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# Sensory Analysis of 3 Teflon Toast Bread Variants Based on Organoleptic Test and Hedonic Test

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## ABSTRACT
*Teflon toast is a popular food product and continues to grow in Indonesia. This study aims to analyze three variants of Teflon toast with different sugar levels using organoleptic tests and hedonic tests. Three variants of bread are made with different sugar levels, namely 20 grams, 15 grams and 10 grams. Ten panelists were involved in the assessment of organoleptic characteristics and analysis of variance (ANOVA) was used to evaluate differences between the three variants. The results showed that there were no significant differences in organoleptic characteristics between bread variants ($p > 0.05$). The hedonic test also confirmed that all bread variants received similar levels of liking from the panelists. Thus, variations in sugar content in Teflon toast did not provide a significant difference in sensory aspects.*

***Keywords**: Teflon Toast; Sugar level; Sensory Analysis; Organoleptic Test; Hedonic Test.*

## INTRODUCTION
Progress in bread innovation in Indonesia has grown rapidly and as a result, some people are now more inclined to make their own bread manually. This phenomenon reflects the increasing public interest in bread-making experiences that are unique and suit their personal preferences. In situations like this, various creative and innovative recipes for making traditional bread begin to emerge, providing opportunities for individuals to explore various bread variants that they have never tried before.

Bread is a food product that is very popular in Indonesia, undergoing a manufacturing process by baking dough that has undergone a fermentation process (Andragogi et al., 2018). Bread is said to be the result of fermentation because of the use of yeast in forming the characteristic taste and smell (Sitepu, 2019). The role of sugar is very significant in the bread making process, including as a nutrient for yeast (Anggraeni, 2017). Therefore, in this research, there was a sugar substitution test using three sample variants.

This research aims to determine the results of sensory analysis of three variants of Teflon toast with different sugar levels, using organoleptic tests and hedonic tests. This test was carried out to determine differences in preferences between panelists in terms of taste, texture and smell. Organoleptic testing is a testing method that uses human senses as a measuring tool for the acceptability of a product. The role of organoleptic tests has important significance in determining product quality (Adiluhung & Sutrisno, 2018). In this research, the organoleptic test method applied is the hedonic test, which is a form of acceptance test for a product. Hedonic testing involves panelists' personal evaluation of their level of liking or dissatisfaction with a product, which is often reflected in the form of a hedonic scale to express the extent to which they like or dislike the commodity being assessed. (Sari Putri & Mardesci, 2018).

## METHOD
This research was conducted on December 25 2023, at Babatan, Wiyung District, Surabaya City, East Java. Aiming at sensory analysis of three variants of Teflon toast with different sugar levels (Table 1). The method for making Teflon toast is conventional and simple. In the preparation process, several essential ingredients need to be prepared, including high protein flour, powdered yeast, sugar, salt, sweetened condensed milk and margarine. The tools needed include a spoon, baking sheet, cloth cover, margarine brush and Teflon**.**

**Table 1.** Treatment of three variants of Teflon toast.

| Sample Code | Sugar Level |
|---|---|
| AAB | 10 grams |
| BAA | 15 grams |
| ABA | 20 grams |

Each dough for the three bread samples consisted of 250 grams of high protein flour, with the sugar dosage adjusted according to the substitutions in (Table 1). Yeast was added as much as 4 grams to each sample, milk as much as 1 sachet per sample and margarine as much as 1 tablespoon per sample. The manufacturing process begins by mixing all the ingredients and kneading them until smooth. Once it feels smooth enough, cover the dough with a cloth so that the yeast fermentation can work and leave it for 30 minutes. After the dough has risen, it is divided into 10 parts according to the number of panelists. Then, cover the dough again and leave it for 15 minutes, where it will appear to rise a second time. Next, the mixture is baked on Teflon over low heat for 10-15 minutes until cooked.

Procedures for Carrying out Organoleptic Tests and Hedonic Tests are carried out after the Teflon toast has finished baking. This process involves the participation of 10 panelists who will be given 3 questionnaires. The questionnaire includes various test forms, including a sweet taste test, a typical yeast odor test, a texture test, and a hedonic test. Panelists were asked to rate the taste, texture and smell of the bread from each variant using a predetermined scale. Apart from that, a hedonic test was also carried out to determine the panelists' level of preference for the three Teflon toast variants. Panelists were asked to rate their preferences using a hedonic scale.

