



The Journal Gastronomy Tourism

Journal homepage:

<https://ejournal.upi.edu/index.php/gastur/index>



Utilization Of Tofu Pulp Flour In Making Cookies

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ABSTRACT

The research objective of what's unique about culinary tourism in Indonesia is not only the food aspect, but also the art and culture. Art and culture packages can be sold through the food. Some regions in Indonesia also make the tourism sector the backbone of the economy because it can bring positive flows to businesses in the service and food sectors. Cookies are popular type of snack food enjoyed by people of all ages, from children to adults, in both rural and urban areas. With this high import value, the utilization of other materials is necessary to reduce the use of wheat flour and produce flour that does not contain gluten so that it can be consumed by people with gluten intolerance, such as tofu pulp flour. Tofu pulp is actually a solid waste derived from the by-product of soybean pulp squeezed in tofu production. Tofu dregs are part of the soybean seeds that remain after filtering. So far, tofu pulp has not been optimally utilized by tofu producers, they just throw it away which can cause pollution. Although there are also tofu producers who have sold this solid waste, they sell it at a very cheap price. Meanwhile, the amount of tofu pulp itself is quite large because approximately 40% of the total tofu production is the result of solid waste. Solid waste of tofu production is actually not so detrimental when compared to its liquid waste because this solid waste can be reprocessed, into flour. Based on the explanation above, study will be conducted to replace the role of eggs in pound cake with tofu, making it suitable for all groups including vegans and those who have allergies to eggs. This research will focus on aspects of taste that include flavor, aroma, texture and appearance.

ARTICLE INFO

Article History:

Submitted/Received Apr 2024

First Revised May 2024

Accepted June 2024

First Available online June 2024

Publication Date June 2024

Keyword:

Cookies; Flour; Tofu Pulp

1. INTRODUCTION

Culinary tourism in the country has tremendous potential. The diversity and uniqueness of the archipelago's culinary originating from diverse ethnicities and cultures, wealth whose growth must continue to be developed. According to Don Kardono, "Over the past 5 years, the Government has tried to provide protection so that culinary tourism develops and is able to compete in the current era of globalization, If not, the uniqueness and diversity of Indonesian cuisine will slowly be eroded by time, era, and changes in people's lifestyle patterns,". After the Ministry of Tourism determining Bandung as one of the gastronomy tourism destinations, every stakeholder in gastronomy tourism should make an effort to align their business with tourist needs. There are many benefits of gastronomy tourism, such as introducing and giving knowledge about local food to the tourists, introducing uniqueness and differentiation in culinary arts, adding value for food ingredients improvement, and developing local tourist areas (Resmi et al, 2023). One of the most well-liked elements of cultural tourism has arisen, and that element is food, which is now seen to be an expression of identity and culture (Rahma, 2023).

In this context, the government continues to strengthen the culinary tourism sector, such as starting to determine regions in Indonesia as leading culinary tourism destinations. Material availability standard to meet various needs especially the domestic industry is balanced with the acquisition of added value from diversification of products produced and power competitive products and tailored to characteristics of each region (Herdhiansyah & Asriani, 2018). Food is very influential in the tourism sector in Indonesia. It is not uncommon for tourists who visit an area would taste the specialties of that area. Indonesia is rich in regional culture, so it can be called a country rich in culinary delights (Fajri et al, 2022).

The selection is based on six aspects: main products and attractions, product packaging and events, feasibility, environmental sustainability, business viability, and the role of the government in developing culinary tourism destinations.

What's unique about culinary tourism in Indonesia is not only the food aspect, but also the art and culture. This is what makes it special. You can sell art and culture packages through the food. Some regions in Indonesia also make the tourism sector the backbone of the economy because it can bring positive flows to businesses in the service and food sectors.

Therefore, strategic thinking and complex problem solving are needed in the business process, both in terms of finding opportunities, innovative products, technology used, how to communicate with the target market. These factors are crucial for maintaining a sustainable and thriving company.

Cookies are one type of snack food that people are interested in. Cookies are known by many people, both children, teenagers and adults, who live in rural and urban areas. Cookies are cakes made from flour-based ingredients which are generally made from wheat flour, powdered sugar, eggs, vanilli, margarine, cornstarch, baking powder, and instant milk powder. The texture of cookies has a crunchy texture and does not crumble easily as with pastries in general. The color of these cookies is slightly yellow-brown due to the influence of instant milk powder and the addition of margarine (Mutmainna, 2013).

