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Submission date: 19-Jun-2023 05:11AM (UTC+0700)
Submission ID: 2118458644
File name: manah_2021_IOP_Conf._Ser.__Earth_Environ._Sci._807_032090_1.pdf (605.44K)
Word count: 2150
Character count: 10548

Characteristic and organoleptic of rice analog based on soybean flour and sweet potato flour in supporting food security

Characteristic and organoleptic of rice analog based on soybean flour and sweet potato flour in supporting food security

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Abstract. Analog rice is a food substitute for rice, produced with the addition of ingredients that can bind the content of soybean fiber and starch from sweet potato. The objectives of the study include: (1) Knowing the characteristics of making analog rice from soybean flour with sweet potato flour, (2) Analyzing carbohydrate content, crude fiber, moisture content, and (3) organoleptic rice analog test from Soybean flour with sweet potato flour. Results of research on making analog rice from soybean flour and sweet potato flour with formula 1:2 (soybean flour 40% and sweet potato flour 60%). On the analysis of fiber content of 5.29% and carbohydrate 29.43, formula 2:1 (soybean flour 60% and sweet potato flour 40%). Moisture content from 29.43 materials. The results of the organoleptic test in analog rice against the color, taste, and texture of the formula 1:2 panelist are very fond of both the color, flavor, so on the texture from the analog rice of soybean flour and sweet potato flour.

1. Introduction

Rice is one of the primary sources of carbohydrates and food sources in Indonesia. Every year, rice consumption is increasing, but the production of rice produced tends to remain. It can affect food security in Indonesia. Food security is known when it can fulfill two aspects at once, namely the availability of adequate food and equitable for the whole community. Secondly, every community has physical and economic access to fulfill nutritional adequacy to live a healthy and productive life. One effort to change the food consumption pattern of the people to Rice is to make food diversification. The concept of diversification is done to overcome the dependence of rice begins with introducing and removing the views of old values that place the crops as second-class community food and also to reappoint food potentials Owned by each region [1].

The development of science and technology today can produce alternative food or substitute staple food like analog rice. Analog rice is one of the solutions that can develop, both in the use of new food sources as well as food diversity. Raw materials of this rice analog derived from the processed cassava, sweet potatoes, sago, and some other types of tubers have a generally lower glycemic index content of rice. One combination of the essential ingredients that processed into analog rice is by combining soybeans and sweet potato. Thus it is really important to know the characteristic and run an organoleptic test to analyze the content of carbohydrates, crude fiber, moisture content, and organoleptic test of rice analog of soybean flour and sweet potato flour.

2. Methods

2.1. Location and time of research

The research time is from April to July 2018. Place of implementation in agricultural processing laboratory of high school Agricultural Counseling (STPP) Gowa, and analyzed in UNIFA Labratorium Makassar.

2.2. Sample and method analysis

To analyze the characteristics and organoleptics of analog rice based on soybean flour and sweet potato flour firstly we made soybean flour and sweetpotato flour by using tools like blender, knife, basin, spoon, Dangdang,Stove, oven, sieve, tamper, scale, flour grinding machine, and tools for analysis in the laboratory.

The data analysis methods used in this study have a qualitative analysis of the number of respondents. The predictive analysis is used to determine the general overview of the quality of the analog rice from soybean flour and sweet potato flour through an organoleptic test. The data obtained is analysts with ANOVA when there is a real treatment sled followed by the Duncan Test with the Math model SPSS program:

$$Yij = \mu + Ti + \sum ij \quad (1)$$

Infortmation:

Yij = observation value to – I and replay to – J
μ = General Rate
Ti = Influence of treatment to – I
∑ = Effect of errors on the treatment of soybean flour and union flour of the quality of the analog rice.

