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The Effect of Drying and Roasting Times on Sensory and Physicochemical Characteristics of Ground Roasted Coconut

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ABSTRACT

Ground roasted coconut is used as a cooking spice, especially in Aceh, with distinctive aroma and fragrant taste. This study aimed to examine the effect of drying time and roasting time on the sensory and physicochemical characteristics of roasted coconut. This research was designed with two treatment factors in triplicate. First factor was the drying time (1, 3, and 5 h), and second factor was roasting time (5 and 10 min). The results showed that drying time has a significant effect on the aroma, color, taste, and air content. The longer the drying time, the higher the sensory characteristics: aroma, color, and taste of ground roasted coconut, but the percentage of water content of the roasted coconut produced is lower. The roasting time also affected the taste and aroma of ground roasted coconut. The longer the roasting process, the higher the sensory characteristics of the taste and aroma of ground roasted coconut. The interaction of drying time and roasting time only has an effect on the sensory taste of ground roasted coconut. Drying time and roasting time did not significantly affectted on fat content and free fatty acid content, both of these parameters are more influenced by other factors, such as drying temperature, harvest age and coconut quality.

1. INTRODUCTION

Coconut is a food product with a multitude of benefits, making it an ingredient in food and beverages, cosmetics, and various other uses. One type of processed coconut flesh used as a cooking spice is ground roasted coconut. In Aceh, roasted coconut is known as *u neulheu* (Maharani *et al*., 2023). Ground roasted coconut is used as a complementary spice (Hartuti *et al*., 2025) in typical Acehnese dishes, including beef, goat, chicken, duck, and other dishes (Ramdhani *et al*., 2023). Adding ground roasted coconut to various dishes imparts a richer flavor, a more attractive color and appearance, and a distinctive, fragrant aroma.

The process of roasted coconut generally begins with grating, drying, roasting, and grinding the coconut to produce a paste-like roasted coconut (*u neulheu*). The grated coconut, the raw material for ground roasted coconut, is typically dried in the sun for 4 to 6 h. Roasting is a frying process without using oil (Darsan *et al*., 2021). This process is carried out until the coconut turns a light brown color and has a fragrant aroma. During the roasting process, it produces a distinctive taste and aroma and causes physical and chemical changes (Edvan *et al*., 2016). Roasted coconut is generally light to dark brown in color, oily, savory, and fragrant (Hartuti *et al*., 2025).

The quality of a food product can be determined based on its physicochemical and sensory characteristics, as well as the level of microbiological and toxic contamination (Mihafu *et al*., 2020). Testing and determining the quality of ground roasted coconut based on sensory and physicochemical characteristics aims to determine the quality of the resulting ground roasted coconut. Sensory quality analysis is crucial for a product to determine its level of consumer

acceptance (Fiorentini *et al*., 2020). Sensory testing is a testing method that measures the extent to which consumers accept a product by utilizing the human senses as the main tool (Juanda & Hartuti, 2024; Maharani *et al*., 2023). Several criteria for testing the sensory quality of food and beverage products include several criteria, namely color, taste, aroma, texture, overall acceptability, and so on (Hartuti *et al*., 2025; Juanda *et al*., 2022, 2023; Juanda & Hartuti, 2024; Sirangelo, 2019; Ruiz-Capillas & Herrero, 2021; Yang & Lee, 2019). Physicochemical analysis of food products includes analysis of fat, carbohydrate, protein, water and ash levels (Yustini *et al*. 2019). Furthermore, the study aims to determine the sensory and physicochemical quality of ground roasted coconut based on drying and roasting times.

2. MATERIALS AND METHODS

2.1. Research Tools and Materials

This study used various equipment such as a Food Dehydrator Type MKS DFH6, an automatic roaster, a spatula, a grinder, a desiccator, an analytical balance, a stove, a heater, trays, measuring cups, heat-resistant gloves, a camera, and various sensory testing equipment: stationery, questionnaires, and coded paper. The materials used in this study were 9-10 month-old coconuts sourced from a community garden in Indrapuri, Aceh Besar Regency, LPG gas, drinking water, unsalted crackers, and other supporting materials.

