And. Int. J. Agric. Nat. Sci. 1(1), 9-17, 2020
E-ISSN: 2745-7885

PROXIMATE TEST AND ORGANOLEPTIC TEST ON THE CHARACTERISTICS OF THE MORINGA LAYER CAKE

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ABSTRACT

Traditional food from Indonesia that is a layer cake. A layer cake is usually made in with many variant color. Beside that a layer cake can be made from rice powder, wheat powder, and starch powder. The taste is chewy, yummy, and sweet make this cake favored by all circles. The purpose is to know a quality of layer cake with adding moringa leaf powder and adding moringa leaf powder with treatment 5 test and 3 times test. The result of analysis using anova with test and continue test Duncan's New Multiple Range Test (DMNRT). The result showing if adding moringa leaf powder have influence with a layer cake quality and adding moringa leaf powder in organoleptic phase into a layer cake is two percent (2%).

Keywords: Mutual, layer cake, powder, moringa leaf

INTRODUCTION

The use of Moringa in Indonesia still unknown, generally only known as a vegetable menu. Apart from being fresh, Moringa can also be processed into a form of flour (powder). Furthermore, it can be used as a fortifying material to provide nutrients in various food products, such as processed pudding, cake, nuggets, biscuits, crackers and other preparations (Aminah et al. 2015).

Layer cake is a typical Indonesian food made from two colors stacked in layers. Usually layer cake is made with rice flour, flour, and starch. The taste is chewy, yummy and sweet to make this cake favored by all people. A good layer cake is usually red or green, because it is made with natural dyes namely pandan leaves or syrup, so the layer cake is safe for consumption for children and adults. To make layer cake is not too difficult it's just that each ingredient must be steamed one by one and the raw ingredients are also easily obtained (Nafisah and Muhsin, 2017). In previous studies about the addition of Moringa oleifera leaf flour to physicochemical and organoleptic canna cookies. The addition of moringa leaf flour significantly affected

the texture, moisture content, calcium content, crude fiber and organoleptic canna cookies in the form of aroma, color, taste and crispness. The best treatment was shown in the treatment of B1 (1g) with a water content of 4.173%, crude fiber 0.600%, and calcium content (53.278 mg / 100g). The texture value uses a texture analyzer 1136.50 g / mm2, and has an aroma score of 4,286 (pleasant - very pleasant), a color score of 4,286 (brown - light brown), a taste score of 4,381 (sweet - very sweet) and a crispness score of 4,190 (crispy - very crispy) (Putri et al. 2018).

This research was conducted to determine the quality of layer cake with the addition of Moringa leaf powder and the addition of appropriate Moringa leaf powder in terms of organoleptic to layer cake.

MATERIALS AND METHODS

Place and time of research This research was conducted at the Agricultural Product Technology Laboratory of the Ekasakti University and the Instrument Agricultural Technology Center Laboratory of the Agricultural Technology Faculty of Andalas University, Padang. The study was conducted from April to June 2019.

Materials and Tools

The main ingredients are rice flour, starch and moringa leaves. The material used for chemical analysis consists of; (1) free fatty acid determination test; NaOH 0.1 N, 50 ml alcohol, 2 ml PP.

The tools used for making layer cake are baking pan, stirring spoon, basin, stove, steamed pot, sarbet, measuring spoon, measuring cup. Tools used for making moringa leaf powder basin, drainer, blender (Vitara), 60 mesh sieves, scales. The tools used for chemical analysis consist of; (1) moisture content test; ovens, porcelain cups, erlenmeyer, desiccators, scales, (2) ash content test; cup, hot plate, ashing furnace, desiccator, (3) free fatty acid determination test; scales, erlenmeyer (tool specifications can be seen in Appendix 4).