## RESULT AND DISCUSSION

In the results and discussion section below, a detailed analysis will be presented regarding the sweet taste test, typical yeast smell, texture, and hedonic test using the ANOVA table, with the aim of providing an in-depth understanding of the significant differences between the three variants of Teflon toast which have different sugar levels.

### Result

In the research results section, focus will be given to the results of the ANOVA table calculation which includes several aspects, such as the sweet taste test, the typical yeast odor test, the texture test, and the hedonic test. This statistical analysis will provide an in-depth understanding of the significance of treatment variations in making Teflon toast related to consumer preferences. Each aspect will be described using calculated data which includes calculated F values, table F values, and interpretation of significance to describe the extent of the influence of sugar content and the addition of yeast on the organoleptic characteristics of Teflon toast. Such information will provide a strong basis for further understanding of the impact of these variables on sensory outcomes and consumer preferences for bakery products.

### Results of organoleptic tests and hedonic tests

Organoleptic test results show variations in consumer responses to three variants of Teflon toast with different sugar levels. First of all, consumers tend to like the sweet taste of Teflon toast, showing the potential for innovation for those who want to make their own bread at home with the desired level of softness of sweetness. However, a note needs to be taken regarding the smell of yeast which does not receive a positive response from consumers. This provides opportunities for further development in designing bread variants with a yeast smell that are more in line with consumer preferences.

Furthermore, the organoleptic test results also revealed that consumers gave a positive assessment of the texture of Teflon toast. Most consumers rated this bread as very soft and not too hard, indicating good acceptance of the consistency and softness of the bread's texture. The general level of consumer preference shows positive acceptance of the three bread variants, opening up opportunities for further variations in the development of Teflon toast with the addition of other food ingredients, which can be tailored to consumer desires. Overall, the organoleptic test results provide a positive picture of consumer acceptance of Teflon toast, providing a strong basis for further development and wider product variations in accordance with consumer preferences. The results of Teflon toast can be seen in Figure 1, which provides a clear visualization of the organoleptic characteristics of Teflon toast..

**Figure 1.** Teflon toast results

This research uses the ANOVA table as the main analysis tool. In its use, the ANOVA table is used to analyze significant differences between the means of several groups or treatments in this study. The data analysis process involves statistical data processing, including:

- Sweetness test results

The sweet taste test on Teflon toast was carried out by asking participants to taste and evaluate the level of deliciousness of the sugar in the bread. Involving organoleptic sensors, this test aims to measure the extent of consumer satisfaction with the sweet taste of toast produced through the baking process using Teflon equipment. The results of this taste test can provide insight into consumer preferences regarding the desired level of sweetness in Teflon toasted bread products. It should be noted that bread generally uses sucrose or cane sugar in the manufacturing process. Sucrose sugar, which belongs to the category of non-reducing sugars, has a tendency to cause caramelization, which in turn gives the bread a brown color (Andragogi et al., 2018). The use of sugar is an important consideration in designing Teflon bread formulations, because apart from influencing the level of sweetness, it can also contribute to the color and texture characteristics of the bread produced. Complete results of the sweet taste test on Teflon toast can be seen in Table 2.

**Table 2.** Sweetness test results on Teflon toast.

| SK | DB | JK | KT | F. Value | F. Table 5 % |
|---|---|---|---|---|---|
| Panelist | 9 | 42,7 | 4,74444444 | 0,673501577 | 2,4562811 |
| Bread | 8 | 39,2 | 19,6 | 2,78233439 | 3,5545571 |
| Galat | 12 | 126,8 | 7,04444444 | | |
| Total | 29 | 208,7 | | | |

Analysis in Table 2 shows that the calculated F value for bread (2.7830) is lower than the table F value at the 5% significance level (3.554). This means that the toast variant has no effect on the sweet taste of the bread, in other words, the three bread variants have no different levels of sweetness.

- Typical yeast odor test results on Teflon toast.