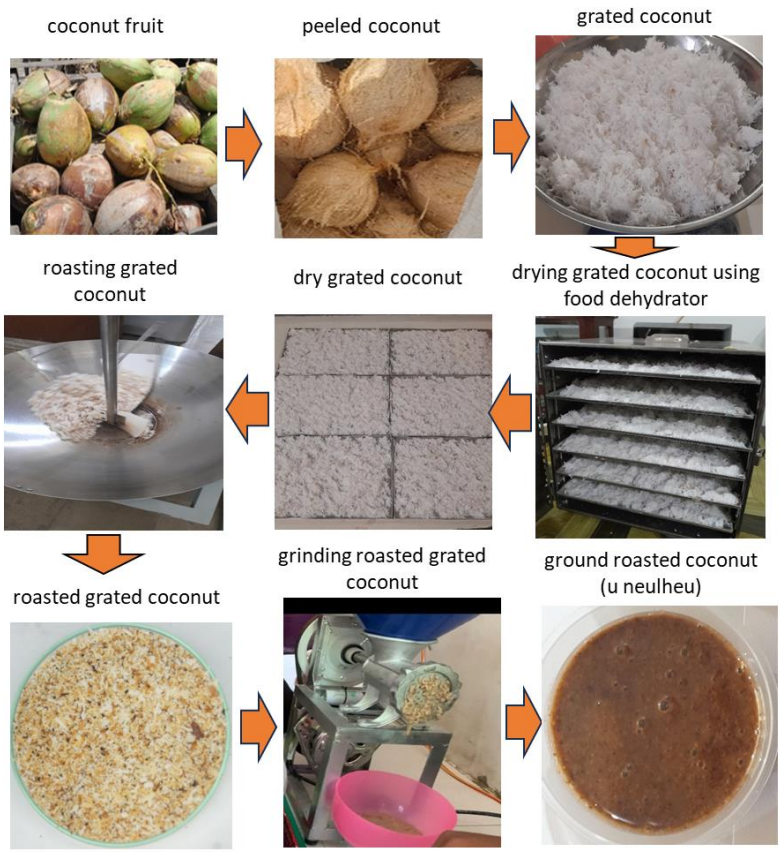

Figure 1. Stages of making ground roasted coconut (*u neulheu*)

2.2. Research Procedure

The stages of the ground roasted coconut production process are shown in Figure 1. Each sample (500 grams of grated coconut) was dried using a food dehydrator at 50 °C and roasted using an automatic roaster according to the specified treatment at a roasting temperature of 130-180 °C. The dried grated coconut samples were then ground using a grinder to obtain fine and fragrant ground roasted coconut. This study was conducted to determine the sensory and physico-

chemical qualities of ground roasted coconut based on drying time and roasting time. This study used a Factorial Completely Randomized Design. There were two treatment factors observed: drying time (A), with three treatment variations: 1 h (A1), 3 h (A2), and 5 h (A3), and roasting time (B), with two treatment variations: 5 min (B1) and 10 min (B2), with three replications, for a total of 18 experimental units.

2.3. Sensory and Physicochemical Characteristics

The quality characteristics of ground roasted coconut observed were sensory characteristics (aroma, color, and taste), as well as physicochemical characteristics (moisture content, fat content, and free fatty acids).

2.3.1. Sensory Test

This study used a descriptive sensory test for ground roasted coconut, using a descriptive scale of 1-5, with parameters including aroma, color, and taste. Descriptive testing is a process for identifying significant sensory characteristics in a product and can provide more detailed information about the level or intensity of these characteristics (Lestari *et al*., 2022). This test can determine the best quality value for a product. Descriptive testing involves scoring or scaling, which is implemented using a scale-based assessment system or values related to specific descriptions of product quality attributes (Hasibuan *et al*., 2019; Lawless & Heymann, 2010). Details of the quantitative sensory scale for ground roasted coconut are shown in Table 1.