Work procedures Making Moringa leaf powder

1. Sorting Moringa leaves as much as 4 kg.
2. Do the washing then drain
3. Withering in the room for 3 days
4. Milling leaves that have withered with a blender
5. Sifting with 60 mesh sifter
6. Moringa leaf powder Making

Moringa Layer Cake

1. Stir in 275 ml coconut milk with 50 g sugar and 2 g salt, until the sugar has dissolved for 3-5 minutes
2. Mix in containers: 75 g of rice flour (Rose Brand) and starch (Pak Tani Gunung) 50 g. Enter coconut milk little by little, stir until the dough does not roll

3. Add moringa leaf powder according to treatment
4. Heat the steaming pan until the water boils, spread the pan with cooking oil
5. Put the baking pan that has been smeared with cooking oil into a steamed pot that has been heated, then closed (lid covered with napkin)
6. After steaming a lot of steam, pour the first layer of dough with a thickness of 0.5 cm. Wait 5-10 minutes for the surface to begin to chew (the length depends on the thickness of the layer), then pour the next layer to 3 layers.
7. Last steamed for up to 25 minutes. Remove and cool then removed from the baking sheet and cut into pieces

RESULTS AND DISCUSSION

Water content

The results of the diversity analysis showed that the difference in the concentration of Moringa leaf powder on the layer cake had a very significant effect (F count> F table at $\alpha = 0.01$) on the moisture content of the layer cake produced (Figure 1).

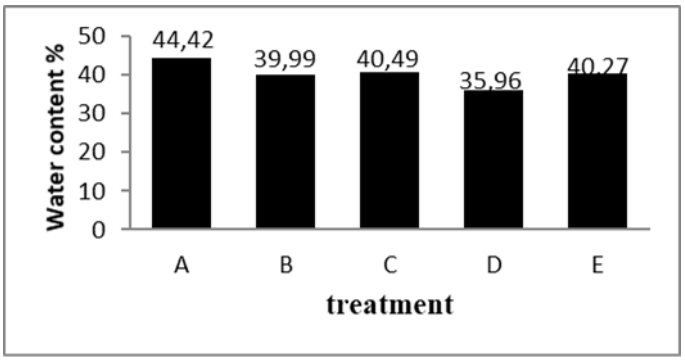

Figure 1. Water content

Figure 1 shows the levels in Figure 1. The highest water content in treatment A was caused by the absence of Moringa leaf powder, so there was no water binding on the layer cake. While the lowest in treatment D was caused by Moringa leaves which had the ability to bind water and in treatment E there was an increase due to the very significant water content.

Water content is a characteristic that affects the texture and appearance of food ingredients and also determines its freshness and longevity. (Sugianto, 2016). High water content makes it easy for bacteria, molds and yeasts to reproduce so that changes will occur in foodstuffs that can accelerate spoilage (Winarno 2008).

Ash Content

The results of the diversity analysis showed a difference in the concentration of Moringa leaf powder on the layer cake had a very significant effect (F count> F table at $\alpha = 0.01$) on the ash content of the layer cake produced (Figure 2).

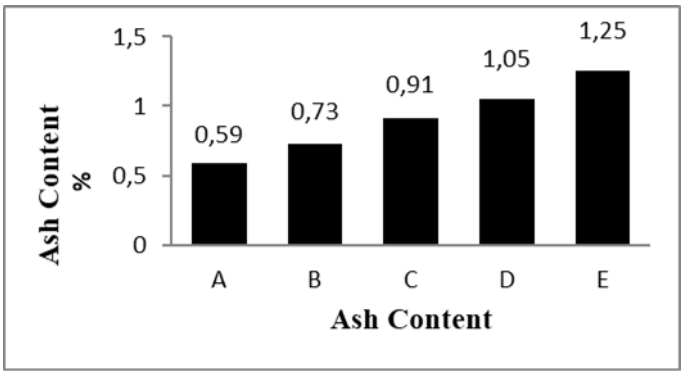

Figure 2. Ash content

Figure 2 shows an increase in ash content, which is thought to have mineral content in Moringa leaves. According to Sugianto (2016), Moringa leaves are leaves with high minerals such as sodium (Na), potassium (K), magnesium (Mg), calcium (Ca), phosphorus (P), and iron (Fe). Ash content is closely related to mineral content and cleanliness of a material. Ash is an inorganic substance left over from the combustion of an organic material. The ash content and composition depend on the type of material and the method of ashes (Sudarmadji et al. 2007).

