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# Organoleptic test using the hedonic and descriptive methods to determine the quality of *Pliek U*

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**Abstract.** *Pliek U* is the most popular for Aceh's people due to its use as a traditional recipe mixed in the main food course. The quality establishment of *Pliek U* is mostly based on sensory tests from consumers. This study using the sensory and the organoleptic test. Certain methods used for panelists to assess *Pliek U* organoleptic were the hedonic or liking test and descriptive test. This research aims to determine the quality of *Pliek U* based on variations in the thickness of the fermentation and fermentation time using the organoleptic hedonic test and descriptive test. Verify was carried out by giving a questionnaire to the panelists with parameters, including; color, aroma, and taste. Furthermore, for the hedonic organoleptic, the panelists were given a questionnaire with a scale or score, i.e., 1 (most dislike), 2 (dislike), 3 (neutral), 4 (like), and 5 (most like). In comparison, the panelist descriptive test represents and identifies quality in *Pliek U* based on taste. For the hedonic and descriptive organoleptic test, the panelists liked the *Pliek U* for fermented to 7 days with a pile thickness of 30 cm, wherein the *Pliek U* was light brown, had a non-rancid aroma, and a sour taste. The regression analysis showed the thickness of the rasp coconut pile, and the fermentation time was significant on the level of panelist admission of the *Pliek U* color, and no significant effect on the aroma and taste of *Pliek U*.

Keyword: color, aroma, taste, Aceh

## 1. Introduction

*Pliek U* is a typical powder used as a traditional recipe from Aceh Province, Indonesia. It is made from dried, fermented coconut and can be stored for a long period before being used. *Pliek U* is the most popular for Aceh's people due to its use as a traditional recipe mixed in the main food course [1]. *Pliek U* is resulted from the processed coconut by performing the fermentation process [2]. Many factors establishment the quality of *Pliek U*, including fermentation of rasp coconut, the drying, and the pressing of process. *Pliek U* has a distinctive taste that the people were considered popular traditional food. The determination of the quality of *Pliek U* is mostly based on sensory tests from consumers. The sensory test used the human senses, including; aroma, color, and liking taste that affects the admission of a product, the respondents, or panelists' decision [3].

The sensory test in this study used the organoleptic test. The organoleptic test was required from a panel. The panel served as an instrument or tool to estimate or analyze a commodity's sensory properties. The panel consisted of people (group) who assess quality based on subjective impressions. People, as members of the panel, were mentioned panelists [4]. The panel classification was namely



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individual panels, trained panels, moderately trained panels, untrained panels, restricted panels, kid panels, and consumer panels [5]

A few panelists used to assess the organoleptic in *Pliek-U* were a hedonic test or liking test and descriptive test. The hedonic test in the organoleptic analysis method was the panelists selected one option based on the level of like or dislike for a product or food ingredient. A descriptive test on the organoleptic analysis method, whereas the sensory attributes of a product or food ingredient were described, quantified, and identified using specially designed panelists for this purpose.

This study aims to determine the quality of *Pliek-U* based on variations in the thickness of the fermentation and fermentation time using the organoleptic hedonic and descriptive test.

## 2. Materials and methods

### 2.1. The *Pliek-U* collection

This study used a sample of *Pliek-U* that have been fermented for 3 days (F1), 7 days (F2), and 10 days (F3) at variation in the thickness of the coconut pile thickness of 10 cm (K1), 20 cm, (K2) and 30 cm. (K3).

### 2.2. Organoleptic test

For organoleptic analysis, the quality taste of *Pliek-U* used the hedonic and descriptive analysis from 10 panelists. The selection of panelists was determined using several criteria, namely: *Pliek-U*, whether eaten raw or processed products, experienced in sensory testing, not in a state of illness (such as flu, coughs, mouth sores, etc.) wherein interfered with the organoleptic testing process [6], including the blind color. Testing was carried out by giving a questionnaire to the panelists with parameters, i.e., color, aroma, and taste. For the hedonic organoleptic analysis, the panelists were given a questionnaire with a scale (scoring of 1-5): 1 (most dislike), 2 (dislike), 3 (neutral), 4 (like), and 5 (most like), whereas the panelist descriptive test identified the quality *Pliek-U* based on taste.

### 2.3. Organoleptic Parameter

The color was important in the process of acceptance of a food product. This case is based on the first stage carried out by a consumer when searching for food, particularly the color display. The color also associates with changes in aroma and taste [7]. The color is a product characteristic that can be viewed as objective and subjective physical properties. Subjective analysis with sensory used humans as the subject of assessing the sample color. The color attributes of the product determined the level of preference for panelists (consumers). The color value of *Pliek-U* was seen from the panelists' level of liking to the color of the product.

The aroma was described as any observed with the sense of smell. The smell or aroma was causing chemical changes and the form of compounds with other materials. Besides, the smell could be used as an indicator of damage to products, such as poor packaging or storage methods. In testing, the sense of smell was more complex than taste [8]. In the food industry, aroma testing is most important because it can quickly produce a yield. Besides, an aroma has a specific function in a product that improved, making it more valuable or acceptable. This aroma was able to attract consumer preferences to the product. Taste is an important constituent to determine the acceptance of a food product and the second factor that affects food taste after the appearance of the food itself.

### 2.4. Data analysis

Organoleptic data based on the average production in each test parameter. Equation analysis data using the SPSS program to see the effect of a combination of stack thickness and fermentation time on the level of preference/acceptance of color, aroma, and taste based on organoleptic conditions. The data has been presented descriptively.