The sensory test for this ground roasted coconut product was conducted by 10 trained panelists with several criteria, namely women aged 30-50 years who are accustomed to making ground roasted coconut, in good physical and mental condition, without a history of allergies to roasted coconut products, consuming and frequently using roasted coconut as a seasoning in various dishes. Furthermore, the physicochemical analysis carried out on the ground roasted coconut included determining the fat content, water content, and free fatty acid content.

Table 1. Description of the Quantitative Sensory Scale of Ground Roasted Coconut

No.	Attribute	Sensory Test Criteria	Description	Scale
1	Aroma	Clear off-flavor detected, rancid and strong sour odor	Very Poor	1
		Weak off-flavor detected, slightly rancid and sour	Poor	2
		Normal, distinctive roasted coconut aroma present, with slight caramel-like note	Fair	3
		Distinctive aroma slightly weak, but roasted coconut scent still recognizable	Good	4
		Strong and clear distinctive roasted coconut aroma, pleasant and liked by panelists	Very Good	5
2	Color	Very light brown, almost whitish-brown	Very Poor	1
		Light brown, slightly creamy	Poor	2
		Normal, light brown, cream, sandstone	Fair	3
		Normal, light brown or light chocolate	Good	4
		From light brown to dark brown, chocolate-like	Very Good	5
3	Taste	Very weak roasted coconut taste, unpleasant, sour, and rancid	Very Poor	1
		Slightly weak roasted coconut taste, less pleasant, slightly sour and rancid	Poor	2
		Normal, typical roasted coconut taste, with slight additional flavors	Fair	3
		Stronger or dominant roasted coconut taste	Good	4
		Very strong or dominant roasted coconut taste, pleasant and liked by panelists	Very Good	5

2.3.2. Physicochemical Tests

1) Moisture content

Moisture content testing refered to (AOAC, 2005) using the oven method. The first step is to dry a porcelain cup in an oven for approximately 1 h. The cup is then placed in a desiccator for 15 min and weighed after it reaches room temperature. Next, 5 g of sample is weighed. The cup filled with the sample is placed in an oven at 102-105 °C for 5 - 6 h. The cup is then placed in a desiccator for 15 min to cool. The cup is then weighed and the drying process is repeated until a constant weight is achieved. Moisture content is calculated using Equation (1).

$$\% \text{ Moisture Content} = \frac{C-A}{B-A} \times 100\% \quad (1)$$

where A is weight of empty cup (g), B is weight of cup with sample (g), and C is weight of cup with dried sample (g).

2) Fat content

The fat content test was conducted using the Soxhlet method according to AOAC (2005). The sample was weighed, then placed on filter paper and inserted into a fat tube. Afterward, it was weighed and inserted into a fat flask connected to a Soxhlet tube. The fat tube was then inserted into the extractor chamber of the Soxhlet tube and irrigated with fat solvent. The extraction tube was then installed in a Soxhlet distillation apparatus and heated for 6 hours at 40°C. The fat solvent contained in the fat flask was distilled until all the fat solvent evaporated. The distillate solvent, which was collected in the extractor chamber, was then removed so that it would not return to the fat flask. The flask was then dried in an oven at 105°C and cooled in a desiccator until it reached a constant weight. Fat content was calculated using Equation (2).

$$\% \text{ Fat Content} = \frac{W_3-W_2}{W_1} \times 100\% \quad (2)$$

where W_1 is sample weight (g), W_2 is weight of empty fat flask (g), and W_3 is weight of fat flask + extracted fat (g)

3) Free fatty acid content

Testing the free fatty acid content refers to (AOAC, 2005) using the titration method. A 5-gram sample is weighed and placed in a 150-ml Erlenmeyer flask containing 50 ml of alcohol. Stir until homogeneous and then heat in a water bath at 60-65°C until boiling. Afterward, cool the sample, add 2 ml of pp indicator, and titrate with 0.1 N NaOH until a pink color appears. The volume of NaOH used is recorded until a faint pink color appears. The FFA content was calculated using the following Equation (3):

$$\% \text{ FFA} = \frac{V \times N \times M}{W} \quad (3)$$

where V is volume of NaOH, N is normality of standardized NaOH, M is molecular weight of sample, W is sample weight.

