Organoleptic Properties of Dodol with the Addition of Tofu Dregs as an Effort to Optimize the Tourism Icon of Pesisir Selatan Regency, West Sumatra

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Abstract
Tofu dregs as waste from tofu production houses in the Pesisir Selatan Regency, West Sumatra are very polluting to the environment. Dodol products that are characteristic of regional tourism icons, need to be optimized for production, profit and appeal for regional promotion. This research aims to increase added value of dodol as regional tourism icons by utilizing tofu dregs waste. The originality of this study is utilization of tofu dregs that are still rich in protein as nutritional fortifying agent for dodol in the Pancung Soal District, Pesisir Selatan Regency, West Sumatra. The method used is to add tofu dregs to dodol dough with treatment A (addition of 150 g), treatment B (addition of 200 g), treatment C (addition of 250 g), and treatment D (without adding tofu dregs). Furthermore, a comparison of organoleptic properties (color, taste, texture and aroma) was carried out. The result showed that treatment B had significant effect on color, taste, texture and aroma of dodol (Anova at a significant level of 5%). The best product was dodol with treatment B (addition of 200 g of tofu dregs). The average value of organoleptic characteristics of dodol is color 4.3, taste 4.4, texture 4.0 and aroma 4.3.

Keywords: Dodol, Tofu Dregs, Organoleptic, Fortification, Tourism Icon

1. Introduction

In the tofu industry in Pancung Soal District, Pesisir Selatan Regency, West Sumatra, a by-product is obtained, namely tofu dregs which are usually only used as animal feed. According to Alfian La Ode Sadiq (2019), tofu dregs have a fairly high protein content, namely 26.6 grams per 100 grams of material or around 23.55%. The high protein content in tofu dregs can make it a source of protein in processed foods that is cheap and easy to obtain. Not many tofu dregs are processed into food products. To increase its economic value, tofu dregs can be used as a fortification agent for making dodol as a tourism icon product for West Sumatra Province. In West Sumatra Province in particular, until now no one has processed tofu dregs into dodol.

Dodol is a traditional food that has a sweet, savory taste, brown color, soft texture and is classified as a semi-moist food. However, dodol which is famous as a tourist icon in West Sumatra Province is also called gelamai Gelamai, which is a product that is exactly the same as dodol but gelamai usually uses brown sugar as a sweetener so the product is dark brown in color. Dodol products generally have very low nutritional value, such as protein content, which is only around 3-5 g per 100 g per weight of dough. To increase the nutritional value, especially protein, in dodol, tofu dregs are used as an additional raw material for the dodol dough. In order to increase the nutritional value of dodol by adding tofu dregs, it is necessary to know the amount of tofu dregs

added to the dodol dough so that it can be accepted by consumers. In this case, the researchers used tofu dregs as raw material for making dodol and tested the resulting dodol on consumers in the local area using the hedonic method.

Based on the description above, the aim of this research is to analyze the effect of adding variations of tofu dregs of 150 g, 200 g and 250 g to dodol dough compared to dodol without adding tofu dregs on the quality of the shape, aroma, texture and taste of dodol.

