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Sensory Churros Analysis Effect of Mocaf Flour Substitution

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ABSTRACTS

Churros is a type of pastry made from water, butter, eggs, sugar, salt and wheat flour. The raw material for wheat flour is wheat which is an imported material. To reduce the need for wheat flour, this study aims to analyze the sensory churros of the influence of mocaf flour substitution as much as 25%, 50%, 75%, and 100%. This type of research is a pure experiment with a completely randomized design (CRD). The data used is primary data obtained directly from 5 expert panelists who gave answers from a questionnaire (organoleptic test format) on the mocaf flour sensory churros. The place and time of the research was carried out on 01-24 December 2021 at the Catering Workshop, Department of Family Welfare, Faculty of Tourism and Hospitality, Padang State University. The data that has been obtained is then tabulated in tabular form and an Analysis of Variance (ANOVA) is performed. If the analysis of variance shows Fcount > Ftable, then it is continued with Duncan's test. The results showed that there was a significant effect of substitution of mocaf flour between 25%, 50%, 75% and 100% on sensory churros, namely the soft inner texture sensory. Sensory uniform shape, jagged shape with a length of 10 cm, brown color, fragrant aroma, crunchy texture, sweet taste, and savory skin taste had no effect on sensory churros. The results of the sensory churros test for mocaf flour were the best in treatment X2 with 50% mocaf flour substitution. The results showed that there was a significant effect of substitution of mocaf flour between 25%, 50%, 75% and 100% on sensory churros, namely the soft inner texture sensory. Sensory uniform shape, jagged shape with a length of 10 cm, brown color, fragrant aroma, crunchy texture, sweet taste, and savory skin taste had no effect on sensory churros. The results of the sensory churros test for mocaf flour were the best in treatment X2 with 50% mocaf flour substitution. The results showed that there was a significant effect of substitution of mocaf flour between 25%, 50%, 75% and 100% on sensory churros, namely the soft inner texture sensory. Sensory uniform shape, jagged shape with a length of 10 cm, brown color, fragrant aroma, crunchy texture, sweet taste, and savory skin taste had no effect on sensory churros. The results of the sensory churros test for mocaf flour were the best in treatment X2 with 50% mocaf flour substitution.

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1. INTRODUCTION

At this time there are many kinds of processed food products that are favored by the community. One of the popular processed food products is from processed pastry products. According to Dinasty, et al (2019), "Pastry is part of the kitchen that produces, in particular, various types of cakes, snacks and desserts. One of the pastry products is a snack". Snack is a snack that can be enjoyed to delay hunger for a while. Snacks generally have a sweet and savory taste, while one example is choux pastry and churros.

*Churros*is a type of pastry typical of Spain, has a long shape with jagged edges on each side made using a five-star syringe, when eaten churros have a hard texture on the outside (crunchy) and a soft texture on the inside, Laisma (2018) . These churros are also known as Spanish donuts and are also known by several other alternative names, namely Porras, Papitas and Calentitos (Lestari, 2017).

*Churros*made with the same ingredients as choux pastry, namely water, butter, eggs and wheat flour as the main ingredients and sugar and salt as additional ingredients, the difference is the processing process where the choux pastry is burned while the churros are fried in a lot of oil until they turn brown. The shape of these churros is generally long but can be created according to the desired shape such as spiral shapes, hearts and others.

The raw material for making these churros is wheat flour. According to Ihromi, et al (2015) "Wheat flour is a fine powder derived from mashed wheat seeds and has a good gluten content, then it is widely used in various kinds of processed foods, especially pastry products". Wheat plants cannot develop well in tropical countries like Indonesia, so Indonesia imports wheat seeds from abroad. According to Ariani, et al (2016), "Wheat is the largest imported material consumed by the Indonesian people every day, and has even shifted the consumption of foods made from local raw materials such as rice and tubers". Indonesian people use wheat flour in processed food products such as noodles, various cookies, cakes and so on.

Government Regulation (PP) NO. 68 of 2002 concerning Food Security, specifically stipulates that the government organizes regulation, guidance, control and supervision of the availability of sufficient food, both in quantity and quality, diverse, nutritious, balanced, safe, equitable and affordable by people's purchasing power. The realization of food security is the responsibility of the government and the people of Indonesia. The community plays a role in organizing production, supply, trade, and distribution as well as consumers. Thus, local food ingredients are needed to strengthen Indonesian food security which can replace wheat flour (Wulansari, 2016: 2).

