

Article

Effect of Red Dragon Fruit Substitution on Organoleptic of Choux Pastry Fillings

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Abstract: Choux pastry is a dough made from wheat flour, margarine, water and eggs. Choux pastry has a golden yellow color with a soft texture. The purpose of this research are 1). To determine the best formulation for making variations of choux pastry filling with the substitution of red dragon fruit and 2) to determine the effect of substitution red dragon fruit to the choux pastry filling with a percentage of 25%, 50% and 75% toward the sensory quality of the choux pastry filling in the aspects of color, aroma, texture, and taste. Object of this research is choux pastry filling with the substitution of red dragon fruit. Methods of data collection is through subjective assessment with sensory tests and liking tests. Data collection tool was 30 semi-trained panelists. The data obtained was analyzed statistically using the ANOVA test and further tested using the DUNCAN test. The result obtained from a single classification analysis of variance is that there is an effect of substitute red dragon fruit to the choux pastry filling with a percentage of 25%, 50% and 75% on the sensory quality of the choux pastry in the aspects of color, Aroma, texture, and taste. The substitution of red dragon fruit in making choux pastry filling at 25% is the best treatment with the favorability rating of color (6.12); Aroma (6.53); texture (5.94); and taste (6.53).

Keywords: dragon fruit, choux pastry, filling, substitution

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1. Introduction

Innovation in the culinary world continues to develop in order to create satisfaction for its connoisseurs. Humans quickly get bored with the same things or tastes, hoping to find a new taste that can give a different impression from anything they have ever tasted before. Not only from products, with trends that continue to change, but other supporting factors that influence the image of the producer. Choux itself comes from France and is made from eggs, butter, flour, salt and water and uses a cooking method process of boiling, mixing and baking. Choux pastry is shaped like cabbage which refers to the choux paste product called cream puff. Choux pastry is defined as a cake that has a soft texture and is hollow in the middle and light, so it can be filled with various fillings [1]

Currently, choux is not only filled with vla, but with various kinds of fillings, such as ice cream, ragout, shrimp, lettuce, fruit, etc. A few studies have identified the choux pastry development on the dough and filling. Innovation in dough and filling pastry can increase the nutrition and functionality of choux pastry. Replacing simple sugar or carbohydrate with fibre and protein is a dietary strategy to improve health effects [2]. Dragon fruit can be used to reformulate pastry products. Dragon fruit is added to enrich the filling of choux pastry.

Indonesia has many types of local food that can be used to support national food security. Local food ingredients are not only available in large quantities but also have high productivity value and good nutritional content. Diversifying food consumption is one of

the government's programs, so that we do not depend on one type of food. So far, the filling for choux pastry is in the form of vanilla or chocolate Aromaed milk without any other variants, whereas Indonesia is rich in fruit which can be used as an additional variant such as dragon fruit.

Dragon fruit is an edible fruit with water-soluble fiber and contains high level of vitamin C and antioxidants like Betalains, Hydroxycinnamates and Flavonoids [3]. It has several health benefits including its ability to aid in weight loss, improve digestion, reduce LDL cholesterol in the blood and strengthen the immune system. Hydroxycinnamates helps to prevent cancer and Flavonoids acts on brain cells and blood vessels to reduce the risk of heart diseases. It also guards against bacteria and fungi and helps in the overall functioning of the body [3]. Dragon fruit is a good source of minerals, glucose, fructose, dietary fiber and vitamins [4]. It is well-known for its rich vitamin C, phosphorus, calcium as well as antioxidant contents [5]. The fresh fruit contains 82.5-83.0% moisture, 0.16-0.23% protein, 0.21-0.61% fat, 0.7-0.9% fiber. 100 g of fresh fruit pulp contains 6.3-8.8 mg calcium, 30.2-36.1 mg phosphorous, 0.5-0.61 mg iron and 8-9 mg vitamin C. The red flesh is additionally rich in Betalains, meeting the increasing trade interest in antioxidant products and natural food colorant [6].

Based on the background above, this research was carried out to determine the best formulation for making variations of choux pastry filling with the substitution of red dragon fruit and to determine the effect of substitution red dragon fruit to the choux pastry filling toward the sensory quality of the choux pastry filling in in the aspects of color, aroma, texture, and taste.

2. Materials and Methods

The ingredients used in the research were wheat flour, margarine, eggs, water and salt. The object of this research is eclairs filling with the substitution of red dragon fruit with different treatments, namely 25%, 50% and 75% for the color, aroma, texture and taste produced. The data in this research uses primary data and secondary data. Data was collected through organoleptic tests by giving organoleptic test format sheets to 30 panelists. The instrument in this research is an organoleptic test format for products which is equipped with a sample code which includes shape, color, aroma, texture and taste. Data were analyzed using Analysis of Variance (ANOVA) and if they were different they would be tested further using the Duncan test.