Free Fatty Acids

The results of the diversity analysis showed that the difference in the concentration of Moringa leaf powder on the layer cake had a very significant effect (F count> F table at $\alpha = 0.01$) on the free fatty acids of the layer cake produced (Figure 3).

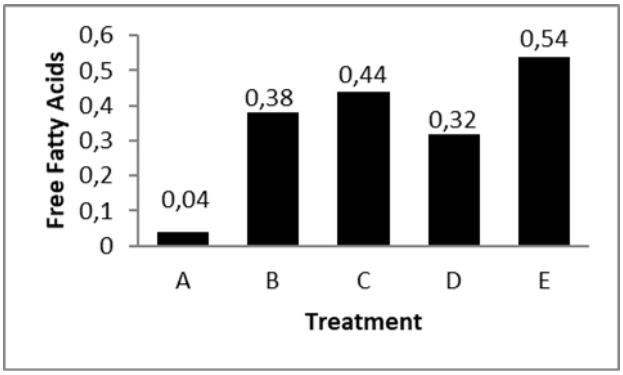

Figure 3. Free fatty acids

Figure 3 shows the high free fatty acids in treatment E caused by the large amount of Moringa leaf powder so that the E treatment experiences oxidation more quickly. According to Suaniti et al. 2017, that the value of the increased acid number is due to peroxide compounds from the oxidation of fatty acids which are oxidized to form aldehyde compounds. The aldehyde will be further oxidized to form carboxylic acid compounds which cause the acid number in treatment E to increase.

Layer Cake Organoleptic

Organoleptic testing is carried out through sensory assessment, namely by tasting the taste, observing the texture, color and aroma of the product. This test is carried out by means of the sample made in accordance with the treatment formulation.

Taste

Panelists' assessment data on the taste of Moringa layer cake as a natural preservative are presented in Table 1.

Tabe1. Average Moringa layer cake taste test

Addition of Moringa leaf powder (%)	Taste Value
A = 0	4,80
B = 2	5,00
C = 4	3,76
D = 6	3,56
E = 8	2,76

Information = taste value includes 7 = very very like 6 = very like 5 = like 4 = somewhat like 3 = dislike 2 = very dislike 1 = very very dislike

In treatment B the taste of the layer cake with the addition of 2% Moringa leaf powder was close to the sweet and chewy taste of the layer cake, while in the E treatment the taste of the layer cake with the addition of 8% Moringa leaf powder resulted in a bitter taste due to the large amount of Moringa leaf powder. According to Dewi et al (2016) the more concentrations of Moringa leaves are added, the more bitter the taste is. Taste is the most important parameter in consumer acceptance of a product. Taste differs from smell and involves more of the five senses of the tongue. Taste is influenced by several factors, namely chemical compounds, temperature, concentration, and interactions with other taste components (Winarno 1991).

Aroma

Panelist assessment data on the aroma of Moringa cake layers are presented in Table 2.