3. Results and discussion

3.1. Crude fiber

The results of the research obtained can be seen in figure 1 below:

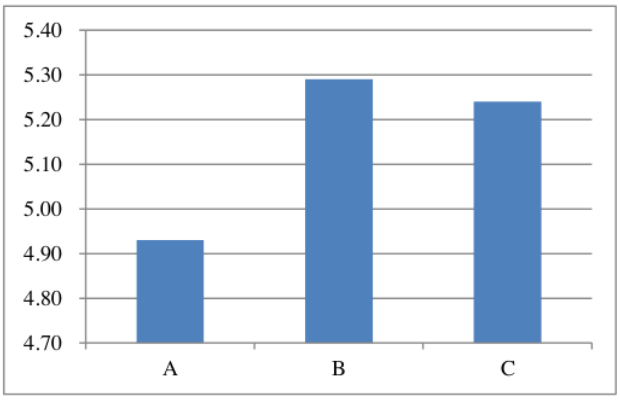

Figure 1. Crude fiber content results in soybean flour and sweet potato flour.

The crude fiber content of the soybean and sweet potato analog rice is at each of the highest treatment at the treatment of B = 1:2, the fibers in the sweet potato are much more than the soybeans [2]. The main fiber content of sweet potato flour is 4.44% per 100 grams. On soybean flour dissolved fiber content of 1.52-3.28% per 100 gram of heavy materials. More high levels of fiber in sweet potato flour compared to soy bean flour.

Coarse fiber can be from cellulose compounds, cellulose hemi, and lignin [3]. This fiber content can provide added value to the product, especially in this rice analog, where the fiber in this flour is a fiber that can dissolve and absorb fat and cholesterol content in the blood and prevent digestive disorder. Analog rice has a high fiber content compared with rice from rice.

3.2. Water content

For water content results can be seen in the following figure 2:

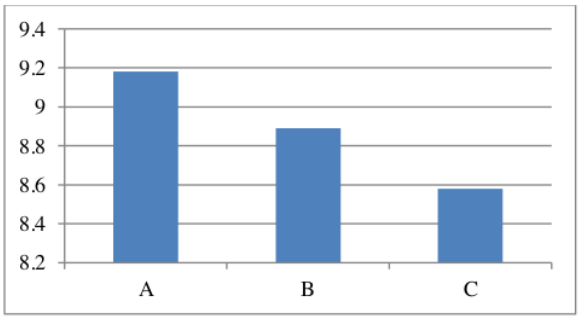

Figure 2. Result content of rice water content of soy bean flour and sweet potato flour.

The results obtained at the treatment of A = 2:1 are soy bean flour + purple sweet potato is 9.18%. The moisture content of food will affect the texture, color, and shelf life of food made flour. A standard for sweet potato flour quality is 10%, while soybean flour 3.14%. This water content affects the shelf life of flour that will be stored long and durable of a product. The higher the water content of the food saving power will be rapidly damaged [4].

3.3. Carbohydrate content

The results of the analysis of the soybean rice and sweet potato analyzers showed in the following pictures:

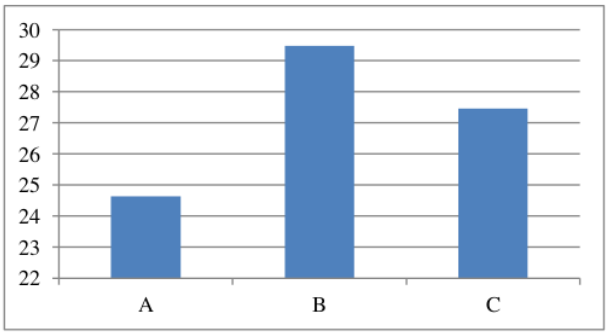

Figure 3. Result content of carbohydrate analog of soy bean flour and sweet potato flour.

The results obtained in the treatment of B = 1:2 soybean + sweet potato The highest of 29.3 is due to carbohydrate content in high sweet potato and rich in starch. In soybean flour contains proteins that work to prevent the work of gelatination then the formation of a slow matrix so that it will decrease glycemic index [5] Great AMYC content can form complexes and lipids during heating and processing; it causes glucose levels in the blood will not rise when eaten and digestible [6].

