

Organoleptic Test On Some Flour Substitutions As A Basic Alternative Selection of Functional Cookies Flour For Patients With Type 2 Diabetes

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ABSTRACT

Diabetes Mellitus (DM) became the biggest problems common in developed and developing countries including Indonesia. Estimates WHO that in 2025, Indonesia will be ranked 5th in the world. The triggering factors for DM are unhealthy and proper eating patterns. Snack is a habit of Indonesian people, namely snacking on food to accompany all their activities. One snack that is commonly consumed is cookies. Cookies are made from the main ingredient of wheat flour and supporting raw materials. The purpose of this study: 1) Conducting sensory tests to determine the level of consumer preferences on cookies brown rice, corn, soybeans, purple yam, and basil; 2) Obtain formulations on all types of flour that are suitable for making cookies. The research will be carried out at University 17 August 1945 Surabaya Laboratory. The organoleptic test analysis method uses excel analysis. The analysis carried out consisted of sensory analysis and proximate analysis. The results of sensory analysis of cookies favored by consumers starting from taste are in the control treatment, A2, B2 and C1. The color of cookies favored by consumers are control, A4, B1, B2, B3, C1, C2, C4, and D2. Aroma cookies preferred by consumers are control, A2, B1, B2, B3, C1, and C3. The cookies that are preferred by consumers are control, A2 and B1. While cookies that are not preferred by consumers in terms of taste are A4, B4, C3, D1, E1, E2, E3, and E4, the colors are D3, D4, E1, E2, E3, and E4, the aroma is treatment B4, D3, D4, E1, E2, E3, and E4, and the impression in the mouth is the treatment of B4, C2, C4, D3, D4, E1, E2, E3, and E4.

Keywords: cookies, flour substitution, sensory

1. INTRODUCTION

Diabetics need foods that have a low glycemic index and are rich in anthocyanin to reduce blood sugar levels (Kusyanti et al. 2016). Snacking is one of the diabetic habits that is difficult to eliminate. One snack that is usually eaten is cookies. Cookies are snacks made from the main raw material of flour. Wheat flour comes from wheat plants imported from abroad. Whereas flour consumption reached 19.72 kg / capita in 2012. The demand for wheat flour for cookies ranked second after the request from the noodle industry (Yanuar and Afasari 2016). Thus, the need for raw materials to replace flour to meet the needs of flour cookies.

Starch substitutes include brown rice, sweet potatoes, corn, soybeans, and basil. Criteria for raw materials are rich in fiber, anthocyanin content, and cookies produced low in carbohydrate absorption. The lower the absorption of carbohydrates, the lower the blood glucose level.)

Management of pharmacological diabetes sites is usually by administering drugs, while those that are non-pharmacological by regulating food intake and physical exercise.

According to SNI 01-2973-1992, Cookies are cookies in the form of biscuits made from soft dough, high fat content, crispy, and when broken the cross section of the cut is less dense. SNI cookies for water composition (% wb) 4, ash (% db) 2, total protein (% db) 6, total fat (% db)

18. SNI becomes the basis for food quality. The analysis results in accordance with SNI can be obtained through proximate analysis. Proximate analysis is carried out to determine the main components of a material. The main components of food are water content, ash content, protein, fat, carbohydrate, and fiber (Hui 2006).

Proximate analysis related to nutrient content needs to be known because it is related to the quality of the food and is relatively inexpensive for the cost of the analysis (Ensminger 1994). Therefore, research is needed to find the right formulation and type of flour to make functional cookies. Research Formulation a. how the results of sensory testing cookies by consumers, b. how flour formulations are suitable for making flour cookies (Ali & Wulan, 2018). The aim of this research is to conduct a sensory test to determine the level of consumer preferences for cookies brown rice, corn, soybean, purple sweet potato, and basil. And get formulations on all types of flour that are suitable for making cookies. This research is useful to reduce the use of flour into substitute flour, namely basil flour, sweet potato flour, corn flour, brown rice flour, and soy flour. In addition, flour cookie the result is expected to be an alternative for healthy snacks for diabetics.