### 3. Results and discussion

The hedonic test was called the preference (liking) test. The hedonic test was an impressive statement about the good or bad quality of a product. The hedonic test was asking the panelists to have to choose one option over the other. Therefore, the products were not selected to indicate like or dislike. According to the liking level, the hedonic scale could be converted to a numeric scale with a quality number.

A descriptive test on the organoleptic method to products was identified and measured using the subject. The analysis product parameters, namely color, aroma, and taste. Descriptive analysis was beneficial in situations wherein a product's sensory attributes specification or a comparison of a partial difference between several products as desired [7]. The results from the hedonic test showed in Table 1.

**Table 1.** The hedonic and descriptive test of the *Pliek-U*

Alternatives	Criteria						Mean of Hedonic
	Hedonic	Descriptive	Hedonic	Descriptive	Hedonic	Descriptive	
		Color		Aroma		Taste	
K1F1	3	Blackish brown	3	Mostly rancid	3	Most sour	3
K2F1	3	Dark brown	3	Mostly rancid	3	Most sour	3
K3F1	3	Dark brown	3	Rancid	3	Not-sour	3
K1F2	4	Dark brown	3	A few rancid	3	Most sour	3
K2F2	4	Light brown	3	A few rancid	3	A few sour	3
K3F2	4	Light brown	4	Not-Rancid	4	Sour	4
K1F3	4	Dark brown	3	Not-Rancid	3	Most sour	3
K2F3	4	Light brown	3	A few rancid	3	Sour	3
K3F3	4	Light brown	3	Not-Rancid	3	Not-sour	4

Based on the table, there was a criterion for color, aroma, and taste to determine the sensory decisions of *Pliek-U*. The color played an important role in food commodities, namely attractiveness, identification, and quality. Among the characteristics of food products, the color was the quality factor that attracts consumers' attention and gives the most impression. Based on the initial stages carried out by a panelist, namely a search for certain foods and the food's color appearance. The color was a product characteristic that was viewed as an objective and subjective physical property [9]. The color played a role as a factor that determines the quality taste of *Pliek-U* for this study. The color assessment at *Pliek-U* showed from the panelists' level of preference for the product's color. Panelists considered that the most preferred Pliek U (4) was Pliek U which was light brown as shown in the 30 cm thickness sample for 7 days fermentation, while the Pliek U that the panelists really didn't like was Pliek U which was blackish-brown as shown in the thickness 10 cm fermentation for 3 days.

The regression analysis showed that the thickness of the rasp coconut pile and the fermentation time reported a significant effect on the color of *Pliek-U* ( $p < 0.05$ ). The value or trust relationship (R) of 0.904 from these results obtained a coefficient of determination (R Square) of 0.818, which means that the effect of the thickness of the rasp coconut pile and the length of fermentation on the color is 81.8%. The aroma was called the smell of a food product. The smell itself was a response when volatile compounds from the food enter the nasal cavity and are felt by the olfactory system. Volatile compounds enter the nose when humans inhale odors (smell) [10]. The aroma was an odor generated by chemical stimuli smelled by olfactory nerves to the nasal cavity when food enters the mouth. The aroma was determined by the delicacy of a food product, especially in food ingredients. The aroma has been more to do with the sense of smell. The aroma has an important role in the determination and quality of foodstuffs [11]. Moreover, the aroma was played a role as the taste of Pliek U quality factor. The level of aroma was determined based on the liking value of the product from the panelists. The most preferred aroma of Pliek U (4) is the aroma in the sample with a thickness of 30 cm and fermentation time of 7 days. This case because the *Pliek-U* is not-rancid or has a bad smell, while the panelists dislike Pliek U, which has a rancid odor as shown in the sample thickness of 10 cm and fermentation time of 3 days.

Therefore, each product has been a specific tasted that varies depending on the constituent ingredients and the processing process. The unity of interaction between the properties of color and aroma was the total taste of food. The taste is the most important factor in a consumer's final decision to reject or reject food. Although the color and aroma are good, consumers will reject the food if the taste is not good [12]. Taste plays a role as a factor that determines the taste of the quality of *Pliek-U* in this study. The taste estimate at *Pliek-U* was showed from the panelists' level of liking to the product's taste. The best taste of *Pliek-U* in this study was *Pliek-U* with a thickness of 30 cm, 7 days fermentation, namely the panelists chose 4 (likes). *Pliek-U* has a sour taste but not too sour, while the panelists dislike *Pliek U*, which has a sourest taste or no sour taste.

The regression analysis results showed that the thickness of the rasp coconut pile and fermentation time had no significant effect on the aroma and taste of *Pliek-U* ( $p > 0.05$ ). The relationship (R) value was obtained 0.435 with a coefficient of determination (R Square) 0.189. On the other hand, the rasp coconut pile's thickness and fermentation length on the aroma and taste were reported at 18.9%.

#### 4. Conclusions

Based on the hedonic and descriptive organoleptic test, the panelists liked the fermented *Pliek-U* for 7 days with a pile thickness of 30 cm, where the *Pliek-U* was light brown, not rancid in aroma, and with a sour taste. The regression analysis results showed the thickness of the rasp coconut pile. The length of fermentation had a significant effect on the level of panelist acceptance of the *Pliek-U* color, not significantly affecting the aroma taste of *Pliek-U*.

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