



The Effect Of Adding Soybeans On The Physical And Organoleptic Properties Of Cassava Crackers (*Manihot Esculanta Crantz*)

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Abstract. Cassava is a potential food ingredient that has quite good prospects in the fields of agribusiness and agroindustry. Cassava crackers are made from cassava which is processed into crackers, as well as being another alternative food that contains nutritional value. Based on data from the Ministry of Agriculture, Forestry and Fisheries of Timor-Leste in 2009-2010, cassava production reached 47,845 tons. However, cassava production has not been utilized optimally by the people of Timor-Leste as a food ingredient for the nutritional value food industry. therefore, it needs to be developed. The aim of this research is to determine the effect of adding soybean concentration to each treatment and to find out which treatment is best for each parameter used in the test. The method used in this research was a Completely Randomized Design (RAL) with 4 treatments, namely 0% soybean concentration compared to 1 kg of cassava, 10% compared to 1 kg of cassava, 20% compared to 1 kg of cassava, 30% compared to 1 kg of cassava. Each treatment was repeated 3 times. The resulting data will be analyzed using analysis of variance and if necessary, will be presented with a follow-up test of the least significant difference (BNT) at the 5% level. The results of the variance statistical test show that the addition of soybean concentration has a significant effect on the color, taste, aroma and texture of making cassava crackers. This research shows that the best results are 10% soybean concentration in color, taste, aroma and texture.

Keywords: soybeans, organoleptic and Cassava.

INTRODUCTION

The need for food for humans is not just to maintain survival, but furthermore, the food consumed must also contain nutritional value. These nutritional needs are obtained from daily food which contains nutrients, namely: carbohydrates, protein, fat, vitamins and minerals. Apart from rice, the people of Timor-Leste generally also choose cassava as an alternative food, besides that, cassava is a food that contains nutritional value. Cassava is a potential food ingredient that has quite good prospects in the fields of agribusiness and agroindustry.

Based on statistical data from the Timor-Leste Ministry of Agriculture (MAP-TL) that in 2009-2010 cassava production reached 47,845 hectares, if cassava production continues to increase in the following years, then further treatment will be needed in order to increase the economic value of cassava and added value for farmers in rural areas. Cassava is a cheap commodity and is widely available in rural areas. Integrated processing of cassava is an effort to utilize all parts of the cassava tuber, without wasting anything and optimizing each stage of the processing process so that it can increase the added value of agricultural products

(Sudrayanto, 1989). The diversity of processed products made from cassava is still very limited, both in type and taste. As a first step in the development of agro-industry processing cassava, techniques that lead to agro-industry are needed.

METHODS

The method used in this research was an experimental method and a complete randomized trial design with 4 treatment levels, namely 100%: 0%, 100%: 10%, 100%: 20% and 100% cassava: 30% soybeans with 3 replications.

The formulation of treatment variations in the research is as shown in the table below;

Treatment		Replications		
1 kg	0 grams	1	2	3
1 kg	100 grams			
1 kg	200 grams			
1 kg	300 grams			

The Information:

S1 K0 = Cassava concentration 1000 grams, Soybeans 0 grams

S1 K1 = Cassava concentration 1000 grams, Soybeans 100 grams

S1 K2 = Cassava concentration 1000 grams, Soybeans 200 grams

S1 K3 = Cassava concentration 1000 grams, Soybeans 300 grams

The data obtained will be analyzed according to variance to determine whether there is an effect of treatment on cassava crackers and (Anova) to determine whether there are differences between each treatment observed in the form of color, taste, aroma and texture. If there is a real difference, a further BNT review will be held at the 5% level (Adj, 200).