2. MATERIALS AND METHODS

This research was conducted in the Agroindustrial laboratory of the UNTAG Vocational Faculty in Surabaya on 5 August - 30 September 2019. The tools used in this study were as follows, mixer, basin, oven, spoon, fork, stove and LPG gas. The ingredients used are flour, basil flour, purple yam flour, soy flour, corn flour, brown rice flour, butter, baking soda, eggs, sugar, milk powder, and vanilla.

This research consists of several stages, first making flour, second formulating cookies, third making cookies, analyzing physical properties, analyzing nutritional content and antioxidant activity. Organoleptic test analysis method uses ms.excel.

1. Making Flour

a. Basil Flour

Process of making basil flour refers to Hamiyanti et al., 2013, The used basil flour is fresh basil leaves. Basil leaves are withered indoors for 48 hours to reduce water content. Furthermore, drying the basil leaves using an oven at 60oC for 24 hours. The next process is grinding basil leaves to become basil flour.

b. Red Rice Flour

The process of making rice flour starts from the separation of mixed grain and dirt and the process of grinding red rice with wiley mill 80 mesh to get flour which is the raw material for making cookies.

c. Soybean Flour

Making soy flour according to the method used by Warisno and Dahana (2010). The manufacturing process includes: 1) sorting soybean seeds, 2) Soaking for 8 hours with a ratio of water and soybeans 1: 3, 3) every 2-3 hours the water is replaced with new water, 4) drying for 5 hours using the sun, 6) drying with an oven temperature of 50oC for 24 hours, 7) Milling with a 40 mesh sieve.

d. Purple Sweet Potato Flour

The process of making sweet potato flour includes the selection of sweet potatoes, washing, draining, peeling, stripping, heating at 90oC for 25 minutes, cooling for 48 hours at 5 oC, drying using cabinet dryer a 60 o.C, flour using a hummer mill, and sifting with a size of 80 mesh

e. Corn Flour

The process of making corn flour refers to Arief et al. 2014. The manufacturing process includes the separation of corn from corncobs, the addition of 1% yeast tape to the corn which has been dipipil, overnight soaking, flouring, and sifting.

3. RESULTS

3.1 Sensory Test Cookies

Test for cookies substitution of red rice, corn, soybean, purple, and basil flour include taste, color, mouth impression, and aroma test. the sensory test criteria for cookies must be normal meaning the distinctive odor of the cookie must match the ingredients of the cake used, the taste is good, the color matches the coloring agent that has been added, the texture is crispy, not easily broken but not hard (Suarni 2009). In general, the physical state of cookies is original.

a. Taste

Tests for taste in some types of cookies are not all preferred. The taste test results (Figure 1) which gave a value of 3 meant that there were likes in the control treatment, A2, B2 and C1.

Consumer ratings that give a value of 2 means that enough like there are treatments A1, A3, B1, B3, C2, C4, D2, and D3. Consumer ratings that give a value of 1 means that they do not like it in A4, B4, C3, D1, E1, E2, E3, and E4 treatments. Taste tests that consumers like are cookies with 100% wheat flour, cookies with 50% red rice flour substitution, cookies with 25% corn flour substitution. The B2 treatment with 50% corn flour substitution has nutritional value and sensory properties that can be accepted by consumers. According to Antarlina and Utomo cookies that have high nutrition and sensory properties received by the panelists are 40% corn flour substitution. The more substitutes for corn flour, texture of cookies the harder the.