"The main raw material for making cookies is wheat flour. This resulted in the Indonesian government having to import wheat from abroad amounting to 10.7 tons in 2019". Several previous studies used additional formulations of Moringa leaves into food products to increase their nutritional value such as biscuits (Sudiarta, 2022).

In addition, "...the gluten content in wheat is high where 6-8% of wheat flour is protein. 80% of the protein contained in wheat flour is called glutenin and gliadin, these two proteins

when mixed with water and mixed into the dough will form an elastic substance called gluten" (Wayne in Khasanah, 2017).

For Indonesians, familiar to hear, because tofu is one of the staple foods (substitutes) fish). Tofu is one type of food that originated in China but is popular in Indonesia (Sunyoto et al, 2014). Soybeans are a type of the most abundant legumes used as a food ingredient (Barus et al, 2019). Tofu is a food that is still widely consumed by Indonesians, because it is a nutritious food and a high source of protein at a price Accessible by almost all layers community, While for fat and carbohydrate levels for each tofu with calcium salt coagulator different, does not produce results that significantly different. Tofu is used as one of the sources protein for the body, and currently there are many consumed by the Asian people, in addition to has an economical price, you know, too has a high protein content value (Ariyanti et al, 2016). New alternatives are needed in Use of soy protein coagulants which is environmentally friendly and even the waste can be used for by-products and Generate added value (Widianingrum, 2015).

2. LITERATUR REVIEW

2.1. Overview of Tofu Pulp

Tofu pulp is a by-product in the process of making tofu in solid form and is obtained from squeezed soybean pulp. Tofu pulp still has a relatively high protein content because in the process of making tofu not all protein content is extracted, especially when using simple and traditional milling processes.

Table 1. Nutrient Content in Tofu Pulp

No	Nutrients	Sum	Unit
1	Calorie	414	Kal
2	Protein	26,6	g
3	Fat	18,3	g
4	Carbohydrates	41,3	g
5	Calcium	19	mg
6	Phosphorus	29	mg
7	Zat Besi	4	mg
8	Vitamin B1	0,2	mg
9	Water	0,9	g

Source : Fransiska & Deglas W, 2017

2.2. Overview of Tofu Pulp Flour

Tofu pulp flour is the result of the processing of dried tofu pulp. Based on the results of Wati's research, "... in 100 grams of tofu pulp flour contains carbohydrates, protein, crude fiber and fat. The content is higher than wheat flour in the same weight. Another advantage of tofu dregs flour is the presence of crude fiber content greater than wheat flour (0.4-0.5%) so that the fiber content in tofu dregs flour can help people to meet their fiber needs (Wati, 2013).

Table 2. Nutrient Content in Tofu Pulp

No	Nutritional Elements	Nutrient
1	Carbohydrates	66,24%
2	Protein	17,72%
3	Fat	2,62%
4	Coarse Fiber	3,23%

Source: Yolanda P, Sudrajat, et al 2022

2.3. Product Introduction Concept of Cookies

According to Turgarini, [Thamrin \(2020\)](#) Gastronomy as a tourist resource is an experience while enjoying food and drinks which is a unique power to lure tourists as well as museums, recreation and shopping. Culinary tourism is broadly defined as a destination for unique and memorable food and beverage experiences, providing a way to connect the local food system with the tourist experience ([Febriyanti, 2020](#)). Snack is defined as eating that is consumed at times between the three main meals in a day, is practical and can be consumed immediately ([Devi et al, 2022](#)).

The earliest appearance is thought to be the 7th century AD in Persia (now Iran), one of the first countries to cultivate sugar. At that time fancy cookies, in large and small versions were well known in the Persian empire. According to historians, the first sugar came from the lowlands of Bengal or elsewhere in Southeast Asia. Sugar spread to Persia, then to the Eastern Mediterranean. With the Muslim invasion of Spain, then the Crusades and the growing spice trade, Saudi cooking techniques and ingredients spread to Northern Europe. The basic ingredients of cookies are generally margarine, flour, eggs and sugar. For a variety of types, they are modified with various other ingredients such as nuts, chocolate, sesame, fruits, etc. Today, we can find hundreds of cookie recipes in various shapes, flavors, and colors. "The nineteenth century was the golden age of biscuits. In the early 1800s biscuits and cakes were still a treat made at home or by small bakers, but by the eve of the First World War biscuits or cookies had gone completely globalized, available in most countries of the world and in some consumed daily" ([Anastasia Edward, 2019](#)).