The typical yeast odor test on Teflon toast was carried out by inviting participants to smell and evaluate the level of fragrance produced by the yeast in the bread. The testing process involves organoleptic sensors with the aim of measuring the level of consumer satisfaction with the characteristic yeast smell of toast produced through the baking process using Teflon equipment. The addition of yeast to the bread making process also has a significant impact on the taste, texture and color characteristics of the bread produced (Sitepu, 2019), thus providing an additional dimension in understanding consumer preferences regarding Teflon toast products. Complete results of the typical yeast odor test on Teflon toast can be seen in Table 3.

**Table 3.** Typical yeast odor test results on Teflon toast.

| SK | DB | JK | KT | F. Value | F. Table 5 % |
|---|---|---|---|---|---|
| Panelist | 9 | 1,4666667 | 0,162962967 | 0,936170247 | 2,4562811 |
| Bread | 8 | 0,2 | 0,1 | 0,574468092 | 3,5545571 |

| | | | |
|---|---|---|---|
| Galat | 12 | 3,1333333 | 0,174074072 |
| Total | 29 | 4,8 | |

Analysis in Table 3 shows that the calculated F value for the typical yeast odor test on Teflon toast is (0.574) lower than the F table value at the 5% significance level (3.554). This means that the toasted bread variant has no effect on the typical yeasty smell of bread, in other words, the three bread variants have no different levels of typical yeasty smell.

- Texture test results on Teflon toast

Tenderness is an important element in the production of sweet bread and is also the main factor sought in achieving product quality (Astuti, 2015). The texture (tenderness) test on Teflon toast was carried out by inviting participants to feel and evaluate the level of softness of the bread produced using a numerical rating from 1-5, where the value range ranged from very soft to very not soft. This testing process involves organoleptic sensors with the aim of measuring the level of consumer satisfaction with the texture of toast produced through the baking process using Teflon equipment. Complete results of the texture test on Teflon toast can be seen in Table 4.

**Table 4.** Texture test results on Teflon toast.

| **K** | **B** | **JK** | **KT** | **F. Value** | **F. Table 5 %** |
|---|---|---|---|---|---|
| anelist | | 8,133333 | 0,903703667 | 1,02521002 | 2,4562811 |
| read | | 0,8 | 0,4 | 0,453781503 | 3,5545571 |
| alat | 2 | 15,866667 | 0,8814815 | | |
| otal | 9 | 24,8 | | | |

Analysis in Table 4 shows that the calculated F value for the texture test on Teflon toast is (0.5380). This value is lower than the F table value at the 5% significance level (3.554). This means that the toasted bread variant has no effect on the softness of the bread, in other words, the three bread variants have no different levels of tenderness.

- Hedonic test results

The hedonic test on Teflon toast was carried out by inviting participants to give a numerical rating from 1-9, where the value range ranged from very like to very dislike. This assessment process aims to measure the extent of consumer satisfaction with the product, with a focus on organoleptic sensory aspects such as taste, smell and appearance of the toast. By involving numerical assessments, it is hoped that the evaluation results can provide a deeper understanding of consumer preferences for Teflon baked bread products, without considering aspects of texture testing or the addition of yeast in its manufacture. Complete results of the hedonic test on Teflon toast can be seen in Table 5.

**Table 5.** Hedonic test results on Teflon toast

| **K** | **B** | **JK** | **KT** | **F. Value** | **F. Tabel 5 %** |
|---|---|---|---|---|---|
| anelis | | 38,83334 | 4,31481556 | 2,54923514 | 2,4562811 |
| oti | | 2,86667 | 1,433335 | 0,846828305 | 3,5545571 |
| alat | 2 | 30,46666 | 1,69259222 | | |
| otal | 9 | 72,16667 | | | |

Analysis in Table 5 shows that the calculated F value for the hedonic test on Teflon toast is (0.8469). This value is lower than the F table value at the 5% significance level (3.554). This means that the toast variant has no effect on the panelists' preferences for bread, in other words, the three bread variants have no

different levels of preference.