2. Research Method

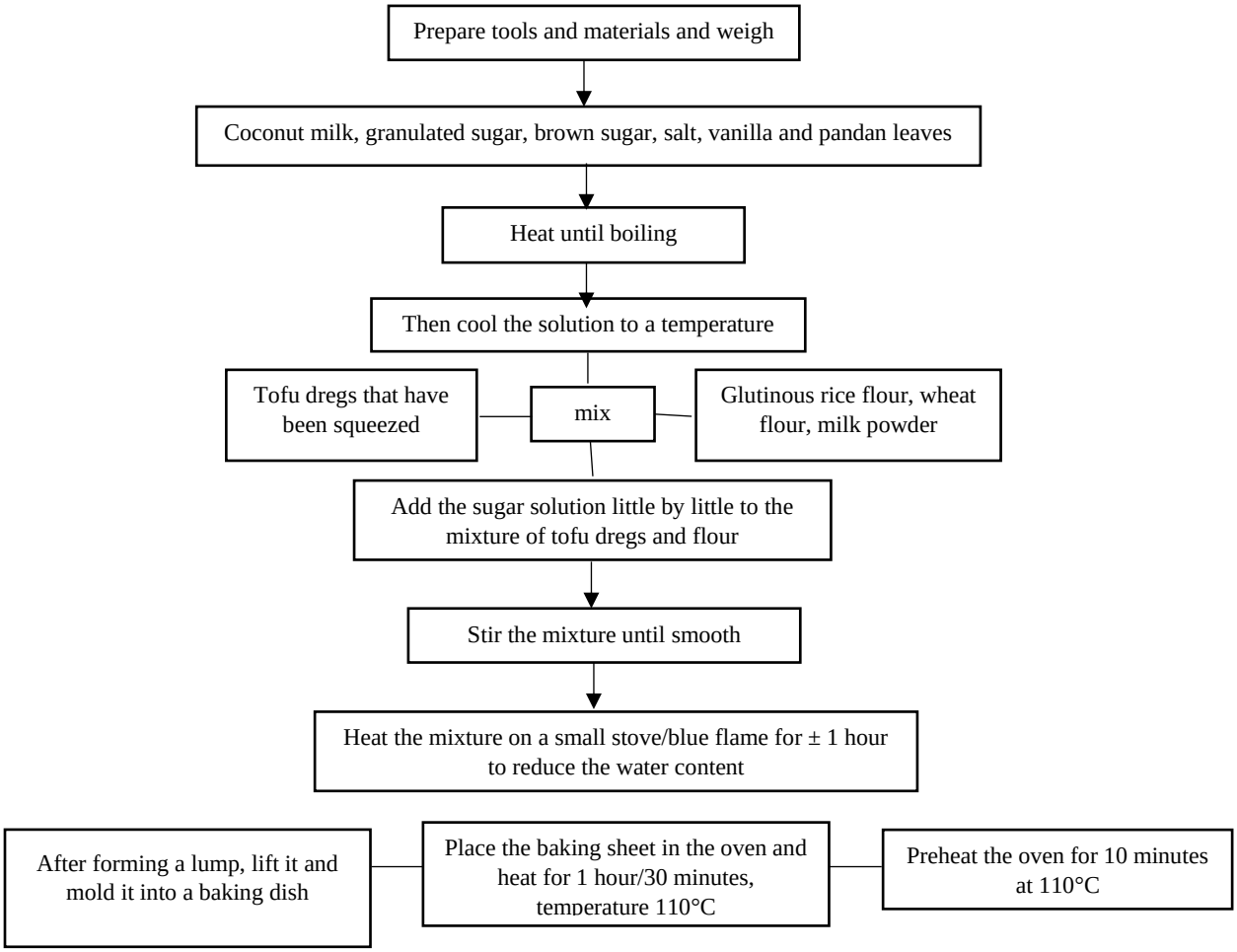
In this study, the research design pattern used a single factor Completely Randomized Design (CRD), namely the addition of tofu dregs with 4 treatments. Treatment A = addition of tofu dregs: 150 g, B = addition of tofu dregs: 200 g, C = addition of tofu dregs: 250 g, and treatment D = no addition of tofu dregs. The first stages in the research were making dodol with the addition of tofu dregs, making dodol without tofu dregs, followed by testing the level of liking.

The ingredients used are tofu dregs, brown sugar, white sugar, milk powder, flour, salt, vanilla, pandan leaves, sticky rice flour and coconut milk. For more clarity, it can be seen from Table 1 below.

Table 1. Dodol Making Formulation for Each Treatment

Component	Mass (g)			
	A	B	C	D
Tofu Dregs	150	200	250	0
Glutinous Rice Flour	65	65	65	225
Flour	25	25	25	25
Sugar	250	250	250	200
Brown Sugar	25	25	25	25
Milk	10	10	10	10
Salt	1,5	1,5	1,5	1,5
Vanilla	1	1	1	1
Thick Coconut Milk	250	250	250	250
Thin Coconut Milk	65	65	65	65

The process of making tofu dregs dodol is presented in the following picture.