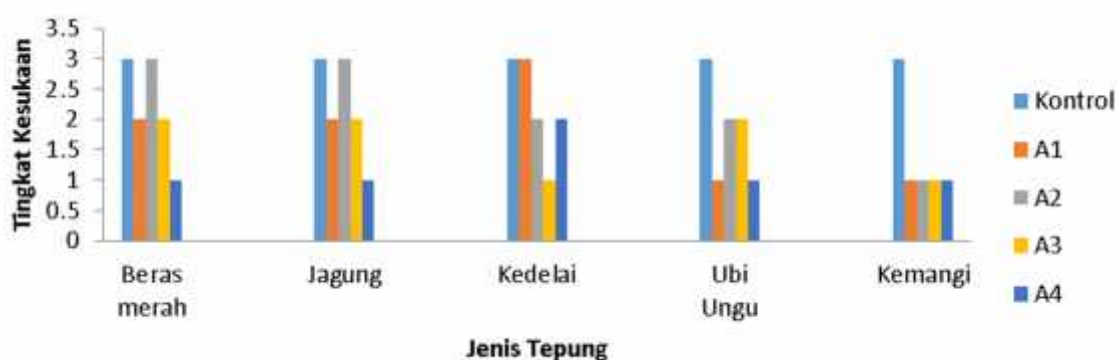


Figure 1. Cookies Taste Assessment The

Desired taste of cookies is normal taste and taste. The savory taste of cookies from corn flour, brown rice, and soy comes from butter which has fat and protein content. Likewise, the fat and protein content in butter cookies affect the taste of cookies (Sarofa et al. 2013). Consumers like the taste of savory cookies from corn flour, soybeans, and brown rice. Whereas the basil consumers don't like the taste of the cookies.

b. Color

The color test on a number of cookies on the panelists provides color results that are widely preferred. The results of the study (Figure 2) of the color test showed that the level of color preference with a value of 3 meant that there were likes in the control treatment, A4, B1, B2, B3, C1, C2, C4, and D2. The level of preference with a value of 2 means that there are enough likes in the treatments A1, A2, A3, B2, B4, C3, and D1. Preference level with a value of 1 means that dislike is found in the treatment D3, D4, E1, E2, E3, and E4.

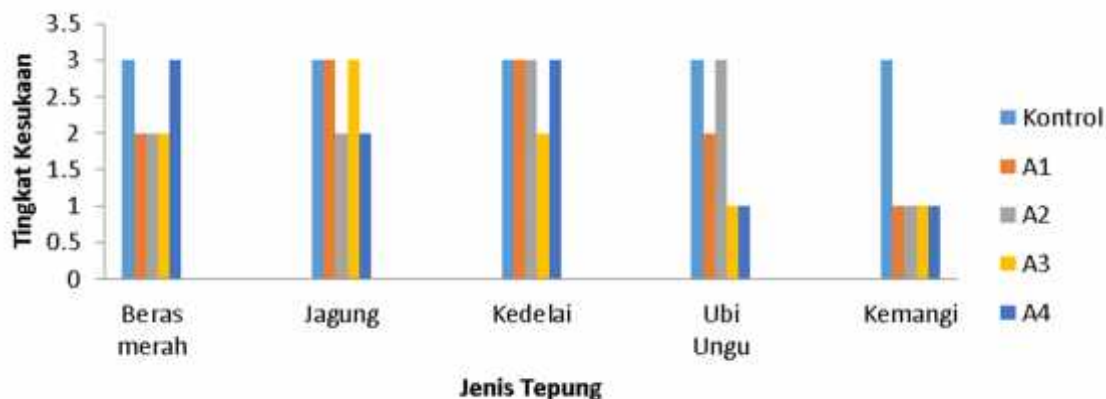


Figure 2. Color Assessment Cookies

Color cookies from brown rice flour, soybeans, corn, potatoes, and basil due to the pigment anthocyanin. The more anthocyanin pigments contained in cookies, the resulting color is getting darker. The color of anthocyanin pigments is influenced by the concentration and type of anthocyanin (Bueno et al. 2012). Color Cookies desired is the color of the cookies that are not too dark. The colors preferred by consumers are cookies corn, soy and sweet potato. According to Marissa (2010), the factors that influence the results of products cookie hard are the use of fat and water content when mixing ingredients, and the provision of local flour substitutions with an increasingly higher percentage. The color of cookies that is pale and unattractive is caused by the amount of the proportion of the ingredients that is not right and the baking process with an oven that is less hot.