At this time there are various kinds of raw materials that can be used as flour as an effort to extend the shelf life of which comes from local food ingredients, namely fruits such as banana flour, breadfruit flour and so on, nuts such as red bean flour, mung bean flour. , soybean flour and so on and tubers such as sweet potato flour, potato flour, yam flour and mocaf flour. In this case the researcher wants to replace some of the basic ingredients, namely wheat flour with mocaf flour.

Development of churros products that utilize mocaf flour in addition to replacing part of wheat flour which aims to utilize local food ingredients, increase innovation of churros products, and reduce the use of wheat flour. The use of mocaf flour in processed pastry products has not been so much compared to products from processed wheat flour.

Mocaf flour is a commodity of cassava flour which is processed by a fermentation technique using bacteria (Badriani et al, 2020). According to Faridah (2013) "MOCAF is a derivative product of cassava flour obtained by modifying cassava by fermentation". Mocaf flour is a flour that has the most similar characteristics to wheat flour compared to other

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cassava flours, besides that mocaf can be an alternative for people who have allergies to gluten. Mocaf can replace wheat flour either partially or completely in the manufacture of flour-based foods (Hasmi et al, 2021).

For this reason, researchers want to analyze the substitution of mocaf flour to see the sensory effect in terms of shape, color, aroma, texture and taste produced in churros. Therefore, this research is entitled "Analysis of Sensory Churros Effect of Mocaf Flour Substitution".

2. METHODOLOGY

Materials and tools

Wheat flour, mocaf flour, margarine, eggs, water, sugar, salt, are the ingredients for making Churros used in this study. The tools used consist of preparation tools (scales, measuring spoons, tablespoons, stainless sinks, measuring cups, and napkins), processing tools (sauce pans, frying pans, wooden spoons, rubber spoons, stoves, email plates, and baking sheets), tools forming (pipping bag and star syringe), as well as serving tools (mica brownies).

Research methods

This study used a completely randomized design (CRD) method with four treatments and three repetitions. Among them are X0 (0%), X1 (25%), X2 (50%), X3 (75%) and X4 (100%). The data collection was carried out by organoleptic tests involving 5 expert panelists on the quality of the churros, including the shape (uniform, jagged with a length of 10 cm), color (brown), aroma (fragrance), texture (soft inside and crunchy outside) and taste (overall sweet and savory). After performing the organoleptic test, then the data was tabulated in tabular form. Then the data were analyzed using analysis of variance (ANOVA). Analysis of Variance was carried out to see if there was a significant difference in the quality of the churros (clear and real). If f count < f table,

Churros Making Process

The composition of the ingredients in the manufacture of mocaf flour substitution churros can be seen in Table 1. While the process of making churros can be seen in the flow chart in Figure 1.

Data analysis

The data obtained from the organoleptic test results were then tabulated in tabular form and analyzed according to the test of each data. After the data was tabulated, the analysis of variance (ANOVA) was carried out.If the results of the analysis of variance show that Ftable is 5% with Fcount < Ftable, it means Ho is accepted and Ha is rejected, so there is no significant effect and if Fcount > ftable with Ftable 5%, Ho is rejected and Ha is accepted, meaning there is a significant effect. So it was continued with the Duncan Multiple Range Test (DMRT). Parameters observed in this study include the quality of shape, color, aroma, texture, and taste.

