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UTILIZATION OF ALMOND PULP AS THE MAIN INGREDIENT FOR MAKING COOKIES

Abstract
Tourism is an industry that has undergone several changes throughout its history. Tourism is considered an enduring industry due to its ability to adapt to many transformations. Cookies are a type of snack that people like, namely cakes. Cookies made from flour usually consist of wheat flour, powdered sugar, chicken eggs, vanilla, margarine, cornstarch, baking powder and instant milk powder. Like other pastries, the texture of these cookies are crunchy and do not crumble easily. The aim of the research is to find out whether almond pulp can be processed into cookies. This type of research is product development with organoleptic testing. Testing was carried out on 3 limited panelists and 51 consumer panelists. Things will be tested using the five human senses with criteria regarding the taste, aroma, color, texture and appearance of the product. The results showed that almond pulp was acceptable in terms of color, aroma, texture and appearance. The implication of this research is that it effectively explains the manufacture of cookies with all tests providing a positive impact on cookie products. It can be concluded that almond pulp is acceptable in terms of color, aroma, texture and appearance.
Keywords: Almond Pulp, Almonds, Cookies,Organoleptic Test

INTRODUCTION

Tourism is an industry that has undergone several changes throughout its history. Tourism is considered an enduring industry due to its ability to adapt to many transformations. Travel has always been an important industry in the global market, especially in Indonesia, which is known for its diverse culture and abundant natural resources, which consistently provide some exciting tourism opportunities. Indonesia has significant potential for tourism expansion in the globally recognized food and beverage sector (Ministry of Industry, 2022).

It is crucial for the food and beverage business to continue to grow and develop with acceptable quality. Based on the increasing realization of investment and the growing gross domestic product (GDP) of the non-oil and gas industry, it is evident that this sector plays an important role in driving Indonesia's industrial and economic growth. Based on statistical data provided by the Ministry of Industry (Kemenperi), the food and beverage sector made a significant contribution to Indonesia's GDP, which amounted to 34.95% in the third quarter of 2021 (Kemenperin, 2022).

The food and beverage business in Indonesia plays an important role in meeting the growing needs of society. The snack food category, in particular, has experienced significant growth, with nuts being one such example. Nuts are a commonly consumed food component by the Indonesian population. Commonly found nuts in Indonesia include soybeans, almonds, peanuts, and several other types of nuts (Fahrudin, 2017).

Almonds, which are an expensive imported commodity, are highly favored by the general public for their delicious taste and rich nutritional value. Many people enjoy various types of almond preparations, including roasted almonds, salted almonds, and almonds used as an additional component in cakes. Typically, these dishes are consumed as snacks or leisure foods. In addition, they are also often incorporated into meals. Almond milk is currently one of the most widely consumed almond-based products (Damayanti et al., 2018).

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Almond milk is a non-dairy plant-based drink that serves as a milk substitute, especially for individuals who have lactose sensitivity. Almonds are rich in flavonols, which are antioxidant compounds that offer several benefits to the digestive system. Flavonols have antiviral, anti-inflammatory, anti-cancer, anti-allergic, and anti-cholesterol properties (Lubis, 2016). Almond pulp, which is rich in saturated fatty acids, is a by-product of almond milk production. The advantages of this fatty substance include its role as a source of energy for the body, as well as the presence of vitamin E in almond pulp which acts as an antioxidant that can reduce the presence of harmful free radicals in the body. The nutritional composition of almond milk pulp is almost the same as that of milk and almonds. Therefore, there is no need to throw it away; instead, almond pulp can be used in the production of cookies and other nutritious snacks.

These cookies are loved by everyone, from children, teenagers, adults, to the elderly. In addition, these *cookies are* also suitable for consumption at any time. Wheat flour, water, milk powder, eggs, and egg whites serve as binding ingredients, while sugar, shortening, or margarine serve as softening ingredients. Baking powder or baking soda is used as a leavening agent. The quality of *cookies is* determined by several factors, such as the selection and measurement of ingredients, tools used, production procedures, the formation process, baking temperature, and packaging techniques (Purwati et al., 2015).