c. Test impression in the mouth

Mouthfeel impression on cookies the desired are cookies when eaten not leave granules which are attached to the mouth, easy to chew and crispy (Figure 3) shows that the level of liking of the impression in the mouth of the consumer with a value of 3 means that there are likes in the control treatment, A2 and B1. The level of preference with a value of 2 means that there are enough likes in the treatments A1, A3, A4, B2, B3, C1, C3, D1 and D2. Preference level with a value of 1 means that dislike is found in the treatments B4, C2, C4, D3, D4, E1, E2, E3, and E4.

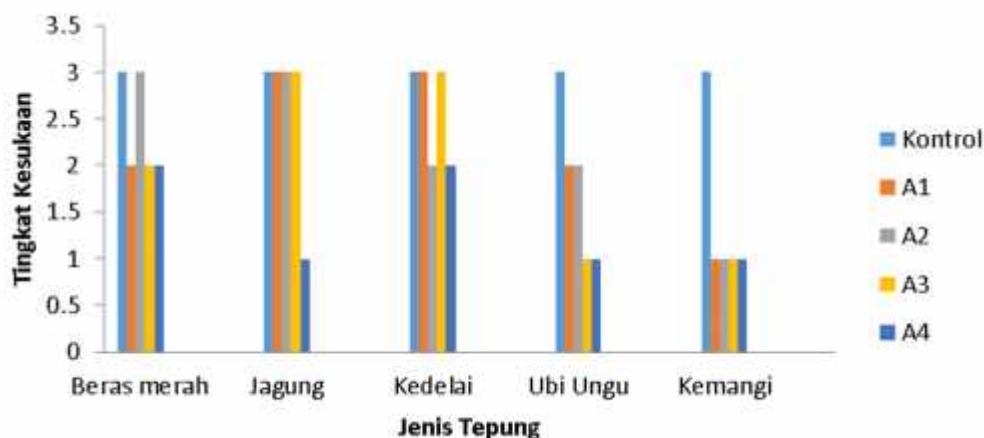


Figure 4. Assessment of

Flavour cookies are produced due to the addition of butter and vanilla. Flavour cookies sharp and good taste due to butter fat from animal milk fat. Butter fat consists of palmitic, oleic and stearic acids as well as small amounts of butyric acid and other similar fatty acids. Other ingredients in small amounts are vitamins A, E and D and as a flavor are diacyl, lactone, butyrate, and lactate.

4. CONCLUSION

Conclusion of this research in the form of sensory cookies by consumers includes:

1. Sensory analysis on taste is in the control treatment, A2, B2 and C1. Whereas cookies that are not preferred by consumers in terms of taste are A4, B4, C3, D1, E1, E2, E3, and E4.
2. Sensory analysis of the color of cookies preferred by consumers is control, A4, B1, B2, B3, C1, C2, C4 and D2. Meanwhile, cookies that are not preferred in terms of color are D3, D4, E1, E2, E3, and E4.
3. Sensory analysis on the aroma of cookies preferred by consumers is control, A2, B1, B2, B3, C1, and C3. Whereas, cookies that are not preferred in terms of aroma are B4, D3, D4, E1, E2, E3, and E4.
4. Sensory analysis on the mouth impression of cookies that consumers like is control, A2 and B1. Meanwhile, cookies that are not liked in terms of the mouth are treatment B4, C2, C4, D3, D4, E1, E2, E3, and E4.