Gambar 1. Process Diagram for Making Tofu Dregs Dodol

The hedonic/liking test is a panelist's personal assessment of their likes or dislikes for a product being assessed (Putri & Mardesci, 2018), the test is carried out to find out what response/impression the five senses get from a stimulus that is generated. In testing the level of liking using 30 untrained panelists, in this study, the test on dodol was to identify preferences such as taste, color, aroma, texture and overall taste of dodol.

The testing procedure was carried out by wrapping the dodol in oil paper (4 samples from treatments A, B, C, and D) and serving it in a mica container and then giving it a label/code. Apart from that, testing forms, stationery and mineral water were also provided to neutralize the taste of each change of product to be tasted. Then the panelists were given an explanation on how to assess and fill in the assessment sheet and the panelists were given the opportunity to assess and fill in the assessment sheet without any discussion with the other panelists.

The testing scale used in this observation consists of 5 criteria and the assessment is carried out by placing a checklist (√) on each criterion which is the value for each product. The panelists' choices on the form were tabulated and given a value for testing the level of preference for the organoleptic properties of dodol as Very Like (5) to Dislike (1) (Setyanigsih, Apriyanto, Maya, & Sari, 2010).

After carrying out the organoleptic test and obtaining the data, it is then tabulated in tabular form and analyzed according to each data test. After the data is tabulated, data analysis is then carried out. If the data obtained by calculated F is greater than F table, then proceed with the Duncan test. Data obtained from organoleptic tests were scored and analyzed using analysis of variance (ANOVA).

3. Results and Discussions

The results of research using organoleptic test methods and calculations based on a Completely Randomized Design (CRD) are as follows.

Tabel 2. Dodol Organoleptic Value of All Treatments

Treatment	Color	Flavor	Texture	Aroma	Average	Additiond
A	3,8	4,1	3,8	3,9	3,9	150 g
B	4,3	4,4	4,0	4,3	4,2	200 g
C	4,0	3,7	3,3	4,0	3,7	250 g
D	3,4	2,5	2,9	2,8	2,9	0 g

Note: Dislike (0,0-1,4); Less Like (1,5-2,4); Somewhat Like (2,5-3,4); Like (3,5-4,4); Very Like (4,5-5,0)

The panelists' assessment of the dodol color of each treatment is presented in Table 3.

Tabel 3. Organoleptic Value of Dodol Color for Each Treatment

Code	Level of Liking in Color					Average	Category
	Really Like	Like	Kinda Like	Dislike	Do Not Like		
A	5	21	1	0	3	3,8	Like
B	13	14	1	2	0	4,3	Like
C	4	23	2	0	1	4,0	Like
D	2	16	5	6	1	3,4	Somewhat Like

Note: Dislike (0,0-1,4); Less Like (1,5-2,4); Somewhat Like (2,5-3,4); Like (3,5-4,4); Very Like (4,5-5,0)

Color is one of the main factors seen as the attractiveness of a food. From Table 3 it can be seen that the organoleptic test results obtained the highest average value for dodol color in treatment B (addition of 200 g of tofu dregs) with an average figure of 4.3, while in treatment D (no addition of tofu dregs as a control) is the product with the lowest organoleptic test value, so that in treatment B it is the dodol product that the panelists like for the color of the product.

If you look at the calculation table (RAL and anova with a real level of 5%) in the first calculation, the F-count is greater than the F-table, but it is not yet known which one is from the different samples. After further calculations were carried out, it was found that the three samples had no significant differences.

The panelists' assessment of the taste of dodol from each treatment is presented in Table 4.