Nowadays, *cookies* are a popular snack food among people. However, cookies are usually only made from wheat flour, so you should look for other flours to add protein. Almond pulp flour is another type of flour that can be used to make cookies. It can increase the protein in cookies, make them tastier, and replace milk, so people who cannot eat milk can eat them (Damayanti *et al.,* 2018).

Almond pulp flour should not be used more than 30% of the mix, especially for perfectly risen doughs due to its high fat content. It is a gluten free alternative that is high in protein and low in sugar and carbohydrates (Dahlia, 2014). Ayu *et al.* (2019), stated that almond flour has more protein and carbohydrates than wheat flour, with protein content of 26.50% and carbohydrate content of 11.82%. A new innovation for *cookies* that uses almond pulp as a substitute for wheat flour. In terms of nutrition, almond pulp has a fairly high protein content and carbohydrate content and is an important source of minerals for the body.

Cookies are one of the snacks that people love to eat. Cookies have various shapes and flavors depending on the ingredients used. One type of *cookie* that is crunchy, small and thin, is cookies. Wheat flour is the main ingredient used to make cookies (Sarofa *et al.,* 2018).

Cookies are a specific type of biscuit. There are four different categories of biscuits: crackers, hard biscuits (also known as hardtack), wafers, and *cookies*. Hard biscuits are confectionery made from hard dough that is flattened and has a compact structure when sliced. *Cookies are* made using a soft dough that contains a lot of fat, resulting in a crunchy texture. When cut, the cookie portion is not too thick (Rosida et al., 2020).

Based on the specifications outlined in SNI 01-2973-1992, dry biscuits are a type of biscuit made from dough that contains a lot of fat. *Cookies* have a thick texture, have a fine crunch and crunch when sliced. Cookies usually use alternative flours that are not derived from wheat. In order for *cookies to be* considered safe for human consumption, *cookies* must meet established quality standards. Quality criteria are set by the Indonesian National Standard (SNI 01-2975-1992), as shown in the table below:

Almonds are the seeds of a tree closely related to peaches and apricots. Therefore, the most natural almond flavoring comes from peach and apricot seeds. Almonds are oval-shaped nuts that grow inside a hard shell, Almonds grow on almond trees. Almonds are very good for health.

This is a high quality 500 gr premium grade real Almond ready for direct consumption and processing that can be used in various ways other than eating such as skin care and so on. In addition to its best properties, it also has an excellent oil consisting of 49% Almond which is very useful for improving blood circulation in the body thereby reducing the risk of heart attack.

Butter is an important ingredient used to cook cakes or complement other dishes such as steak. Butter is a dairy product because it is made from churned cow's milk. Consuming butter itself can provide good benefits for the body. This butter contains vitamins such as Vitamin A, Vitamin D, Vitamin E and Vitamin K2 (Ardian *et al.*, 2022).

Wheat is an important component in the food industry worldwide and is the most abundant food commodity. In Indonesia, wheat production has consistently increased every year, surpassing rice and corn production. Wheat surpasses all other major crops worldwide due to its annual growth rate of 2 to 3% (Ardian et al., 2022).

Indonesians are becoming increasingly dependent on wheat, as it is widely used in several processed products that use wheat flour. As a result, there has been a significant surge in wheat imports into Indonesia each year. The national wheat demand in 2017 reached 8.79 tons, posing a potential danger to the country's economic stability (Gisslen, 2019).

Wheat grains are mainly used to produce a substance called wheat flour, which is the most frequently used ingredient in the production of various foodstuffs for human consumption. The name "wheat flour" in Indonesian comes from the Portuguese "trigo", which specifically refers to wheat (Ketaren, 2018). Indonesia has a well-established food industry that uses wheat flour as a major component. The industry produces a wide range of processed food products such as dry bread, wet bread, biscuits, instant noodles, and many more. In 2016, Indonesia was the largest wheat flour producer in the world, with 30 companies specializing in this field. These companies have a combined production capacity of up to 11.4 million Metric Tons (MT) per year. PT Indofood Sukses Makmur (ISM) Bogasari Flour Mills is a leading company in wheat flour manufacturing. The company was established in 1971 and is responsible for meeting all of Indonesia's domestic wheat flour needs through imports (Sari *et al*., 2023).

