



## Sensory Evaluation of Snack (Doughnut) Prepared With Selected Varieties of Oil

(Vegetable oil, Olive oil, Palm oil, Coconut oil)

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### **Abstract**

*In this study, various methodologies are used to assess the sensory evaluation of doughnuts made with particular types of oil. The sensory analysis involved a total of 50 panelists. On the data, an analysis of variance (ANOVA) was run. The findings demonstrated that the type of oil used had a substantial ( $P < 0.05$ ) impact on the doughnut's flavor, texture, color, appearance, scent, and general acceptability. The findings showed that there was a substantial difference in the treatments measured for a number of the analyzed parameters. The study found that, compared to the other oils examined, coconut oil had a high level of acceptance overall. The highest degree of overall acceptance and other sensory qualities were found in coconut oil, which was followed by vegetable oil, palm oil, and then olive oil. Based on these results, the study proposed that the production of coconut oil be encouraged more in order to boost the level of production for easy access by the general public and that coconut oil usage among bakers in the baking business should be widely accepted. In order to increase the amount of coconut oil produced for human consumption, the government should also support the farmers and allot more area for coconut farming.*

**Keywords:** *Doughnut, Evaluation, Oil, Sensory*

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### **Introduction**

Oil is a key component of baked goods and contributes in a variety of ways to their desirable textural qualities, especially in doughnuts. A snack, such as a doughnut, is a small food serving typically consumed in between meals. John (2006). Snacks can be prepared at home using fresh ingredients or they can be packaged snack foods and other processed meals. Doughnuts are a common example of a snack meal that is made to be portable, quick, and filling. As a type of convenience food, processed snacks are made to be more enduring, portable, and less perishable than homemade snacks. They frequently include substantial amounts of sugars, preservatives, and enticing components like chocolate, peanuts, and tastes created especially for them (like flavored potato chips). Marsden & Norbert (2006)

A doughnut, often known as a donut (IPA: /dɒnt/), is a form of fried leavened dough. (p. 275 of The Oxford Companion to Sugar and Sweets). It is a common sweet snack that can be made at home or bought in bakeries, supermarkets; food stands, and franchised specialty retailers. It is produced in a variety of ways. The formal spelling is "doughnut," whereas the informal one is "donut." In English, the two names are frequently used interchangeably. Doughnuts are normally made from flour dough and deep-fried. They are often either ring-shaped or come in a variety of shapes without holes, are frequently filled, although they can also be formed like balls (thus the term "doughnut holes"). Other batters can also be utilized, and different toppings and flavorings, including sugar, chocolate, or maple glaze, are used for distinct variations. Water, a leavening agent, eggs, milk, sugar, oil, shortening, and natural or artificial flavors are additional elements that doughnuts may contain. Krispy (2013)

### **Materials and Methods**

The preparation techniques and recipes are shown below.

The Federal Polytechnic employees in Ilaro, Ogun State participated in the descriptive research. The study was carried out in an Ogun State demonstration kitchen for hospitality management. Selected kitchen personnel from The



Federal Polytechnic in Ilaro, Ogun State who work in the hospitality demonstration program participated in the qualitative research.

50 respondents/panelists in total were used in this study, and the data for the primary source was acquired utilizing a sensory assessment sheet with a nine-point hedonic scale.

## **Materials and Methods**

### **Recipes**

#### **Sample A (VEGETABLE OIL)**

- Vegetable Oil 1bottle
- Flour 500g
- Sugar 100g
- Butter 50g
- Water 1 cup
- Egg 1 large
- Yeast 15g
- Nutmeg 15g

#### **Method of Preparation with Vegetable Oil**

In a big stainless steel bowl, 500g of wheat flour, 50g of butter, 100g of sugar, 15g of yeast, 15g of nutmeg, and 1 large egg were combined. Warm H<sub>2</sub>O was then gently added to the mixture. The mixture was prepared and given time to prove until it had doubled in volume. The dough was stretched out on a floured surface and worked until it was elastic and smooth. Until the dough was well kneaded, this was repeated. The dough was then formed into a ball, placed on parchment paper, covered with a clean towel, and proofed for around 20 minutes. One bottle of vegetable oil was heated in a medium, heavy-bottomed skillet. I cautiously reduced the heat and inserted a few doughnuts at a time, peeling them off the parchment paper before cooking. For 2-3 minutes on each side, I fried the food until a golden color was evident. I took it out of the warm oil and drained the extra oil in a sieve. I serve it with a crust of sugar on top.