3. Results and Discussion

The average value of the research results for the color quality of the choux pastry filling in each treatment can be seen in Figure 1.

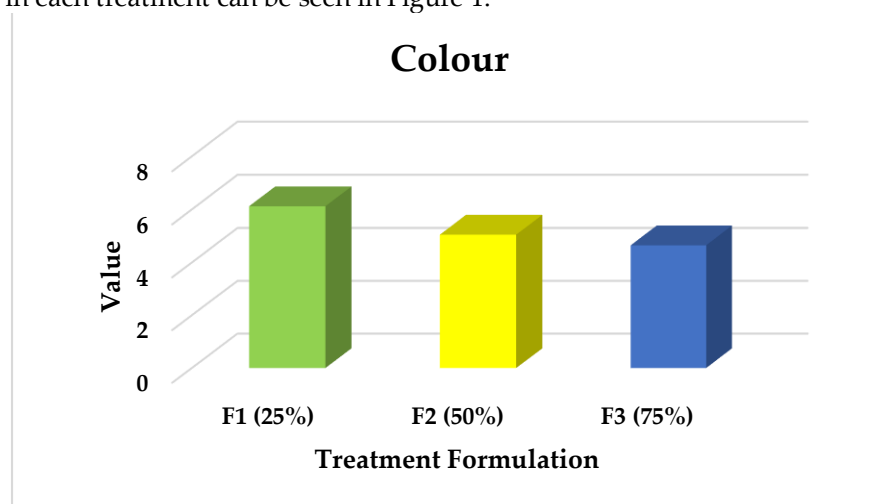


Fig 1. Organoleptic test results for choux pastry filling color

Organoleptic testing of the color of the choux pastry filling aims to see the visual conditions produced by the choux pastry filling product in each treatment carried out. Color is an important indicator in a food product, where color influences consumers' interest in a product. Attractive colors will usually provide a better level of favorability in the market. Based on the panelist test results on the organoleptic color of the choux pastry filling, it was found that the highest value was found in the F1 formulation, namely the choux pastry filling with 25% red dragon fruit substitution, while the lowest value was found in the F3 formulation, namely the choux pastry filling with the substitution of 75% red dragon fruit. This means that the substitution of red dragon fruit affects the panelist test results on color organoleptics.

The anthocyanin content in red dragon fruit is a dye that plays a role in providing a bluish-red color, so it has the potential to become a natural coloring for food and can be used as an alternative to synthetic dyes [7]. The red flesh is additionally rich in betalains, meeting the increasing trade interest in antioxidant products and natural food colorant [6]. When the concentration of red dragon fruit used is higher, the percentage of anthocyanins will also be higher so the purple color will be stronger or more intense.

The average value of the research results for the Aroma quality of the choux pastry filling in each treatment can be seen in Figure 2.

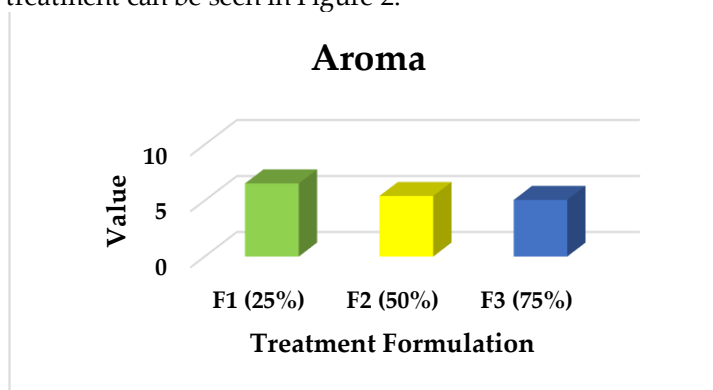


Fig 2. Organoleptic test results for choux pastry filling aroma

Aroma is the smell of food products. Aroma plays an important role in the production of Aromaings, it is used to increase the attractiveness of the food product [8]. Aroma is a distinctive smell produced by a food and is assessed subjectively by the sense of smell [9]. The Aroma will give a characteristic to each food from what ingredients the food product is made from. Based on the panelist test results on the organoleptic Aroma of the choux pastry filling, it was found that the highest value was found in the F1 formulation, namely the choux pastry filling with 25% red dragon fruit substitution, while the lowest value was found in the F3 formulation, namely the choux pastry filling with the substitution of 75% red dragon fruit. This means that the substitution of red dragon fruit affects the panelist test results on Aroma organoleptics.

The average value of the research results for the texture quality of the choux pastry filling in each treatment can be seen in Figure 3.