Table 2. Average aroma test of moringa layer cake

Addition of Moringa leaf powder (%)	Nilai Value
A = 0	4,56
B = 2	4,60
C = 4	4,20
D = 6	3,36
E = 8	2,88

Information = aroma value includes 7 = very, very like 6 = very, very like, 5 = like 4 = rather like 3 = dislike 2 = very, very dislike 1 = very, very dislike

The aroma in treatment B was not too strong because of the lack of moringa leaf powder, while treatment E produced rancid aroma. According to Dewi et al (2016) Moringa leaves have a very strong unpleasant aroma, so that at a concentration of 8% Moringa leaf powder the odor of the layer cake is very

strong compared to a concentration of 2%. Scent can be defined as something that is acceptable to the sense of smell. In order to produce odors, odorous substances must be volatile, slightly water soluble and slightly fat soluble. Testing of aroma is an important aspect in the food industry, because it can quickly provide an assessment of the acceptance of a product. The appearance of the smell of food is caused by the formation of volatile compounds. Aroma can also be used as a sign of damage to the product. For examples the result of heating or poor storage methods, or because of a defect in a product. The aroma of food also determines the delicacy of these food ingredients (Kartika, 1988).

Texture

Panelist assessment data on the texture of the Moringa layer cake is presented in Table 3.

Table 3. Average test of Moringa layer cake texture

Addition of Moringa leaf powder (%)	Texture value
A = 0	4,80
B = 2	4,84
C = 4	3,12
D = 6	3,08
E = 8	2,80

Information = texture value includes 7 = very, very like 6 = very, very like, 5 = like 4 = rather like 3 = dislike 2 = very, very dislike 1 = very, very dislike

In treatment B the texture of the layer cake is chewy, while in treatment E the texture of the layer is hard or dense because Moringa leaves have the ability to bind water so that too much Moringa leaf powder gives the texture of the hard or dense layer cake. According to Rahmawati (2016) that the higher the distribution of Moringa leaves is used, the harder or denser the texture of the product. Food texture is largely determined by the content of water, fat, protein and carbohydrates. Texture is a pressure sensation that can be observed with the mouth (when bitten, chewed, and swallowed). The sensing of various textures includes wet, dry, hard, smooth, coarse, and oily (Noviyanti, et al. 2016).

Color

Panelist assessment data on the color of the Moringa layer cake is presented in Table 4.

Table 4. Average color test of layer cake

Addition of Moringa leaf powder (%)	Color value
A = 0	4,56
B = 2	4,88
C = 4	4,20
D = 6	3,08
E = 8	2,84

Information = color value includes 7 = very, very like 6 = very, very like, 5 = like 4 = rather like 3 = dislike 2 = very, very dislike 1 = very, very dislike

The color in treatment B was bright green due to the addition of moringa leaf powder, while the color in treatment E was dark green which was less attractive because of the large number of moringa leaf powder. According to Alkham (2014) that Moringa leaves contain chlorophyll or green pigment which is usually found in green vegetables.

Recapitulation of Organoleptic Values

In general, organoleptic assessments can be recapitulated on the value of likes and likes of layer cake products as presented in Table 5.

Table 5. Recapitulation of average organoleptic test for kelor layer cake.

Addition of Moringa leaf powder (%)	Volue				
	Taste	Aroma	Texture	Color	Average
A = 0	4,80	4,56	4,80	4,56	4,68
B = 2	5,00	4,60	4,84	4,88	4,83
C = 4	3,76	4,20	3,12	4,20	3,82
D = 6	3,56	3,36	3,08	3,08	3,27
E = 8	2,76	2,88	2,80	2,84	2,82

Information = value of layer cake recapitulation includes 7 = very, very like 6 = very like 5 = like 4 = rather like 3 = dislike 2 = very dislike 1 = very, very dislike

The high average value of treatment B was due to each assessment of good taste, less pungent aroma, chewy texture, and bright green color which the panelists preferred, while treatment E had a low average value due to bitter taste, unpleasant or unpleasant aroma, texture. hard, and a deep green color that the panelists didn't like.

From the results of this recapitulation, it can be determined that the best product from the moringa layer cake, namely in treatment B (2% Moringa leaf powder concentration), in treatment B (2% Moringa leaf powder concentration) there are 3 parameters that have the highest organoleptic percentage value. The organoleptic radar recapitulation of moringa layer cake can be seen in Figure 4.