### **Recipes**

#### **Sample B (OLIVE OIL)**

- olive Oil 1bottle
- Flour 500g
- Sugar 100g
- Butter 50g
- Water 1 cup
- Egg 1 large
- Yeast 15g
- Nutmeg 15g

#### **Method of Preparation with Olive Oil**

In a big stainless steel bowl, 500g of wheat flour, 50g of butter, 100g of sugar, 15g of yeast, 15g of nutmeg, and 1 large egg were combined. Warm H<sub>2</sub>O was then gently added to the mixture. The mixture was prepared and given time to prove until it had doubled in volume. The dough was stretched out on a floured surface and worked until it was elastic and smooth. Until the dough was well kneaded, this was repeated. The dough was then formed into a ball, placed on parchment paper, covered with a clean towel, and proofed for around 20 minutes. One bottle of olive oil was heated in a medium, heavy-bottomed skillet. I cautiously reduced the heat and inserted a



few doughnuts at a time, peeling them off the parchment paper before cooking. For 2-3 minutes on each side, I fried the food until a golden color was evident. I took it out of the warm oil and drained the extra oil in a sieve. I serve it with a crust of sugar on top.

### **Recipes**

#### **Sample C (PALM OIL)**

- Palm Oil 1bottle
- Flour 500g
- Sugar 100g
- Butter 50g
- Water 1 cup
- Egg 1 large
- Yeast 15g
- Nutmeg 15g

#### **Method of Preparation with Palm Oil**

In a big stainless steel bowl, 500g of wheat flour, 50g of butter, 100g of sugar, 15g of yeast, 15g of nutmeg, and 1 large egg were combined. Warm H<sub>2</sub>O was then gently added to the mixture. The mixture was prepared and given time to prove until it had doubled in volume. The dough was stretched out on a floured surface and worked until it was elastic and smooth. Until the dough was well kneaded, this was repeated. The dough was then formed into a ball, placed on parchment paper, covered with a clean towel, and proofed for around 20 minutes. One bottle of palm oil was heated in a medium, heavy-bottomed skillet. I cautiously reduced the heat and inserted a few doughnuts at a time, peeling them off the parchment paper before cooking. For 2-3 minutes on each side, I fried the food until a golden color was evident. I took it out of the warm oil and drained the extra oil in a sieve. I serve it with a crust of sugar on top.

### **Recipes**

#### **Sample D (COCONUT OIL)**

- Vegetable Oil 1bottle
- Flour 500g
- Sugar 100g
- Butter 50g
- Water 1 cup
- Egg 1 large
- Yeast 15g
- Nutmeg 15g

#### **Method of Preparation with Coconut Oil**

In a big stainless steel bowl, 500g of wheat flour, 50g of butter, 100g of sugar, 15g of yeast, 15g of nutmeg, and 1 large egg were combined. Warm H<sub>2</sub>O was then gently added to the mixture. The mixture was prepared and given time to prove until it had doubled in volume. The dough was stretched out on a floured surface and worked until it was elastic and smooth. Until the dough was well kneaded, this was repeated. The dough was then formed into a ball, placed on parchment paper, covered with a clean towel, and proofed for around 20 minutes. One bottle of coconut oil was heated in a medium, heavy-bottomed skillet. I cautiously reduced the heat and inserted a few doughnuts at a time, peeling them off the parchment paper before cooking. For 2-3 minutes on each side, I fried the food until a golden color was evident. I took it out of the warm oil and drained the extra oil in a sieve. I serve it with a crust of sugar on top.