RESULTS AND DISCUSSION

Level of Likeness for the Color of Cassava Crackers

The results of analysis of variance from further tests with the smallest significant difference test on the color of cassava crackers showed significantly different effects between treatments. of the four samples (0%, 10%, 20% and 30%) showed an average value ranging from 3 to 4.13 regarding the panelists' preferences. The results of the 5% BNT test on color showed that the addition of soybeans in the 10% treatment was significantly different from 20% and 30%, while the addition of soybeans in 10% was significantly different at 0%, 20% and 30% and the concentration of the 20% and 30% treatment was also significantly different. Of the four treatments, the 10% treatment showed the most preferred value by the panelists with an average value of 4.13. as presented in the following table;

The Average value of organoleptic test for color of cassava crackers

Soybean Concentration Treatment	Average	BNT Notation
0 %	3	d
10 %	4,13	a
20 %	3,46	c
30 %	3,73	b
BNT 5 %	0,19	

Note: The notations a, b, c and d indicate that there are significant differences at the 5% significance level.

Color is one of the parameters that determines consumer acceptance of a product. However, the higher the addition of soybeans mixed in a product, especially cassava crackers, the brown color will result from the accompaniment process which can influence consumer preferences (Gama and Sherngton, 1981).

Level of preference for the taste of making cassava crackers

Organoleptic test results on the taste of cassava crackers, from the four samples (0%, 10%, 20%, and 30%). Organoleptic test results on the taste of cassava crackers, from the four samples (0%, 10%, 20%, and 30%). shows an average value ranging from 3.13 to 4.06 regarding the panelists' preference for cassava crackers. The four treatments, the 10% treatment shows the value preferred by the panelists who represent consumers with an average value of 4.06. However, the 30% treatment only showed an average value of 3.13, meaning the panelists did not like the taste of this treatment. as presented in the following table;

Average value of organoleptic test for the taste of cassava crackers

Soybean Concentration Treatment	Average	BNT Notation
0 %	3	D
10 %	4,13	A
20 %	3,46	C
30 %	3,73	B
BNT 5 %	0,19	

Note: The notations a, b, c and d indicate that there are significant differences at the 5% significance level.

The results of the 5% BNT taste test showed that the concentration of 10% soybean addition was significantly different from 0%, 20% and 30%. The addition of treatment at 30% was not significantly different from 0% and 20%.

Level of liking for the aroma of cassava crackers

The results of the analysis of the organoleptic value of the texture of cassava crackers (Appendix 5) show that there is a real influence on the smell of the food. Based on the results of the analysis of variance (attachment 5) on the aroma of cassava crackers, the four samples

(0%, 10%, 20% and 30%) showed an average value ranging from 3.2 to 4.13 regarding the panelists preferences for singkong crackers. as presented in the following table;

Average value of the organoleptic test for the aroma of cassava crackers.

Soybean Concentration Treatment	Average	BNT Notation
0 %	3,2	c
10 %	4,13	a
20 %	3,6	b
30 %	3,13	c
BNT 5 %	0,17	

Note: The notations a, b and c indicate that there are significant differences at the 5% significance level.

From the results of the organoleptic test on the aroma of cassava crackers, the average value of the level of liking for the aroma of cassava crackers is 3.2 to 4.13. while the lowest average values were 3.2 and 3.13 in the 0% and 30% soybean concentration treatments.

Level of Likeness for the Texture of Cassava Crackers

Based on the results of analysis of variance (attachment 6) on the texture of cassava crackers, the four samples (0%, 10%, 20% and 30%) show an average value of 3 to 4.2, which is the level of texture preference of the panelists representing consumers for cassava crackers. as presented in the following table;

Average value of organoleptic test of the texture of cassava crackers

Soybean Concentration Treatment	Average	BNT Notation
0 %	3,2	c
10 %	4,2	b
20 %	3,33	b
30 %	3,26	b
BNT 5 %	0,17	

Note: The notations a, b and c indicate that there are significant differences at the 5% significance level.

From table 7 the average value of the organoleptic test for texture shows that the concentration of 10% soybean addition is significantly different from 0%, 20% and 30%. while the concentration of soybean addition in the 0%, 20% and 30% treatments was significantly different and the 20% and 30% treatments were not significantly different.

CONCLUSION

With the completion of this research, several suggestions can be made as follows;

1. This research needs to be examined further in the laboratory to determine the composition of the nutritional content contained in cassava crackers, so that it can be applied on an industrial scale.

2. It is necessary to carry out further research with comparisons and other factors that influence cassava crackers.

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