aroma 85. Red Velvet cake processing using natural dyes of beets and red spinach does not affect the texture and aroma, but the difference in taste and color.

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