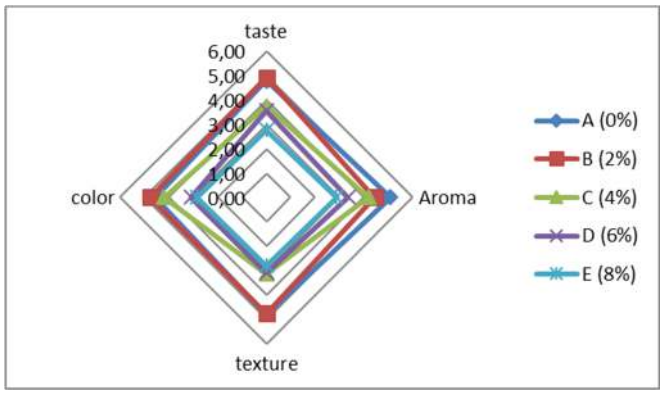

Figure 4. Organoleptic recapitulation

Figure 5. Organoleptic test

Figure 6. Documentation of moringa layer cake

CONCLUSION

The addition of Moringa leaf powder affects the quality of the layer cake. The addition of appropriate Moringa leaf powder from an organoleptic perspective to the layer cake is 2%.

REFERENCES

AA's daughter. Bekti E., & Putri AS. 2018. Addition of Moringa oleifera (Moringa oleifera) leaf meal to the physicochemistry and organoleptics of canna cookies. Journal. Repository.usm.ac.id. Accessed January 6, 2019.

Alkham FF. 2014. Test of protein and organoleptic levels of biscuits of wheat flour and Moringa oleifera leaf meal with the addition of oyster mushrooms (Pleurotus ostreatus). Biology Education Study Program. Faculty of Teacher Training and Education. Muhammadiyah University. Surakarta.

Aminah S., Ramdhan T., & Yanis M. 2015. Nutritional content and functional properties of Moringa oleifera plants. Urban agriculture bulletin 5(2): 35-44.

Dewi FK., Suliasih N., & Garnida Y. 2016. Making cookies with the addition of Moringa leaf flour (moringa oleifera) at various baking temperatures. Undergraduate Thesis. Pasundan University Faculty of Engineering. Bandung. (published).

Kartika. 1988. Guidelines for sensory testing of food ingredients. UGM Press. Yogyakarta.

Nafisah L., & Muhsin A. 2017. Increasing production results through the use of fan double layer cake coolers in the “asih” snack business group of Kwasen hamlet, Srimartani village, Piyungan district, Bantul district, Yogyakarta. Option Journal 10(2): 125-129.

Noviyanti, Wahyuni S., & Syukri M. 2016. Output analysis of wikau maombo flour substitution brownie cake. Journal of Food Science and Technology 1(1): 58-66.

Rahmawati PS., & Adi AC. 2016. Acceptability and nutrition of jelly candy with the addition of Moringa oleifera leaf powder. Indonesian Nutrition Media 11(1): 86-93.

Suaniti MN., Manurung N., & Utari NMM. 2017. The Effect of Addition of Antioxidant Extract of Methanol Extract of Mangosteen Rind (Garcinia Mangostana L.) Against Changes in Ffa Levels, Acid Numbers, and Biodiesel Peroxide Numbers. Journal of Chemistry 11(1): 49-55.

Sudarmadji S., Haryono B., & Suhardi. 2007. Procedures for analysis of food and agricultural materials. Liberty. Yogyakarta.

Sugianto AK. 2016. Nutritional content of Moringa oleifera leaves based on leaf method and brewing temperature. Undergraduate Thesis. Faculty of Human Ecology. Bogor Agricultural Institute. Bogor.

Winarno FG. 1991. Food chemistry and nutrition. Gramedia Pustaka Utama. Jakarta.

Winarno FG. 2008. Food chemistry and nutrition. Gramedia Main Library. Jakarta.

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