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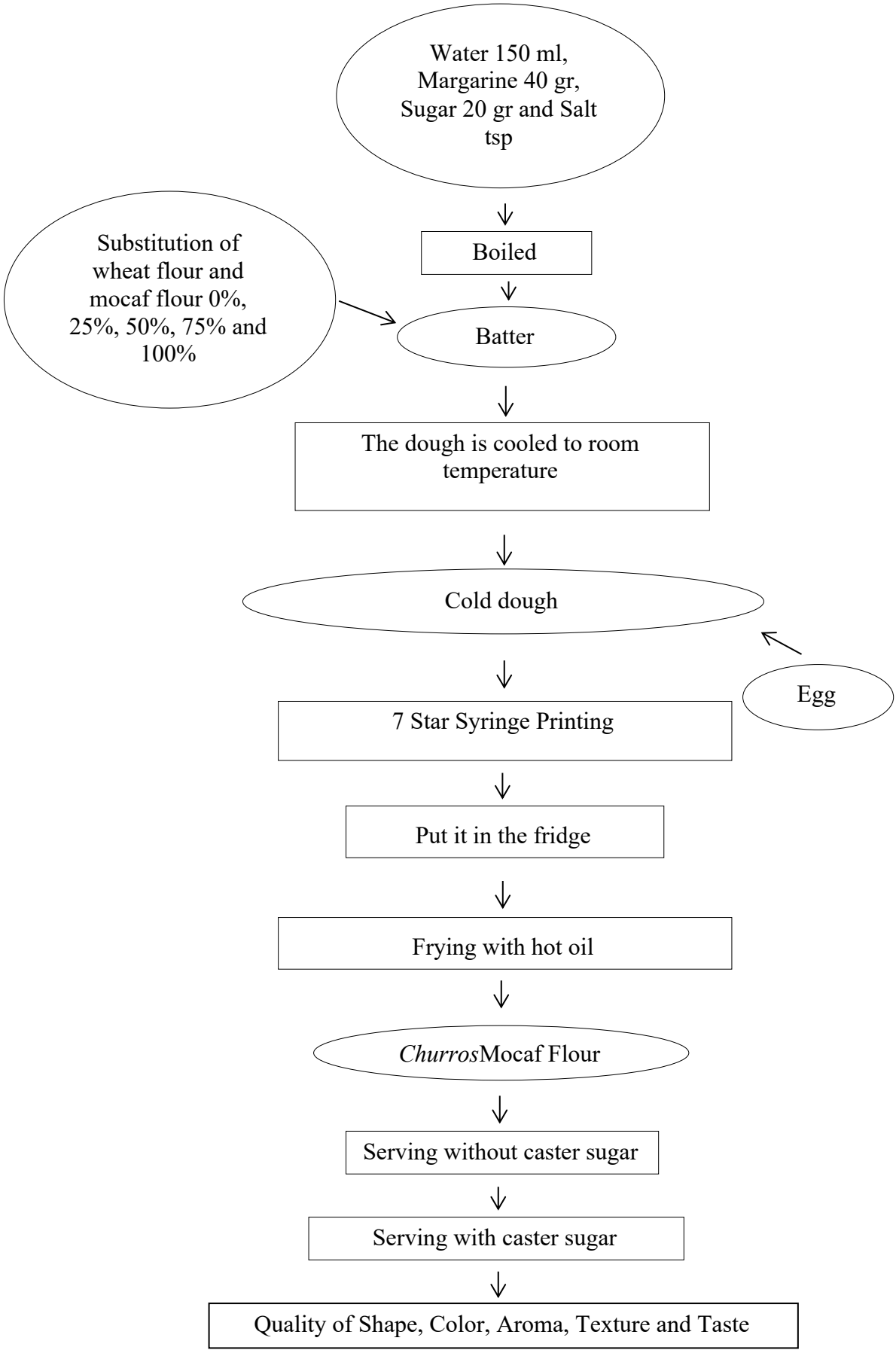

Figure 1. Flowchart of Making Churros with Mocaf Flour Substitution

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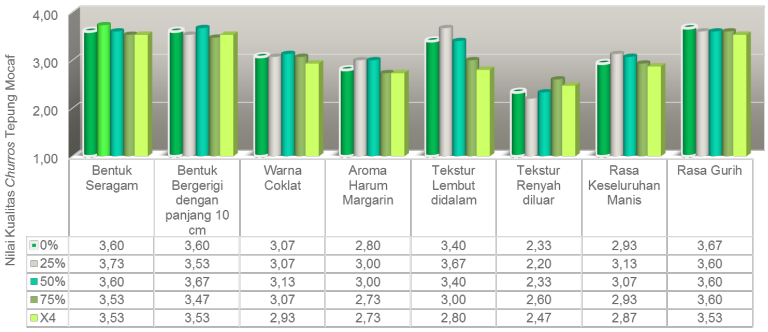
3. RESULTS AND DISCUSSION

Organoleptic Test

The results of the study of the effect of mocaf flour substitution on the quality of churros can be seen in Figure 2 below:



	Bentuk Seragam	Bentuk Bergerigi dengan panjang 10 cm	Warna Coklat	Aroma Harum Margarin	Tekstur Lembut didalam	Tekstur Renyah diluar	Rasa Keseluruhan Manis	Rasa Gurih
0%	3,60	3,60	3,07	2,80	3,40	2,33	2,93	3,67
25%	3,73	3,53	3,07	3,00	3,67	2,20	3,13	3,60
50%	3,60	3,67	3,13	3,00	3,40	2,33	3,07	3,60
75%	3,53	3,47	3,07	2,73	3,00	2,60	2,93	3,60
X4	3,53	3,53	2,93	2,73	2,80	2,47	2,87	3,53

Figure 2. Average Quality of Churros with Mocaf Flour Substitution

Form

Shape is an important thing to attract consumer interest. The shape of food can be seen by using the sense of sight. According to Winarno FG (2004:172), "The shape is the most important part and can lead to the attractiveness of a food. Besides that, shape can also provide standards and characteristics of certain foods. The expected shape of the churros is uniform with jagged sides and a length of 10 cm. The mold used is a star syringe made of stainless steel.