2.4. Data Analysis

Ground roasted coconut was prepared for sensory and physicochemical testing, and the data obtained were analyzed using ANOVA. If there were differences in results between treatments, a Duncan test was performed with a significance level of $p < 0.05$.

3. RESULTS AND DISCUSSION

The ground roasted coconut produced in this study, for some treatments, appeared similar to standard roasted coconut (best cooked). Some samples appeared undercooked or undercooked. This was due to the combination of drying and roasting that was too short. Samples of ground roasted coconut dried for one hour and roasted for 5-10 min produced light brown, with a weak aroma and flavor, and an unattractive appearance. Some samples even spoiled easily and smelled rancid (undercooked). Ground roasted coconut dried for 5 h and roasted for 10 min was dark brown and had a general "*u neulheu*" aroma, but also a slightly burnt aroma. Meanwhile, the roasted coconut produced with 3 h drying time and roasted for 5-10 min had a more attractive appearance, a fragrant and distinctive roasted coconut aroma, a brown color, and a very strong ground roasted coconut flavor.

3.1. Sensory Characteristics of Ground Roasted Coconut

Sensory characteristics are the assessment of a new product to determine its acceptability using the human senses. Furthermore, each final product from the processing process needs to be associated with sensory evaluation to determine the effect of the processing process on the resulting product quality. The sensory quality of ground roasted coconut products in this study was determined based on several criteria, namely aroma, color, and flavor. The effect of drying and roasting time on the sensory characteristics of ground roasted coconut is shown in Table 2.

Table 2. Effect of drying and roasting duration on the sensory characteristics of ground roasted coconut

Aroma			
Drying Duration (A)	**Roasting Duration (B)**		**Mean**
	5 minutes (B1)	**10 minutes (B2)**	
1 hour (A1)	1.23±0.15	1.50±0.10	1.365±0.12a
3 hours (A2)	1.77±0.29	2.73±0.38	2.25±0.33b
5 hours (A3)	4.47±0.59	4.37±0.32	4.42±46c
Mean	2.49±0.34a	2.87±0.27b	
Color			
Drying Duration (A)	**Roasting Duration (B)**		**Mean**
	5 minutes (B1)	**5 minutes (B1)**	
1 hour (A1)	1.60±0.79	2.00±1.05	1.80±0.92a
3 hours (A2)	2.57±0.64	3.30±0.30	2.94±0.47b
5 hours (A3)	3.00±0.30	4.83±0.25	3.92±0.27b
Mean	2.39±0.577	3.377±0.533	
Taste			
Drying Duration (A)	**Roasting Duration (B)**		**Mean**
	5 minutes (B1)	**5 minutes (B1)**	
1 hour (A1)	1.17±0.15a	1.47±0.25b	1.32±0.20a
3 hours (A2)	1.53±0.32c	3.03±0.25d	2.28±0.28b
5 hours (A3)	4.3±0.70e	4.43±0.15e	4.37±0.42c

Note: Different letters in the same row or column indicate a significant difference (p<0.05).