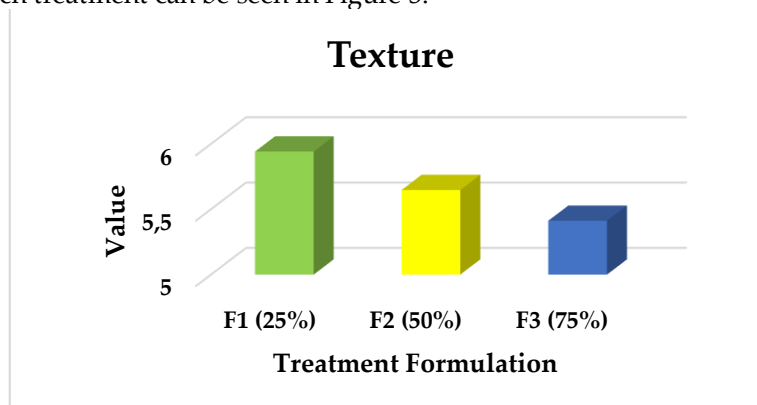


Fig 3. Organoleptic test results for choux pastry filling texture

Based on the panelist test results on the organoleptic texture of the choux pastry filling, it was found that the highest value was found in the F1 formulation, namely the choux pastry filling with 25% red dragon fruit substitution, while the lowest value was found in the F3 formulation, namely the choux pastry filling with the substitution of 75% red dragon fruit. This means that the substitution of red dragon fruit affects the panelist test results on texture organoleptics.

Food texture is one of the physical and sensory attributes used by consumers to assess the quality of food products. In fact, for several types of food products, texture attributes are crucial, acting as the main characteristics and determining the overall quality of the product [10]. Factors that influence the texture of food ingredients include the protein-fat content ratio, protein type, processing temperature and water content [11]. Fresh dragon fruit contains approximately 82.5 to 83.0% moisture, 0.16 to 0.23 protein, 0.21 to 0.61 fat, and 0.7 to 0.9% fiber. 100g of fresh fruit pulp contains 6.3 to 8.8 mg calcium, 30.2 to 36.1 mg phosphorus, 0.5-0.61 mg iron and 8-9 mg vitamin C [12]. Dragon fruit contains quite a high water content so that if the substitution of red dragon fruit in the choux pastry filling is higher, the choux pastry filling will be softer.

The average value of the research results for the taste quality of the choux pastry filling in each treatment can be seen in Figure 4.

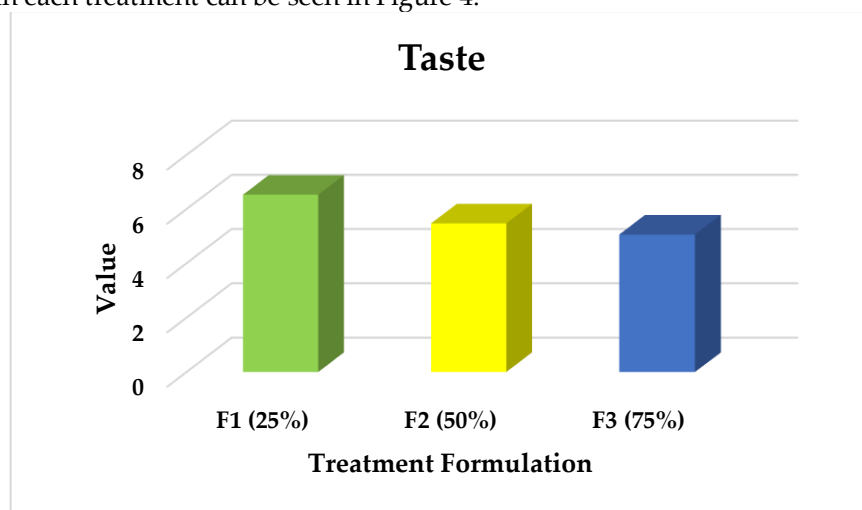


Fig 4. Organoleptic test results for choux pastry filling taste

Based on the panelist test results on the organoleptic taste of the choux pastry filling, it was found that the highest value was found in the F1 formulation, namely the choux pastry filling with 25% red dragon fruit substitution, while the lowest value was found in the F3 formulation, namely the choux pastry filling with the substitution of 75% red dragon fruit. This means that the substitution of red dragon fruit affects the panelist test results on taste organoleptics.

Taste is the response of the tongue to the stimulation provided by a food. Panelists' acceptance of taste is influenced by several factors, including the content of chemical compounds, temperature, concentration of ingredients and interactions of other components [8]. According to [13] red dragon fruit contains monosaccharides such as glucose and fructose, and during the ripening process the starch content in the fruit turns into reducing sugars which will give a sweet taste, red dragon fruit itself contains a sugar content of 13-18 %Briks. So if the content of red dragon fruit in the choux pastry filling is higher, the choux pastry filling will be sweeter.

4. Conclusion

The organoleptic test results of choux pastry filling with red dragon fruit substitution showed that there was an influence on color, Aroma, texture and taste. The best choux pastry filling formulation was obtained from 25% red red dragon fruit substitution treatment with the characteristics of color (6.12); Aroma (6.53); texture (5.94); and taste (6.53).

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