According to the Association Brasileira Industri do Trigo, wheat flour is widely used in daily food consumption. About 55% of the total wheat flour production is estimated to be used by industries, bakeries, and confectionery companies. Another 17% is used for household consumption, 15% is used for dough making, 11% is used as an ingredient for *cookies*, and 2% is used in the production of animal feed (Agustin & Wahyuni, 2020).

Wheat flour is a fine-textured powder made from processed wheat grains. Wheat grains are cultivated and undergo many procedures, including milling, to obtain the desired texture.

After undergoing several processes, such as milling to obtain a smooth texture, wheat flour is then used as the main raw material in the food manufacturing process. This material is usually used in cakes and breads to increase their texture and volume (Alvionita et al., 2017).

Wheat flour is essential in the human diet and is particularly important in the production of sweet breads. This is due to its high water absorption, which results in a dough with excellent consistency and elasticity. These properties contribute to the desired soft and delicious texture of the final product. Wheat flour can be distinguished from other types of flour. According to the data, there are two kinds of proteins that play an important role in making cakes, namely functioning as *gluten* proteins in determining the structure of processed *cake* products and also to be able to provide strength to the dough that has been made (Agustin & Wahyuni, 2020).

Optimal results for each type of *cookie* can be achieved by following a specific baking temperature and duration. The size of the molded cookies directly affects their baking time, with larger cookies requiring a longer duration. In addition, it is important to ensure that the baking temperature is not too high. The recommended baking temperature range for *cookies* is 160 - 200 °C, with a baking time of 10 - 15 minutes or even more (Maimunah et al., 2020). The presence of sugar in *cookies* directly impacts the baking process. In particular, reducing the amount of sugar and fat in the dough allows an increase in the baking temperature, ranging from 177 to 204°C. The moisture level of the *cookies* can be affected by the baking temperature and duration, as too rapid baking of the outer layer can cause excessive dryness. This can inhibit the development process and result in cracking of the cookie surface. In addition, it is very important to avoid excessive sugar content in the dough because it will produce *cookies that are* too hard or too saccharine (Maimunah *et al.*, 2020).

METHOD

The research conducted was the use of *almond pulp* as a basic ingredient for making *cookies* to be used as a substitute for wheat flour. This form of research can be known as product research and development which is a form of method or method that exists in science to

produce a certain product and then will go through several tests to determine the effect and changes in the product (Suwandi, 2018).

There are variables determined in this study to be seen and assessed, namely the variables of aroma, taste, texture and appearance. The research will be carried out with the product development stage on *cookies* then for the improvement of the research, further research will be carried out using the form of testing on the research products produced with the hedonic test and also the hedonic quality test. The form of testing will be given by distributing questionnaires to a number of panelists who have been determined to be able to provide responses related to the interest and quality of the research product.

The research conducted in the development of the product uses a form of time dimension research called *cross-sectional* where the implementation of this research has been determined to collect data using several processes and stages in it for several months, namely three months from the first data collection conducted in the period of October 2023 to targeting completing data collection in December 2023 (Priyono *et al.*, 2019).This research has the aim of being able to find out whether there are differences in aroma, taste, texture, color and appearance of the five types of processed product variants that have been developed which will go through several stages of data collection.

This research focuses on assessing the level of panelists' liking for *cookies* made with almond pulp as the main ingredient. The testing methodology was carried out by conducting an evaluation to determine the panelists' level of liking for the *cookies*. In this study, several people will be selected as panelists to evaluate various products developed with the basic ingredients of almond pulp. Panelists will conduct hedonic tests and hedonic quality tests to analyze their influence on predetermined aspects such as aroma, taste, texture, color, and appearance of the three products developed.