**Discussion**

The results of this research show the visualization of Teflon toast with several brown sides, this phenomenon is in line with research (Andragogi et al., 2018) which states that sucrose sugar is a non-reducing sugar, thus causing a caramelization process which contributes to the brown color of bread. In addition, this research also involved adding yeast as a fermentation agent to bread, according to the findings (Andragogi et al., 2018) which shows that the addition of yeast can convert sugar and carbohydrates in the dough into carbon dioxide gas (CO2) and alcohol. This causes the dough to expand and produce the characteristic fragrant smell of bread when baked. The sugar in the composition of the dough is not only food for the yeast, but also provides flavor and improves the color and smell through the caramelization process during baking. Thus, this research provides an in-depth understanding of the role of sugar and yeast in the process of making Teflon toast which involves visual, smell and taste aspects.

Although the sugar concentration in the three variants of Teflon toast was varied, the results showed that there were no significant differences in organoleptic characteristics, especially in sweet taste. Several factors may explain this phenomenon. First, the complex interactions between the ingredients in bread dough, such as flour, milk, yeast, and sugar, can produce a final product with a uniform taste that is difficult to differentiate sensory. This is confirmed by research (Sitepu, 2019) which explains that the taste of bread is influenced by the amount of sugar and milk added, which gives bread its characteristic sweet and savory character. Sugar not only provides sweetness, but also plays a role in the Maillard reaction and caramelization during baking, contributing to the formation of color and odor and influencing the final taste. In addition, the addition of yeast is a key factor in the development of bread dough, where yeast converts starch into sugar, which is then converted into alcohol and CO2 gas. This process not only affects the structure and texture of the bread, but also impacts the final taste. Using greater amounts of yeast can increase the rate and amount of sugar breakdown into alcohol and CO2, providing an additional dimension to the bread's flavor profile.

Second, treatment of fermentation temperature and time proves its significant influence on reducing sugar levels in bread dough, a finding that is confirmed by research (Wahyudi et al., 2022) The level of reducing sugar in the dough is a key element in the proofing stage using yeast where the amylase enzyme produced converts the amylose in the dough into simple sugar. Therefore, this research strengthens the understanding that controlling fermentation temperature and time plays an important role in achieving organoleptic similarity between bread variants. Third, it should be noted that the sensory response to sweet taste can be subjective and influenced by the individual preferences of the panelists. Research findings (Hasanah et al., 2014) adds a further dimension, suggesting that eating habits may be one of the factors influencing basic taste preferences. Cultural differences can also make a significant contribution to sweet taste preferences, as seen in research which states that panels from Minang prefer sweet flavors at higher concentrations than panels from Central Java and Nusa Tenggara. Other studies, such as those conducted by (Fernández-Carrión et al., 2022), confirmed that genes also have a role in sweet taste preferences. In conclusion, sensory responses to sweet tastes and preferences for sweet foods are closely related and influenced by complex factors, including eating habits, cultural differences, and genetic factors.

In this study it was also seen that the results of the ANOVA table analysis showed that the value obtained was lower than the F table value of 5%, indicating that there was no significant difference between the three Teflon toast treatments in the aspects of taste, smell, texture and preference. These results are in line with previous research findings by (Salsabila et al., 2022) which shows that the use of beet flour substitutes in making steamed brownies does not have a significant effect on aspects of color, smell, sweetness, beet flavor and texture. This means that the results of this study provide support for the conclusion that variations in sugar content and the addition of yeast in making Teflon toast do not have a significant impact on sensory characteristics and consumer preferences. This research also involved hedonic tests, and the results showed that there were no differences in the panelists' preferences for the three variants of Teflon toast. This finding is in line with previous research by (Pratama et al., 2021), which stated that the hedonic test on white bread with the addition of coconut dregs flour did not show a significant difference in preference. This means that this research supports the conclusion that differences in sugar content and the addition of yeast in the process of making Teflon toast do not have a significant effect on the sensory aspects and preferences of the panelists. In other words, variations in composition

do not make a difference in panelists' preferences regarding the characteristics of taste, smell, texture and consumer preferences for bread.

## CONCLUSIONS

In this study, sensory analysis of three variants of Teflon toast with different sugar levels using organoleptic tests and hedonic tests showed that there were no differences in organoleptic characteristics between variants. Varying sugar levels and adding yeast did not affect the panelists' sensory responses. However, research limitations, such as the limited sample size and short research duration, indicate the need to expand and strengthen the results by involving more respondents and extending the observation period. In conclusion, this research provides opportunities for further innovation in the Teflon toast industry, opening up the potential for exploration of innovative product variants and economic aspects of production.

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