The average value obtained from each treatment, namely X0 has an average of 3.60 with a fairly uniform category, X1 has an average of 3.73 with a fairly uniform category, X2 has an average of 3.60 with a moderate category. uniform, X3 has an average of 3.53 with a fairly uniform category and X4 has an average of 3.53 with a fairly uniform category. The highest average value is found in X1 which is 3.73. The obtained Fcount value of the sample is 0.31, where the Fcount value is smaller than Ftable at the 5% level (3.01) thus it can be said that there is no significant effect between the samples at the 5% level. This means that the use of mocaf flour does not have a significant effect on the quality of the uniform shape of the churros. So Duncan's test was not performed.

The average value obtained from each treatment, namely X0 has an average of 3.60 with a fairly jagged category with a size of 10 cm, X1 has an average of 3.53 with a fairly jagged category, X2 has an average of 3 .67 with a fairly jagged category with a size of 10 cm, X3 has an average of 3.47 with a fairly jagged category with a size of 10 cm and X4 with a fairly jagged category with a size of 10 cm. The highest average value is X2, which is 3.67. The obtained Fcount value of the sample is 0.29, where the Fcount value is smaller than Ftable at the 5% level (3.01) thus it can be said that there is no significant effect between the samples at the 5% level. This means that the use of mocaf flour does not have a significant effect on the quality of uniform churros. So Duncan's test was not performed.

Color

Color is one of the things that attracts food. According to Negara, et al (2016), "Color is the first sensory that can be seen directly by panelists". Food colors are divided into two, namely natural dyes and synthetic dyes (Cahyadi, 2008). It can be concluded that color is the main thing that can be seen directly by the panelists where this color is divided into two, namely natural dyes and synthetic dyes.according to Fadhliani et al, (2021) "The color that occurs in baked churros by spraying water is almost the same as brown". The color

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produced in making churros is obtained from the ingredients used, namely eggs, margarine and sugar. The expected color for churros is brown.

The average value obtained from each treatment, namely X0 and X1 has an average of 3.07 with a moderately brown category, X2 has an average of 3.13 with a moderately brown category, X3 has an average of 3 .07 with moderate brown color category, and X4 has an average of 2.93 with less brown color category. The highest average value is found in X2, which is 3.13. The obtained F value for the sample is 0.76, where the Fcount value is smaller than Ftable at the 5% level (3.01) so it can be said that there is no significant effect between the samples at the 5% level. This means that the use of mocaf flour does not have a significant effect on the color quality of the churros. So Duncan's further test was not carried out.

Aroma

Aroma is the smell released by food and is able to stimulate the smell so that it can arouse appetite. Aroma is one of the factors that can be accepted or not a food product by consumers, because usually consumers will smell the aroma of food before eating. Products with an unpleasant aroma can make consumers not interested in tasting the product (Nurrahmah, 2018: 27). The expected aroma of churros is the smell of margarine.

The average value obtained from each treatment, namely X0 has an average of 2.80 with a less fragrant category, X1 and X2 has an average of 3.00 with a moderately fragrant category, X3 and X4 have an average an average of 2.73 with a less fragrant category. The highest average value is found in X1 and X2, which is 3.00. The obtained F value for the sample is 1.13, where the Fcount value is smaller than Ftable at the 5% level (3.01) so it can be said that there is no significant effect between the samples at the 5% level. This means that the use of mocaf flour does not have a significant effect on the quality of the aroma of the churros. So Duncan's test was not performed.