1) Aroma of Ground Roasted Coconut

Aroma is a smell produced by chemical stimuli detected by the nose via the olfactory nerve (Yasir *et al*., 2019), and was also perceived by panelists in various roasted coconut samples. The overall average aroma values for ground roasted coconut are shown in Table 2. The lowest aroma value for ground roasted coconut was obtained with a drying time of one hour and a roasting time of 5 min, with the criteria for a distinct off-flavor aroma, meaning a very weak roasted coconut aroma and the presence of other undesirable aromas. Conversely, the highest aroma for ground roasted coconut was obtained with a combination of a drying time of 5 h and a roasting time of 10 min, with a distinctive and distinct flavor characteristic, namely a very strong and dominant roasted coconut aroma, which was favored by panelists. The ANOVA results showed that the drying time had a very significant effect (p-value=0.000), while the roasting time had a significant effect (p-value = 0.016), and the interaction between the two had no significant effect (p-value = 0.065) on the aroma of roasted coconut. Based on Duncan's further test, it was found that the coconut drying time of one hour (A1) had a different aroma from the roasted coconut dried for 3 h (A2) and 5 h (A3). Meanwhile, the aroma of the roasted coconut dried for 3 h (A2) was also different from the roasted coconut dried for 1 h (A1) and 5 h (A3), and vice versa. The aroma of the roasted coconut dried for 1 h (A1) had a weak aroma (off flavor was clearly smelled, rancid and pungent sour), meaning the aroma was not very similar to roasted coconut in general, due to the drying process being too short, so that the resulting roasted coconut was still not quite cooked (undercooked). Meanwhile, aroma of the roasted coconut dried for 3 to 6 h had an aroma that matched to those of ground roasted coconut in general. Roasting time also significantly affected the aroma of ground roasted coconut, with 5 min roasting time (B1) differing from 10 min roasting time (B2), but the effect was not as significant as drying time.

2) Color of Ground Roasted Coconut

One of the sensory elements that influences food product acceptance is color (Juanda *et al*., 2023). The color of a food product significantly influences its attractiveness, identity, and quality attributes. Color creates a perception of a food product, determining whether it will be desirable or not (Tarwendah, 2017), and is the most important sensory criterion assessed. The lowest color of ground roasted coconut was achieved with a drying time of 1 hour and a roasting time of 5 minutes, with a characteristic very light brown color. While the highest color of ground roasted coconut was achieved with a drying time of 3 h and a roasting time of 10 minutes, with a characteristic dark brown color. ANOVA results showed that drying time had a significant effect (p-value = 0.016), while roasting time and the interaction between the two had no significant effect (p-value = 0.316 and p-value = 0.503) on the color of roasted coconut.

Duncan's further test revealed that the one hour drying time (A1) significantly differed from the color of roasted coconut dried for 3 h (A2) and 5 h (A3). Meanwhile, the color of roasted coconut dried for 3 h (A2) and 5 h (A3) did not differ. The color of roasted coconut dried for one hour (A1) was white-brown or light brown due to the very short drying process, resulting in undercooked roasted coconut. Meanwhile, the color of roasted coconut dried for 3 h and 5 h was a clear or normal brown. This indicates that drying coconut for 3 h using a food dehydrator at 50 °C is sufficient to produce roasted coconut with a good and attractive appearance.

3) Flavor of Ground Roasted Coconut

The presence of chemical elements such as protein, carbohydrates, and fats contributes to the flavor of food. Generally, there are four recognized flavors: sweet, salty, sour, and bitter. The lowest flavor value for ground roasted coconut was obtained with a combination of one hour drying time and 5 min roasting time, characterized by a weak roasted coconut flavor, namely sour, rancid, and unpleasant. The highest value for ground roasted coconut was obtained with a 5 h drying time and 10 min roasting time, characterized by a very strong roasted coconut flavor, namely a dominant roasted coconut flavor, favored by panelists and consistent with roasted coconut sold in the market.

ANOVA results showed that drying time and roasting time had a highly significant effect (p-value = 0.000 and p-value = 0.002), while the interaction between the two had a significant effect (p-value = 0.012) on roasted coconut flavor. Table 2 shows that the longer the drying and roasting process, the more concentrated and stronger the flavor of ground roasted coconut will be, as will the interaction of the two factors. Based on Duncan's further test, it was also found that the coconut drying time of 1 h (A1) was different from the flavor of roasted coconut dried for 3 h (A2) and 5 h (A3). Meanwhile, the flavor of roasted coconut dried for 3 h (A2) was also different from that of roasted coconut dried for 1 h (A1) and 5 h (A3). The flavor of roasted coconut dried for 1 h (A1) had a very weak taste; meaning that the taste was not very similar to roasted coconut in general due to the drying process being too short, so that the resulting roasted coconut was still not quite cooked (undercooked). Meanwhile, the flavor of roasted coconut dried for 3 h (A2) had a normal taste, and roasted coconut dried for 5 h (A3) had a very strong flavor compared to the flavor of other roasted coconuts and its appearance was a dark brown color. This indicates that drying coconut for 3 to 5 h using a food dehydrator at 50°C is sufficient to produce roasted coconut with a normal to strong flavor, a dominant roasted coconut flavor, which is delicious and favored by panelists.