Tabel 4. Organoleptic Value of Dodol Taste for Each Treatment

Code	Level of Liking in Color					Average	Category
	Really Like	Like	Kinda Like	Dislike	Do Not Like		
A	6	23	0	1	0	4,1	Like
B	16	9	5	0	0	4,4	Like
C	4	18	5	2	1	3,7	Like
D	0	0	16	12	2	2,5	Somewhat Like

Note: Dislike (0,0-1,4); Less Like (1,5-2,4); Somewhat Like (2,5-3,4); Like (3,5-4,4); Very Like (4,5-5,0)

Taste is the main factor in whether food is accepted or rejected by consumers. From Table 4 it can be seen that the taste of the organoleptic test results obtained that the highest average value for the taste of dodol was found in treatment B (Addition of 200 g of tofu dregs) with an average figure of 4.4, while in treatment D (no addition of tofu dregs) it was the product which had the lowest organoleptic test value, so that treatment B was the dodol product that the panelists liked for the color of the product.

If you look at the calculation table (RAL and anova with a real level of 5%) in the first calculation, the F-count is greater than in the F-table, but it is not yet known which one is from the different samples. After further calculations were carried out, the results showed that the three samples were not significantly different.

The panelists' assessment of the dodol texture from each treatment is presented in Table 5.

Tabel 5. Organoleptic Value of Dodol Taste for Each Treatment

Code	Level of Liking in Color					Average	Category
	Really Like	Like	Kinda Like	Dislike	Do Not Like		
A	6	17	3	3	1	3,8	Like
B	12	13	1	2	2	4,0	Like
C	0	11	17	1	1	3,3	Like
D	1	7	14	5	3	2,9	Somewhat Like

Note: Dislike (0,0-1,4); Less Like (1,5-2,4); Somewhat Like (2,5-3,4); Like (3,5-4,4); Very Like (4,5-5,0)

Texture is a factor that influences the taste of food produced by food. The difference in the level of elasticity is due to variations in the addition of tofu dregs to each dough. From Table 5 it can be seen that the texture of the organoleptic test results showed that the highest average value for dodol texture was found in treatment B (Addition of 200 g of tofu dregs) with an average figure of 4.0, while in treatment D (no addition of tofu dregs) the product was which had the lowest organoleptic test value, so that treatment B was the dodol product which the panelists liked for the color of the product.

If you look at the calculation table (RAL and anova with a real level of 5%) in the first calculation, the F-count is greater than in the F-table, but it is not yet known which one is from the different samples. After further calculations were carried out, it was found that the three samples had no significant differences.

The panelists' assessment of the dodol aroma from each treatment is presented in Table 6

Table 6. Organoleptic Value of Dodol Aroma for Each Treatment

Code	Level of Liking in Color					Average	Category
	Really Like	Like	Kinda Like	Dislike	Do Not Like		
A	2	24	3	1	0	3,9	Like
B	14	12	2	2	0	4,3	Like
C	4	22	3	1	0	4,0	Like
D	2	2	18	4	4	2,8	Somewhat Like

Note: Dislike (0,0-1,4); Less Like (1,5-2,4); Somewhat Like (2,5-3,4); Like (3,5-4,4); Very Like (4,5-5,0)

Aroma is an important factor that influences food products to be accepted or rejected by consumers. From Table 6 it can be seen that the organoleptic test results obtained the highest average value for the aroma of dodol in treatment B (Addition of 200 g of tofu dregs) with an average figure of 4.3 whereas in treatment D (no addition of tofu dregs) it was the product with the lowest organoleptic test value, so in treatment B it was the dodol product that the panelists liked regarding the color of the product.

If you look at the calculation table (RAL and anova with a real level of 5%) in the first calculation, the F-count is greater than in the F-table, but it is not yet known which one is from the different samples. After further calculations were carried out, it was found that the three samples had no significant differences.

4. Conclusion

The results showed that the treatment with the addition of tofu dregs had a significant effect on the color, taste, texture and aroma compared to the comparison without the addition of tofu dregs. Overall or what is also called the best product is dodol made with treatment B (adding 200

g of tofu dregs to the dodol mixture). The average value of the organoleptic properties of the dodol is 4.3; aroma 4.3; texture 43; and taste 4.4 with the criteria of liking.

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