Various methods can be used to collect data for further analysis in a study, which includes two different categories of data sources: secondary and primary. Primary data refers to information that is directly collected by the person responsible for data collection, while secondary data is information that is not directly collected by the person responsible for data collection. Secondary data is usually published by authorized institutions in the country's government and has more value, such as data released by the Central Bureau of Statistics (Bougie & Sekaran, 2020).

Secondary data analysis is a more complicated approach and also requires several procedural steps that are more evaluative, besides that this type of source is an option for selecting data collection methods that are less selected and used than secondary data collection methods, but the form of secondary data will be more systematic (Hermawan, 2019).

Primary data collection can be grouped into several ways, including using interviews, distributing questionnaires (questionnaires), making observations (observations), surveys, and also forms of documentation. Data collection techniques obtained from survey methods and also the distribution of questionnaires will certainly be followed by the distribution of questionnaires which can be made in the form of paper brochures or online which are then distributed links. The questionnaire is distributed to respondents who want to be addressed according to the target or target (Hermawan, 2019).

The data collection method used in this study involves the use of questionnaires as a tool. Questionnaires are a commonly used method of collecting data in research. This method involves distributing a set of written questions or statements to respondents, which are then answered and rated based on their opinions and responses. This method is efficient and easy to do if the researcher has determined the variables to be measured and the target population for data collection. The collected data can then be processed to determine the feasibility of a product (Hermawan, 2019).

In this study, researchers used primary data collection methods by distributing online questionnaires created using Google Form. The questionnaire was then distributed to certain panelists or targets according to predetermined criteria. The questionnaire distributed included panelist answers in the form of an assessment consisting of four aspects, namely aroma, taste, texture, and appearance. The questionnaire distributed at the beginning of this research served as a preliminary product survey to 51 people. This survey used a rating method based on the

Likert scale, which is a measurement scale. The Likert scale follows a similar format to other methods that use scales. In surveys using Likert scales, participants are instructed to rate the product based on their personal opinions and provide honest responses using statements ranging from strongly agree to strongly disagree. This type of scale is very easy to use and easy for participants to understand (Sugiyono, 2020).

Likert scale is a form of measurement scale in which it consists of five or even more than six items of questions given depending on the type of question to be asked by the research team and the question will be combined so that it can form the final result in the form of an answer in the form of a score or value. When analyzing the data that will be used is usually the sum of the average results of all the questions that have been given, this type of Likert scale is often used in research in the form of surveys with the help of questionnaires as a medium of auxiliary means to obtain data (Hermawan, 2019).

Measurement on this Likert scale uses ordinal and interval-shaped types of measures and there is a gradation of lines arranged from very positive to very negative assessments or assessments ranging from strongly agree to strongly disagree. Each Likert scale must contain an explanation of the scale indicators that will be used to make it clear and facilitate filling and drawing final conclusions (Sekaran & Bougie, 2016).

The diversity of questions on the Likert scale is needed to draw final conclusions from respondents and also to attract attention and be preferred by respondents. Likert scales are very widely used by researchers because they are considered to provide later use (Sekaran & Bougie, 2016). To be able to convince respondents to fill in the answers to the various questions and statements given in the questionnaire, the Likert scale used is to use a scale of 1 to 6 with value weights and value indicator criteria (Sekaran & Bougie, 2016).

Based on the data obtained to conduct a refinement assessment with the research product assessment, the following analysis will be carried out: hedonic quality test and hedonic test. The hedonic quality test in this study was carried out by panelists as a group of individuals who act as an assessor of a product that has been produced and then tested properly and in this product research will collect data using 3 people as expert panelists and 51 people as consumer panelists.

Validity is a measure that shows that the variable being measured is actually the variable that the researcher wants to study. The validity test is used to determine whether a questionnaire is valid or not. The questionnaire is said to be valid if the questions can reveal what is intended to be measured (Ghozali, 2018). A quote is contained in a book entitled "Encyclopedia of Educational Evaluation", someone named Scarvia B. Anderson said that a test is said to be valid if the test measures what is to be measured (Ghozali, 2018). Research on cookies made from almond pulp Validity is assessed using the SPSS program. The validity test is used to determine whether the statement or indicator is valid if r count is greater than r table and if there is a positive value. The validity test form is obtained from the processed organoleptic test data, which includes hedonic and hedonic quality.