Ground coconut roasted for 5 min also differs from roasted coconut roasted for 10 min. The longer the roasting process, the better the resulting roasted coconut flavor. The interaction of drying time and roasting time also has a different effect on the flavor of the resulting roasted coconut, as shown in Table 2. In general, roasted coconut dried for 3 and 5 h, with roasting times of 5 and 10 min, has a strong flavor and is similar to the roasted coconut commonly sold on the market. However, roasted coconut dried for 5 h and 10 min has the strongest flavor compared to other roasted coconuts. This is thought to be because this combination of treatments produces slightly overcooked ground roasted coconut, with the highest roasting temperature being 170-180°C.

3.2. Physicochemical Characteristics of Ground Roasted Coconut

Physicochemical testing is the determination of the physical and chemical properties of a substance or material to determine the composition and quantity of substances or nutritional value contained in the product. Physical testing in the food industry refers to testing methods used to assess various physical properties of a food product. Physical testing of food not only serves as a quality indicator but can also be used to ensure product quality consistency. The chemical characteristics of food products can be used to identify the contents of a food product, particularly its nutritional content.

1) Moisture Content of Roasted Coconut

The research data shows that drying time and roasting time have different effects on the moisture content of ground roasted coconut. The moisture content percentages obtained in this study ranged from 3.13±0.42% to 35.4±9.80%, as shown in Table 3. The ANOVA analysis results showed that drying time had a highly significant effect (p-value = 0.000), while roasting time and the interaction between the two had no significant effect (p-value = 0.124 and p-value = 0.686) on the moisture content of roasted coconut. The longer the drying time, the lower the moisture content of the ground roasted coconut, and vice versa. Duncan's further test revealed that the 1 h drying time (A1) significantly differed

Table 3. Effect of drying and roasting duration on the physicochemical characteristics of ground roasted coconut

Moisture Content			
Drying Duration (A)	**Roasting Duration (B)**		**Mean**
	5 minutes (B1)	**10 minutes (B2)**	
1 hour (A1)	35.40 ± 9.80	30.07 ± 11.30	32.733 ± 10.55a
3 hours (A2)	13.07 ± 2.72	5.33 ± 0.42	9.200 ± 1.57b
5 hours (A3)	4.60 ± 0.20	3.13 ± 0.42	3.867 ± 0.31b
Fat Content			
Drying Duration (A)	**Roasting Duration (B)**		**Mean**
	5 minutes (B1)	**5 minutes (B1)**	
1 hour (A1)	41.67 ± 6.05	39.00 ± 13.14	40.33 ±9.59
3 hours (A2)	48.33 ± 1.40	50.00 ±15.57	49.17 ±8.46
5 hours (A3)	52.33 ± 13.42	57.00 ±16.25	54.67 ±14.83
Mean	47.444 ±6.957	48.667±14.99	48.056 ±9.80
Free Fatty Acid Content			
Drying Duration (A)	**Roasting Duration (B)**		**Mean**
	5 minutes (B1)	**5 minutes (B1)**	
1 hour (A1)	0.08 ±0.02	0.10 ±0.03	0.09 ± 0.03
3 hours (A2)	0.05 ±0.01	0.10 ±0.03	0.07 ± 0.02
5 hours (A3)	0.09 ±0.04	0.08 ±0.03	0.08 ± 0.04
Mean	0.072 ± 0.04	0.090 ± 0.03	0.08 ± 0.03

Note: Different letters in the same row or column indicate a significant difference (p <0.05).

from the moisture content of ground roasted coconut dried for 3 h (A2) and 5 h (A3). Meanwhile, the moisture content of ground roasted coconut dried for 3 h (A2) did not significantly differ from that of roasted coconut dried for 5 h (A3).