## Results and Discussion

Table : Sensory Evaluation of snack (doughnut ) prepared with selected varieties of oil.

| Treatment      | Appearance              | Colour                  | Texture                 | Aroma                  | Taste                  | Flavor                  | Overall acceptability  |
|----------------|-------------------------|-------------------------|-------------------------|------------------------|------------------------|-------------------------|------------------------|
| A<br>(control) | 8.02±0.53 <sup>c</sup>  | 8.10±0.61 <sup>ab</sup> | 8.08±0.92 <sup>b</sup>  | 7.46±0.83 <sup>b</sup> | 8.24±0.52 <sup>b</sup> | 7.24±0.84 <sup>b</sup>  | 8.44±0.58 <sup>b</sup> |
| B              | 7.72±0.90 <sup>a</sup>  | 7.72±1.17 <sup>a</sup>  | 7.80±1.17 <sup>a</sup>  | 7.24±1.10 <sup>a</sup> | 7.70±1.51 <sup>a</sup> | 7.20±1.29 <sup>a</sup>  | 8.22±0.99 <sup>a</sup> |
| C              | 8.28±0.85 <sup>b</sup>  | 7.92±0.96 <sup>ab</sup> | 8.18±0.82 <sup>ab</sup> | 7.78±1.14 <sup>a</sup> | 8.10±1.14 <sup>a</sup> | 7.60±0.98 <sup>ab</sup> | 8.42±0.67 <sup>a</sup> |
| D              | 8.36±0.80 <sup>bc</sup> | 8.24±0.89 <sup>b</sup>  | 8.24±0.89 <sup>b</sup>  | 7.80±1.38 <sup>a</sup> | 8.63±1.58 <sup>a</sup> | 7.92±1.29 <sup>ab</sup> | 8.46±1.02 <sup>a</sup> |

A=Vegetable oil, B=Olive oil, C=Palm oil D=Coconut oil

Values are the means and standard deviations ( ) of three conclusions (n = 3). Means in the same column that are separated by the same letter do not differ substantially (p<0.05), according to the test.

The analysis of variance (ANOVA) results revealed a significant difference in the treatments tested for some of the characteristics taken into consideration in this study (P 0.05).

### Appearance

(P < 0.05) determined that all values were statistically different across all treatments. The highest value (8.360±80) was achieved by D (P < 0.05). The lowest value (7.720±90) was reported by B.

### Colour

All values substantially differed from one treatment to the next (P <0.05). The greatest value was achieved by D (8.24 0±89), and the lowest by B (7.72 1±17).

### Texture

(P <0.05) determined that all values were statistically different across all treatments. In this investigation, D recorded the greatest value (8.240±89), while B recorded the lowest value (7.801±17).

### Aroma

(P <0.05) determined that all values were statistically different across all treatments. In this investigation, D recorded the highest value (7.801±38) while B recorded the lowest value (7.241±10).

### Taste

(P <0.05) determined that all values were statistically different across all treatments. D obtained the maximum value of 8.631±58 from this result. B, however, obtained the lowest result (7.701±51)

### Flavor

(P <0.05) determined that the values were significantly the same for all treatments. The greatest value was (7.921±29), while the lowest was (7.201±29), recorded by B.

### Overall acceptability

D recorded the greatest value of (8.461±02), followed by A with a mean value of 8.440±58, and B with a value of (8.220±99) for the lowest acceptability mean score. All values were significantly equivalent across all treatments (P <0.05).

## Discussion

Several methods are used in the study to assess the sensory evaluation of doughnuts made with several types of oil. The sensory analysis involved a total of 50 panelists. On the data, an analysis of variance (ANOVA) was run. The findings demonstrated that the type of oil used had a substantial impact on the doughnut's flavor, texture, color, appearance, scent, and general acceptability. The findings showed that there was a significant difference in the treatments measured for a number of the analyzed parameters.

From this study, it can be concluded that coconut oil (Sample D) is highly acceptable by the respondents in this research study and is closely or relatively the same color using vegetable oil (Sample A), which serves as the control



in this study, and that coconut oil had the highest level of overall acceptability and other sensory attributes. Additionally, it was discovered in this investigation that sample D (coconut oil) has a fine texture when utilized in the manufacturing of doughnuts, which in this study produced doughnuts with an excellent texture, taste, color, and aroma. Furthermore, the texture, taste, color, and scent of each value varied significantly across all treatments. Because sample D (coconut oil) in this study had the highest and highest value, respondents found it more appropriate to utilize it in snacks produced for consumption by the general public.

### **Conclusion and Recommendation**

Overall acceptance and other sensory qualities were highest for coconut oil, which was then followed by vegetable, palm, and olive oils. This suggests that using coconut oil has the potential to raise the oil's market value. Understanding each oil's nutritional characteristics is crucial.

### **References**

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