Reliability is a measure in which it shows that the measuring instrument used in a study can be used as a valid measuring instrument because it has reliability both from function and others. It is said that reliability is if a measure that shows the measurement results always experiences consistency if the measurement is carried out for several times within a certain period of time and uses the same type of measuring instrument as used for the previous measurement. There are two types of reliability measurements, namely the *repeated measure* form and also *one shot*, the use of both will be based on the type of measurement needed in research activities (Ghozali, 2018).

The reliability test is a tool used to be able to measure a questionnaire which consists of several indicators of an existing variable. The questionnaire can be said to be a *reliable* or reliable questionnaire if the answers produced by respondents to a form of question are consistent or stable within a predetermined period of time and are not said to be reliable if the answers continue to experience different changes after being successfully drawn to the final conclusion.

Friedman is someone who first introduced a form of this test called the Friedman test in 1937. One form of testing that is carried out requires and involves a number of panelists in it to

obtain the desired data. The Friedman test, also known as the ranking test for a research product that has been created and developed, the Friedman method is a test that has more accurate results in it and by conducting this test will get the final results containing benchmarks in knowing consumer tastes for research products that have been made. The Friedman test method is used and applied to be able to test the significance of existing samples related to data that has the same population with a minimum ordinal data scale (Ghozali, 2018).

The Friedman test is a form of testing that can be used as an alternative to be able to analyze group designs such as analyses carried out on complete group randomized designs and then rank measurements are usually divided into several equal groups to be able to facilitate and get correct results (Ghozali, 2018).

Ranking can be seen and measured based on looking at the mean rank on each variable whose data has been processed using the SPSS system. After measuring the rank using the mean, *Chi-Square* significance also affects the test, aiming to be able to find out overall whether the product under study has a significant effect (Ghozali, 2018).

RESULT AND DISCUSSION

Data was collected from filling out questionnaires conducted by expert panelists and consumers to obtain the final results of product research. The organoleptic test assesses the product by hedonic test and hedonic quality test. The hedonic test, also known as the favorability test, assesses how much consumers like the product overall. The hedonic quality test assesses the quality of the product based on elements such as aroma, flavor, texture, and appearance. Once the data are collected, they are processed using a system called Statistical Product and Service Solution, or SPSS.

Hedonic Test Results

The Hedonic Test is divided into five scales namely: 1 = Strongly Dislike (STS), 2 = Dislike (TS), 3 = Somewhat Like (AS) , 4 = Like (S), 5 = Very Like (SS), 6 = Extremely Favorable (ASS)

Table 1. Hedonic test results of almond pulp cookies (flavor)

		Frequency	Percent	Valid Percent	Cumulative Percent	Mean
Valid	TS	1	1,5	2,0	2,0	5.59
	S	2	3,0	3,9	5,9	
	SS	13	19,7	25,5	31,4	
	ASS	35	53,0	68,6	100,0	
	Total	51	77,3	100,0		

Source: SPSS data processing results (2023)

Table 2. Hedonic test results of almond pulp cookies (color)

		Frequency	Percent	Valid Percent	Cumulative Percent	Mean
Valid	US	2	3,0	3,9	3,9	4,90
	S	14	21,2	27,5	31,4	
	SS	22	33,3	43,1	74,5	
	ASS	13	19,7	25,5	100,0	
	Total	51	77,3	100,0		

Source: SPSS data processing results (2023)

Table 3. Hedonic test results of almond pulp cookies (aroma)

		Frequency	Percent	Valid Percent	Cumulative Percent	Mean
Valid	US	1	1,5	2,0	2,0	5,55
	S	4	6,1	7,8	9,8	
	SS	12	18,2	23,5	33,3	
	ASS	34	51,5	66,7	100,0	
	Total	51	77,3	100,0		