The arrival of cookies in Indonesia is inseparable from Dutch intervention. "Cookies were brought by Dutch aristocrats during the colonial period. This is evidenced by the existence of nastar cookies which stands for ananas-taart taken from the Dutch language."

Cookies are an important part of the food industry in most countries around the world. Its successful development can be explained by at least four main factors: relatively long product shelf life; ease of use as a food product; addiction to sweets, petite; relatively low cost.

3. METHODS

3.1. Methods

The research method used is experimental. Where this method explains the engineering/manipulation of products/materials/methods/tools, compared to aspects that have been done before. The description of research and development in this writing is described through an experimental approach, "that research and development is closely related to experiments, because research and development is very focused on effectiveness, efficiency and productivity". This is in line with [Creswell's \(2013\)](#) opinion which states that "experimental writing as a systematic, systemic, structured, rigorous and accurate writing stage in explaining procedures and ensuring certainty of results due to control, measurement and consistency that accompany the implementation of the writing stages.

3.2. Data Collection Techniques Used Observation, Literature Study, Panelist Rating

Data types In this study, qualitative data is used. Qualitative data is data derived from Natural research Research that do not use mathematical, statistical or computer models ([Kurniawan, 2012](#)). Qualitative data that used in this study came from Business Information and Management in Business The industry knows. Data sources in this study using primary data. Primary data are Data obtained through observation directly in the field against the

object that Researched. The primary data in this study are Production Process, Raw Materials, and Results production obtained from the survey results field.

3.3. Population & Sample

Panelists will be asked for personal responses regarding their liking or organoleptic assessment. According to Erliana, "...In the second stage, namely the consumer acceptance test, the population used at this stage is 100 people based on the criteria for the number of consumer panels from 30-100 people. This test uses a preference test. The results of the preference test to determine whether a type of food can be accepted by the public".

3.4. Measurement Scale and Data Analysis Techniques

a. Measurement Scale

According to Irianto, "The ordinal scale is a scale based on ranking sorted from the higher level to the lowest level or vice versa. The ordinal scale is also said to be a scale that already has differentiating power, but the difference between one number and another is inconsistent (does not have a fixed interval)" (Irianto, 2015).

Sugiyono, argues that "The measurement scale in research is an agreement used to determine the length and shortness of intervals in measuring instruments, so that these measuring instruments are used in measurements that produce quantitative data". The measurement scale used by researchers in data collection is an ordinal scale

b. Data Analysis Technique

Data analysis according to Sugiyono "... is the process of systematically searching and compiling data obtained from interviews, field notes and documentation, by organizing data into categories, breaking down into units, synthesizing, compiling into patterns. Researchers use quantitative data analysis techniques, because quantitative data is numerical data in the form of numbers and of course can be scaled because it is a number" (Sugiyono, 2018).

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4. RESULTS AND DISCUSSION

After conducting a taste test on professional panelists, the author has obtained the test results. The following are the results of the assessment of cookies using tofu dregs flour (experiment) from professional panelists totaling ten people, as follows:

Table 3. Results of Consumer Panelist Assessment of the Taste of Experimental Tofu Dregs Cookies (n=38)

No	Aspects Valuation	(5)		(4)		(3)		(2)		(1)		$\Sigma f(x)$	\bar{x}	Category
		F	f(x)	F	f(x)	f	f(x)	F	f(x)	F	f(x)			
1.	Aroma	3	15	27	108	8	24	-	-	-	-	147	3,9	Very Delicious
2.	Taste	11	55	14	56	13	39	-	-	-	-	150	3,9	Delicious
3.	Texture	13	65	18	72	7	21	-	-	-	-	158	4,2	Very crisp
4.	Display	22	110	12	48	4	12	-	-	-	-	170	4,4	Very interesting
	Total	49	245	71	284	42	96	-	-	-	-	625		4,1

Source : Processed by the Author, 2023

- Information : n = Number of samples
 f = Frequency
 f(x) = Frequency that has been multiplied by 2
 $\Sigma f(x)$ = Total f(x) from one category
 \bar{x} = Grade point average

a. The results of the aroma aspect assessment

The value of tofu dregs cookies in the aroma aspect from the summation of consumer panelist assessments gets a total of 147 points with an average of 3.9. Thus the criteria for aroma in the tofu dregs cookies experiment is delicious.

b. Taste assessment results

The value of tofu dregs cookies in the aspect of taste from the results of the summation of consumer panelist assessments gets a total of 150 points with an average of 3.9. Thus the criteria for the taste of the experimental tofu dregs cookies are delicious.

c. Texture aspect assessment results

The value of tofu dregs cookies in the texture aspect from the results of the summation of the consumer panelist assessment gets a total of 158 points with an average of 4.2. Thus the criteria for texture in the tofu dregs cookies experiment are very crisp.

d. The results of the display aspect assessment

The value of tofu dregs cookies in the display aspect from the summation of consumer panelist assessments gets a total of 170 points with an average of 4.4. Thus the criteria for the appearance of the tofu dregs cookies experiment is delicious.