The ground roasted coconut with the lowest moisture content was obtained from 5 h drying time (A3) and a 10-minute roasting time (B2), with a moisture content of 3.13±0.42%. This moisture content is close to the results of research (Arpi, 2014), which found a moisture content of 0.13-2.02% for roasted coconut. Furthermore, this sample with the lowest moisture content also meets the SNI 01-3715-2000 standard (BSN, 2000) concerning the Quality Requirements for Dried Grated Coconut, which requires a maximum moisture content of 3%. (Currently, a national standard or SNI for ground roasted coconut is not yet available.) Therefore, it is necessary to increase the drying time and increase the drying temperature to ensure the resulting moisture content of the ground roasted coconut is <3%. The low moisture content of ground roasted coconut can extend shelf life and prevent changes in aroma, color, and flavor (decreasing sensory quality) of the ground roasted coconut.

2) Fat Content of Roasted Coconut

The fat content of ground roasted coconut ranged from 39±13.14% to 57±16.25%. The highest fat content, 57±16.25%, was obtained from a combination of 5 h drying time (A3) and a 10-minute roasting time (B2) (Table 3). ANOVA analysis showed that drying time, roasting time, and the interaction of the two factors had no significant effect on the fat content of ground roasted coconut. Research by Kumalasari *et al*. (2020) showed that mature coconut flour had a higher fat content than medium-aged and young coconuts, with average fat contents of 50.625%, 54.0325%, and 58.3575%, respectively (Kumalasari *et al*., 2020). Furthermore, research results Amoo (2004) stated that the fat content of roasted coconut was lower than that of fresh coconut after being grated, namely 39.83±1.14% and 47.19±1.28%. The research conducted produced different results, with the longer drying and roasting causing a higher percentage of fat in the ground roasted coconut obtained as shown in Table 3. These results indicate that ground roasted coconut with a high water content has a low fat content; conversely, ground roasted coconut with a low water content causes a higher fat concentration, due to water loss in the material (Table 3). According to Zuhra *et al*. (2019); Pratiwi *et al*. (2020), high drying temperatures (80°C) can also increase the concentration of fat content due to a decrease in water content in the material. In addition, Prihatini (2008) also stated that the fat content in coconuts is also influenced by the age of the coconut, where old coconuts have a higher fat content.

3) Free Fatty Acid Content of Ground Roasted Coconut

Free fatty acids (FFA) are a key parameter for ground roasted coconut. FFA levels are considered normal if they do not exceed the FFA levels required by the Indonesian National Standard (SNI). The SNI for roasted coconut is not yet available, so the reference FFA percentage is the SNI for dried coconut, which is 0.14% (BSN, 2000). The FFA percentage data in this study are shown in Table 3. All FFA percentage data comply with SNI 01-3715-2000, with all FFA levels <0.14%. The permitted FFA in coconut oil is 0.2% (BSN, 2008).

ANOVA analysis results showed that drying time, roasting time, and the combined effect of these two factors were not significant on the FFA percentage of ground roasted coconut. The FFA content in a material determines its quality and susceptibility to spoilage (Untari *et al*., 2020). According to Maimun *et al*. (2017), rancidity and changes in flavor and color in palm oil are caused by high levels of FFA. High FFA also indicates poor quality coconut oil. Furthermore, FFA is also significantly influenced by the maturity or aging of the coconut (Khathir *et al*., 2023). This study used semi-mature coconuts with dark yellow skins, harvested at 9-10 months. The coconuts in this study also experienced no processing delays and were of good quality, resulting in all samples having low FFA values, namely 0.05-0.09% (complying with SNI 01-3715-2000).

4. CONCLUSION

The research data shows that drying time affects the aroma, color, flavor, and moisture content of ground roasted coconut. The longer the drying time, the higher the values for color, flavor, and aroma of the ground roasted coconut. However, the resulting moisture content of the ground roasted coconut decreases. Roasting time affects the flavor and aroma of ground roasted coconut; the longer the roasting time, the better the flavor and aroma of the ground roasted coconut. Meanwhile, fat and free fatty acid content are more influenced by other factors, such as drying temperature, coconut harvest age, and coconut quality.

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