Source: SPSS data processing results (2023)

Table 4. Hedonic test results of almond pulp cookies (texture)

	Frequency	Percent	Valid Percent	Cumulative	Mean

					Percent	
Valid	US	1	1,5	2,0	2,0	5,22
	S	10	15,2	19,6	21,6	
	SS	17	25,8	33,3	54,9	
	ASS	23	34,8	45,1	100,0	
	Total	51	77,3	100,0		

Source: SPSS data processing results (2023)

Table 5. Hedonic test results of almond pulp cookies (appearance)

		Frequency	Percent	Valid Percent	Cumulative Percent	Mean
Valid	S	4	6,1	7,8	7,8	5,49
	SS	18	27,3	35,3	43,1	
	ASS	29	43,9	56,9	100,0	
	Total	51	77,3	100,0		

Source: SPSS data processing results (2023)

The results of data processing that have been carried out show that one panelist with a percentage of 1.5% did not like it, two panelists with a percentage of 3.0% chose to like it, thirteen panelists with a percentage of 19.7% chose to like it very much, and 35 panelists with a percentage of 53.0% chose to like it very much. The average value of the liking value on the taste variable is 5.59.

The results of data processing that have been carried out show that the color variable of almond pulp cookies has a frequency of liking value of 2 with a percentage of 3.0% choosing rather like; 14 panelists chose like with a percentage of 21.2%; 22 panelists chose with a percentage of 33.3%; and 13 panelists chose very like with a percentage of 19.7%.

The results of the data processing that has been managed show that one panelist with a percentage of 1.5% chose somewhat like, while four panelists with a percentage of 6.1% chose like. A total of 12 participants, with a percentage of 18.2%, chose very like, and 34 participants, with a percentage of 51.5%, chose very like. The average favorability result was 5.55.

The results of data analysis that have been processed show that the average liking value on the texture variable of almond pulp cookies is an average of 1 panelist with a percentage of 1.5% choosing somewhat like, 10 panelists with a percentage of 15.2% choosing like, 17 panelists with a percentage of 25.8% choosing very like, and 23 panelists with a percentage of 34.8% choosing very very like.

Panelists' liking of the four appearance variables of almond cookies was reported with an average of 5.49, with 4 panelists with a percentage of 6.1% choosing like, 18 panelists with a percentage of 27.3% choosing very like, and 29 panelists with a percentage of 43.9 percent choosing very like. The favorable score has the highest value of a scale of six

Hedonic Quality Test Results

The hedonic test is divided into five scales, namely: 1= Very unfavorable (STB), 2 = Not Good (TB), 3 = Somewhat Not Good (ATB), 4 = Somewhat Good (AB), 5 = Good (B),6 = Very Good (SB)

In the results of the data processing that has been described, it was found that the frequency of values obtained on the almond pulp cookies flavor variable is as follows: one panelist, which is equivalent to 1.5% of the total respondents, selected the quality as not good; thirteen panelists, which is equivalent to 19.7% of the total respondents, selected the quality as good; while thirty-seven panelists, which is equivalent to 56.1% of the total respondents, selected the quality as very good. The mean calculation result for the almond pulp cookies flavor variable is 5.67. Therefore, it can be concluded that the average assessment in the hedonic quality test of the flavor of almond pulp cookies exceeds the mean value set at 5.

Based on the same data processing results, the frequency of values obtained on the color variable of almond pulp cookies is as follows: one panellist, equivalent to 1.5% of the total respondents, chose a rather poor quality; eleven panellists, equivalent to 16.7% of the total respondents, chose a rather good quality; twenty-four panellists, equivalent to 36.4% of the total respondents, chose a good quality; while fourteen panellists, equivalent to 22.7% of the total

respondents, chose a very good quality. The mean value for the color variable of almond pulp cookies is 5.04. Thus, it can be concluded that the average assessment in the hedonic quality test of the color of almond pulp cookies also exceeds the mean value set at 5.