REFERENCES

- Adawiyah DR. (2006). Effects of Relationship of Water Sorption, Glass Transition Temperature and Water Mobility and Its Effect on Product Stability in Food Models. Dissertation. IPB Postgraduate Program, Bogor.
- Arief RW, Yani A, Asropi, Dewi F. 2014. Study of making corn flour with different processing. [Proceedings of the national seminar on "location-specific agricultural technology innovation". Banjarbaru 6-7 August 2014. 611-618.
- National Standardization Agency. 1993. Indonesian National Standards. Quality Requirements Cookies Cookies. SNI 01-2973-1992. National Standardization Agency, Jakarta.
- Bueno JM, Purificación SP, Fernando RE, Ana MJ, Roseane F, Agustin G. Asuero. 2012. Analysis and antioxidant capacity of anthocyanin pigments. Part II: Chemical structure, color, and intake of anthocyanins. *Critical Reviews in Analytical Chemistry*, 42: 126–151.
- Fustier P, Castaigne F, Turgeon SL, and CG Biliaderis. 2009. Impact of commercial soft wheat flour streams on dough rheology and quality attributes of cookies. *Journal of Food Eng* 90: 228-237.
- Ginting E, Utomo JS, Yulifiani R, and Jusuf M. 2011. Potential of purple sweet potato as functional food. *Food Crop Science and Technology*. 6 (1): 116-133.
- Hamiyanti AA, Sutomo B, Rozi AF, Adnyono, and Drajat R. 2013. The effect of the addition of basil flour (*Ocimum basilicum*) on the chemical composition and physical quality of broiler meat. *Journal of Animal Sciences*. 23 (1): 25-29.
- Hui YH. 2006. Handbook of food science, technology, and engineering. volume 1 Taylor & Francis Group, Boca Raton.
- Kusyanti, Hasanuddin, and Djufri. 2016. Utilization of medicinal plants for hypertension and diabetes mellitus in the rural community of subulussalam city. *The scientific journal of biology education students*. Vo.1, No.1: 85-94.
- Marissa D. 2010. Formulation of cookies corn and estimating shelf life of products with the critical water content approach. [thesis]: Faculty of Agricultural Technology, Bogor Agricultural University.
- Martin CP, Pijpekamp A, Vliet T, Jongh HH, Plijter JJ, and Halmer RJ. 2006. The role of the gluten network in the crispness of bread crust. *Journal of Cereal Science* 43: 342-352.
- Ali, M., & Wulan, W. (2018). EFFECTS OF SAND AND SUGAR CONCENTRATION ROSELLA (*Hibiscus sabdariffa* Linn) AGAINST QUALITY OF JELLY CANDY. *Teknoboyo*, 2(1).
- Foresters, SA. 2004. Food Glycemic Index. Jakarta: Persagi: 2005.

- Sabuluntika N and Ayustaningwarno F. 2013. Levels of β -carotene, anthocyanin, isoflavones, and antioxidant activity in black soybean snack bars as alternative snacks for type 2 diabetes mellitus sufferers. *Journal of Nutrition College*. Vo 2 No.4: 689-695.
- Sarofa U, Mulyani T, Wibowo YES. 2013. Making high-fiber cookies using mangrove pulp (*Sonneratiacaseolaris*) [thesis]. Surabaya (ID): FTI UPN "Veterans".
- Setyaningsih D, Apriyantono A, Sari MP. 2010. Sensory Analysis for Food and Agro Industry. Bogor (ID): IPB Press.
- Suarni. 2009. Prospects of Utilization of Corn Flour for Cookies. *Research and Development Journal*. 28 (2): 63-71.
- Sudarmaji, Slamet, Haryono, and Suhadi B. 1996. Analysis of Food and Agriculture Materials. Intersection Center for Food and Nutrition University of Gadjah Mada University, Liberty: Yogyakarta.
- Suyono 2013. Soybean Superior in Baluran, Merubetiri, and "Baluran Putih" Hope Strains, and their Production Technology. Jember: Faculty of Agriculture, UNEJ.
- Taylor TP, Fasina O, and Bell LN. 2008. Physical properties and consumer liking of cookies prepared by replacing sucrose with tagatose. *Journal of Food Science* 73 (3): 145-151.
- Winarsih H. 2010. Soybean and Sprout Protein: benefits for health. Kanisius, Yogyakarta.
- Yanuar AR and Afasari MD. 2016. Commodity Profile of Staple Goods and Important Commodities of Wheat Commodities. Printing 2016: Jakarta.