3.4. Colour

This organtic test uses 30 panelists by testing the personal levels of the analog rice samples from the treatment A = 2:1, treatment B = 1:2 and the treatment of C = 1:1. Each panelist test based on his favorite level with a score of 1 = dislike, 2 = enough likes, score 3 = likes and score 4 = very like, analog rice from soy bean flour and sweet potato flour cooked in a way to boil water then analog rice Inserted into the pan, cooked with a water comparison of 1/2 of material weight. Organoleptic test on soybean rice and sweet potatoes showed in the following six pictures on analog rice color:

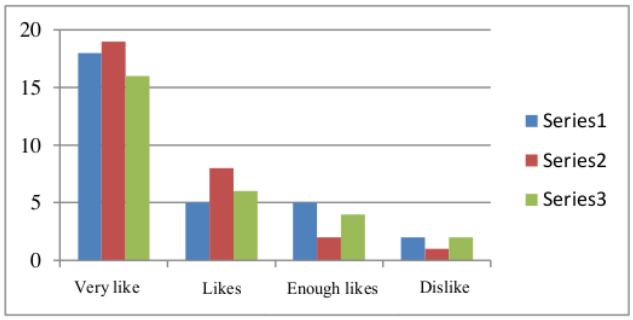

Figure 4. The result of the organoleptic test of the color on the analog rice of soybean flour and sweet potato flour.

The results obtained in the treatment of B = 1:2 Many panelists like and like the resulting color. In the cooked analog, rice produces analog rice with a slight basil color instead of white, in general, the color of rice. It causes color contrast, which can vary according to high heating temperatures. This B treatment also contains a lot of sweet potatoes rich in carbohydrates and starch, so that the color of flour will undergo a brownish reaction to the results obtained in the product that is experiencing the processing.

3.5. Flavors

Organoleptic test on soybean and sweet potato analog rice showed in the following figure 5 on analog rice flavor:

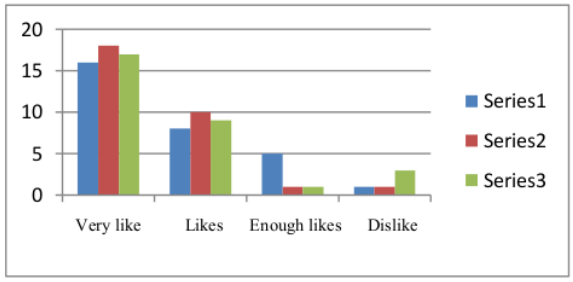

Figure 5. The organoleptic test result of rice flavor analog of soybean flour and sweet potato flour.

The results obtained an organoleptic test on the flavor of analog rice of soybeans and sweet potatoes after being cooked into analog rice. Based on the personal level of panelist prefers the treatment B = 1:2, more sweet potato flour has the taste of sweetness so that the rice produced is favored.

3.6. Texture

Organoleptic test on soybean and sweet potato analog rice showed in the following images on analog rice texture:

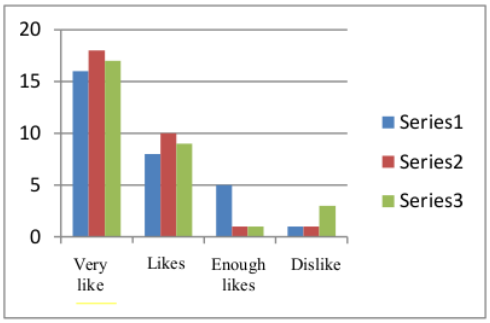

Figure 6. Organoleptic test results on the rice flavor of soybean flour and sweet potato rice flour.

Rice testing of soybean flour and sweet potato flour after cooked into rice analog panelists liked the texture of the treatment B = 1:2. The texture of the analog rice that more sweet potatoes have a soft texture compared to other treatments. The sense of tentacle and the degree of acceptance depends on the level of fondness of panellists.

4. Conclusion

The conclusions that can be taken from this study are as follows: Characteristic analog rice is the best formula for the treatment B comparison 2:1 on soybean flour and sweet potato flour. Analysis of fiber content for treatment B = 1:2 The highest average result is 5.29 water content of the average rate of 9.18 in the treatment of A = 2:1 and carbohydrate average results in the treatment B = 2:1 with the highest yield 29.43 and then organoleptic test on B An analog of the color, taste, and texture of the panelist highly liked at the treatment of B = 2:1. Following the result, analog rice based on soybean flour and sweet potato flour in the future might be an alternative as a stapple food.

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