According to the processed data obtained, that the frequency of values obtained on the aroma variable of *almond pulp cookies is* 1 panelist or in a percentage of 1.5% choosing somewhat not good and as many as 2 panelists or in a percentage of 3.0% choosing somewhat good. A total of 13 panelists or in a percentage of 19.7% chose good and those who chose very good were 35 panelists or in a percentage of 53.0%. The *mean* value for the aroma of almond amps cookies is 5.61, so the average of the hedonic quality test assessment for the aroma of *almond pulp cookies is* above the median value (5).

According to the results of processed data obtained, that the frequency of values obtained on the texture variable of *almond pulp cookies is* 1 panelist or in a percentage of 1.5% choosing somewhat not good and as many as 9 panelists or in a percentage of 13.6% choosing somewhat good. A total of 17 panelists or in a percentage of 25.8% chose good and those who chose very good were 24 panelists or in a percentage of 36.4%. The *mean* value for the texture of almond amps cookies is 5.25, so the average of the hedonic quality test assessment for the texture of *almond pulp cookies is* above the median value (5).

It can be seen from the processed data, the frequency of values obtained on the appearance variable of *almond pulp cookies* as many as 1 panelist or in a percentage of 1.5% chose rather bad and as many as 17 panelists or in a percentage of 25.8% chose good. A total of 32 panelists or in a percentage of 48.5% chose good and those who chose very good were 8 panelists or in a percentage of 14.3%. The *mean* value for the appearance of *almond pulp cookies* is 5.59, so the average of the hedonic quality test assessment for the appearance of *almond pulp cookies is* above the median value (5)

In this study, validity testing was carried out to evaluate the validity of data from a questionnaire containing six questions using the hedonic test and hedonic quality test, which were assessed by 51 people. The formula for finding rtabel is df = N-2, where N is the number of samples and k, so 51 - 1 = 50, so the r table is significant 5% = 0.279. The following table shows the results of the validity test of this study:

Table 10. Hedonic validity test results

Indicator	r count	r table	Description
Taste	0,712	0,279	Valid
Color	0,290	0,279	Valid
Aroma	0,456	0,279	Valid
Texture	0,496	0,279	Valid
Appearance	0,383	0,279	Valid

Source: SPSS data processing results (2023)

Table 11. Hedonic quality validity test results

Indicator	r count	r table	Description
Taste	0,312	0,279	Valid
Color	0,263	0,279	Valid
Aroma	0,498	0,279	Valid
Texture	0,297	0,279	Valid
Appearance	0,285	0,279	Valid

Source: SPSS data processing results (2023)

It is known from the results of the validity calculation in the table above, it can be seen that rCount> rTable. So overall it can be concluded that all instruments in this study are valid, both hedonic validity and hedonic quality tests.

According to Sugiyono, the instrument can be declared reliable if the minimum reliability coefficient is 0.6 (Zahra & Rina, 2018). According to the Alpha (Cronbach's) method formula, an alpha value of more than 0.70 indicates sufficient reliability; an alpha value between 0.70

and 0.90 indicates high reliability; an alpha value between 0.50 and 0.70 indicates moderate reliability; and an alpha value below 0.50 indicates low reliability. (Cahyani et al., 2016).

Based on Reliability test results above, the *Cronbach's Alpha* value of almond pulp cookies states the numbers 0.776 to 0.671 in accordance with the data in table 21 and table 22, where alpha 0.70- 0.90 is declared as high reliability. While the *Cronbach's Alpha* value in the hedonic validity test is 0.776 and the hedonic quality validity test is 0.671, declared as moderate reliability. But because all *Cronbach's Alpha* values are> 6, it can be concluded that all instruments in this study are declared *reliable.*

The result can be seen and concluded that taste is ranked first with a *mean* value of 3.43. The second rank is *aroma* with a *mean* value of 3.39. The third rank is *appearance with a mean* value of 3.30, and the fourth rank is texture with a *mean value of* 2.70 and the fifth rank is coloral with a *mean* value of 2.16. From the existing data, it can be said that *cookies* made from almond pulp in the aspect of taste are preferred by panelists.