Texture

Texture is one of the things that must be considered from a food product, a texture that is easily digested by the mouth will make the product more preferred by consumers. Sensory assessment of food textures varies such as smooth, hard, soft, dry, wet and oily (Nabilah, 2019:6). According to Fadhliani et al, (2021) "Inner texture is influenced by the composition of the materials used. In the manufacture of baked churros by spraying water, the taste, appearance and texture of food can also be affected due to the presence of water which is also an important component in food ingredients. The outer texture of the baked churros is dry and has a crust. Crust occurs due to the process of water vapor reacting with starch on the surface, some of the starch forms dextrins. Then, when the steam is removed, this dextrin, together with the sugar in the dough, it caramelizes and turns brown. The result is a thin, crunchy layer of skin." In processing churros, the expected texture is churros with a soft texture on the inside and crunchy on the outside.

The average value obtained from each treatment, namely X0 has an average of 3.40 with a moderately soft category, X1 has an average of 3.67 with a moderately soft category, X2 has an average of 3.40 with moderately soft category, X3 has an average of 3.00 with moderately soft category and X4 has an average of 2.80 with less soft category. The highest average value is in X1 which is 3.67. The obtained Fcount value of the sample is 6.48, where the Fcount value is greater than Ftable at the 5% level (3.01) so it can be said that there is a significant effect between the samples at the 5% level. This means that the use of mocaf flour has a significant effect on the texture quality of the churros. ANOVA results on texture quality (soft inside) showed significant results.

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Table 2. Duncan's Test of Texture Quality of Soft Inside Churros

Treatment	Average
100%	2.80(a)
75%	3.00 (a)
50%	3.40(b)
Control	3.40(b)
25%	3.67(c)

Based on Table 13, it can be concluded that the treatmentX0 and X1 are not significantly different, X0 and X2 are not significantly different, X0 and X3 are significantly different, X0 and X4 are significantly different, X1 and X2 are not significantly different, X1 and X3real different,X1 and X4real different,X2 and X3real different,X2 and X4 are significantly different and X3 and X4 are not significantly different.

The average value obtained from each treatment, namely X0 has an average of 2.33 with a less crunchy category, X1 has an average of 2.20 with a less crunchy category, X2 has an average of 2.33 with the less crunchy category, X3 has an average of 2.60 with the less crispy category and X4 has an average of 2.47 with the less crispy category. The highest average value is found in X3, which is 2.60. The obtained F value for the sample is 1.56, where the Fcount value is smaller than Ftable at the 5% level (3.01) so it can be said that there is no significant effect between the samples at the 5% level. This means that the use of mocaf flour does not have a significant effect on the quality of the crunchy texture of the churros. So Duncan's test was not performed.

Flavor

Taste is the final assessment of a food product that determines whether or not a food tastes good after being eaten. The sense that plays a role in the assessment is the tongue (Wulansari, 2016:17). Churros have a sweet and savory taste that comes from the ingredients used, namely sugar, salt and margarine. According to Fadhliani et al, (2021) "The sweet taste of baked churros is obtained from the addition of sugar which is used as a sweetener in the dough and sprinkling of churros".

The average value obtained from each treatment, namely X0 has an average of 2.93 with a less sweet category, X1 has an average of 3.13 with a moderately sweet category, X2 has an average of 3.07 with quite sweet category, and X3 has an average of 2.93 with less sweet category and X4 has an average of 2.87 with less sweet category. The highest average value is found in X1 which is 3.13. The obtained F value for the sample is 0.46, where the Fcount value is smaller than Ftable at the 5% level (3.01) so it can be said that there is no significant effect between the samples at the 5% level. This means that the use of mocaf flour does not have a significant effect on the taste quality (overall sweetness) of the churros. So Duncan's test was not performed.

The average value obtained from each treatment, namely X0 has an average of 3.67 with a moderately savory category, X1 has an average of 3.60 with a moderately savory category, X2 has an average of 3.60 with quite savory category, and X3 has an average of 3.60 with quite savory category and X4 has an average of 3.53 with quite savory category. The highest average value is found in X0 which is 3.67. The obtained F value for the sample is 0.40, where the Fcount value is smaller than Ftable at the 5% level (3.01) so it can be said that there is no significant effect between the samples at the 5% level. This means that the use of mocaf flour does not have a significant effect on the quality of the taste (savory skin) of the churros. So Duncan's test was not performed.

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4. CONCLUSION

Based on the results of this study, it can be concluded that there is no significant effect of the effect of substitution of mocaf flour on the quality (uniform shape, jagged shape with a length of 10 cm, brown color, fragrant aroma, crunchy exterior texture, overall sweet and savory taste), while there is a significant effect of the effect of substitution of mocaf flour on the quality (soft inside). The results of the best mocaf flour churros quality test results were in the X2 treatment with 50% mocaf flour substitution.

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