From the assessment in table 3.4 above, the conclusion obtained is that the tofu dregs cookies get a total score of 625 with an average result of 4.1 from a total of 38 consumer panelists.

Table 4. Results of Combined Panelist Assessment of the Taste of Comparison Cookies (n=48)

No	Aspects Valuation	(5)		(4)		(3)		(2)		(1)		$\Sigma f(x)$	\bar{x}	Category
		F	f(x)	F	f(x)	F	F()	F	f(x)	F	f(x)			
1.	Aroma	21	105	21	84	6	18	-	-	-	-	207	4,3	Very Delicious
2.	Taste	24	120	17	68	7	21	-	-	-	-	209	4,3	Delicious
3.	Texture	14	70	21	84	13	39	-	-	-	-	193	4	Very crisp
4.	Display	30	150	15	60	-	-		6	-	-	216	4,5	Very interesting
	Total	89	445	74	296	26	78	3	6	-	-	825		4,3

Source : Processed by the Author, 2023

- Information: n = Number of samples
 f = Frequency
 f(x) = Frequency that has been multiplied by 2
 $\Sigma f(x)$ = Total number of f(x) from one category
 \bar{x} = Average score

a. Aroma aspect assessment results

The value of comparison cookies in the aroma aspect from the summation of the combined panelist assessment results obtained a total of 207 points with an average of 4.3. Thus the criteria for aroma in the tofu pulp cookies experiment is very delicious.

b. Taste assessment results

The value of comparison cookies in the aspect of taste from the summation of the combined panelist assessment results obtained a total of 209 points with an average of 4.3. Thus the criteria for taste in the tofu dregs cookies experiment is very good.

c. Texture aspect assessment results

The value of comparison cookies in the texture aspect from the summation of the combined panelist assessment results obtained a total of 193 points with an average of 4. Thus the criteria for texture in the tofu dregs cookie experiment are crisp.

d. The results of the display aspect assessment

The value of comparison cookies in the appearance aspect from the results of the summation of the combined panelist assessment gets a total of 216 points with an average of 4.5. Thus the criteria for the appearance of experimental tofu dregs cookies are very attractive.

From the assessment in table 3.9 above, the conclusion is that the comparison cookies get a total score of 825 with an average result of 4.3 from a total of 48 consumer panelists.

5. CONCLUSION

Based on the experimental research conducted, the authors present the following suggestions:

a. Taste aspect

By utilizing a waste of tofu and then processed in such a way as to become a product that can be consumed daily and based on the data in the table "Results of Comparison of Taste of Experimental Cookies with Comparison Cookies", experimental tofu pulp flour cookies are feasible and can be traded among consumers. Consumers. In addition to replacing high-fiber flour, the purpose of using tofu pulp flour is to modify products with new ideas and innovations so as to produce a product that is no less delicious than the high-fiber flour. Tofu pulp flour is nutritionally beneficial, particularly for consumers seeking gluten-free options, making it safe and healthy.

b. Display on experimental tofu dregs flour cookies and comparison cookies

After the author conducts experimental research, it can be concluded that the appearance of the experimental tofu dregs flour cookies is very attractive and the results of the panelist test also liked the appearance of the experimental tofu dregs flour cookies, making these cookies worthy of introduction to the market.

c. Knowing the production costs that must be incurred

To reduce the price of experimental production costs, the authors chose to utilize and use processed tofu waste and then processed in such a way as to become a healthy and nutritious flour. By processing tofu dregs flour manually, the author can reduce costs that are cheaper and more affordable and the author can control thoroughly, based on the results of processed data by the author in the table "Production Costs of Making Cookies Using Tofu Dregs Flour", readers can redevelop the processed results of the tofu dregs flour.

d. Opinions from consumers

According to processed data, consumers desire more flavor variety in tofu pulp flour cookies, which could enhance market appeal.

6. ACKNOWLEDGMENT

Thanks to AKPAR NHI Bandung providing the opportunity to become the research locus.

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