There is an *Asymp. Sig. value of* .000. It is known that if the *Asymp. Sig. is* smaller or <0.005 then H0 will be rejected and Ha is accepted so that when viewed based on the assessment obtained from the hedonic test, there are significant differences in the aspects of taste, color, aroma, texture and appearance.

The result can be seen and concluded that the results of the hedonic quality test on cookies made from almond pulp are flavors that rank first with a *mean* value of 3.42. The second rank is *aroma* with a *mean* value of 3.37. The third rank is *texture with a mean* value of 2.70, and the fourth rank is appearance with a *mean value of* 2.26 and the fifth rank is color with a *mean* value of 2.25. From the existing data, it can be said that *cookies* made from almond pulp in the aspect of taste are preferred by panelists.

There is an *Asymp. Sig. value of* .000. It is known that if the value of *Asymp. Sig. is* smaller or <0.005 then H0 will be rejected and Ha is accepted so that when viewed based on the assessment obtained from the hedonic quality test, there are significant differences in the aspects of taste, color, aroma, texture and appearance.

DISCUSSION

In the research on the use of almond pulp as a substitute for wheat flour in making cookies, the results of the assessment of the level of preference of the respondents showed significant variations. After conducting data analysis using SPSS (Statistical Product and Service Solution) software, researchers can determine the respondents' level of preference for various predetermined aspects, such as taste, color, aroma, texture, and appearance, as well as the overall product.

In this study, an organoleptic test consisting of hedonic test and hedonic quality test was used. In the hedonic quality test, respondents rated the five elements mentioned, while in the hedonic quality test, panelists rated their overall liking for the product. The results showed that the flavor of cookies using almond pulp received the highest rating based on the mean value.

Based on the results of validity testing, it can be concluded that all variables used are valid, because the value of rCount is greater than rTable with a significance level of 5%, which is 0.0279. In addition, the reliability test value using the Cronbach's alpha value for each variable reaches 0.06.

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CONCLUSION

Based on the results of research that has used the main ingredient of almond pulp substitution in the manufacture of *cookie* products, the following conclusions can be drawn: The use of almond pulp greatly affects the aroma, taste, texture, color and appearance of *cookies*. Based on the hedonic test results *cookies* from the aspects of taste, color, aroma, texture and appearance have an average value of 5.59, 4.90, 5.55, 5.22, 5.49. So it can be said that the average value of the aspects of taste, color, aroma, texture and appearance is above the middle

value (5). The level of panelists' liking for *cookies* made from almond pulp on aroma, taste, texture, color and appearance. From the results of the Friedman Mean Ranking Hedonic Test, panelists prefer the flavor aspect because the mean rank is 3.43. The results obtained from various forms of testing carried out by respondents and panelists show that cookie products made from almond pulp obtained a satisfactory assessment for researchers. Therefore, this product can be accepted by a number of panelists because the value obtained reaches the predetermined standard according to the calculation of the mean or average.

Researchers have conducted a series of research activities on the processing of *cookies* products made from almond pulp. After the researchers conducted several forms of experiments in it, there are several suggestions that will be given related to further research: Not using a *food processor* in the processing of *cookie* products would be better if you use more hand-driven tools such as spatulas to produce a good and desired texture and final shape of *cookies*. In processing *cookie* products, it is necessary to add a little milk or *fresh milk* which can affect the texture of soft *cookies.* It is necessary to conduct further research on the utilization of almond pulp as a substitute for wheat flour in the cake-making process. Before reaching the final result, the researcher has run a series of tests on various types of cookies, such as cat's tongue cookies and brownies, with the aim of determining the most effective type of cookie that has high similarity in characteristics. The selected cookies will then be used as a model in the next research to produce cookies that are considered the most successful and closest to the characteristics of these cakes. A number of respondents and panelists used in this study are expected to meet the requirements in the field of food production in order to produce valid data.

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