

Utilization of Papua Kasifu Local Food Ingredients (Peanut, Sago, Cassava, Sweet Potato, Mother Formula) As A Pregnant Mother's Biscuit

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Abstract--- *The maternal mortality rate (MMR) in Indonesia stands at 359 deaths per 100,000 live births with the highest cause of maternal death due to bleeding (42%). The government's efforts are a supplementation program for adding blood tablets and Supplementary Feeding (PMT). Pregnant women taking blood-added tablets often complain of nausea and dizziness so that overcoming this, PMT should be given in the form of biscuits or dry snacks. The purpose of this research is to make biscuits using local ingredients, tubers, fish, nuts, and Moringa leaves. Organoleptic panelists assess the level of panelists' preference for biscuits for color, aroma, taste, and texture, analyze the nutritional content of Kasifu biscuits per piece and compare with biscuits for pregnant women produced by the Indonesian Ministry of Health. This type of research is Quasi Experiment, with local food ingredients made flour, then formulated in 6 biscuit formulas between ingredients sago flour, sweet potato, cassava, fish, green beans, red beans, and moringa leaf flour then conducted an assessment of the level of panelists' preference color, aroma, taste, and texture of biscuits. After that, the nutritional value of kasifu biscuits was compared with biscuits for pregnant women produced by the Indonesian Ministry of Health. Organoleptic research results on taste and texture, panelists (70%) preferred biscuits for formula 6 with a mixture of ingredients: sago flour, cassava, red beans, fish and moringa leaf flour. While in terms of color, panelists (55%) preferred formula 5 and aroma (55%) panelists preferred formula 2. Nutritional value of kasifu biscuits per piece, obtained Energy of 82.6 Kcal, Protein 1.9 gr, and iron 0.4 mg is lower than the biscuits of pregnant women from the Ministry of Health, namely 100 Kcal energy, 3 gr protein, and iron 12.03 mg, folic acid 626.86 mcg.*

Keywords--- *Kasifu Biscuit Form, Test Level For Panelists' Preference*

I. PRELIMINARY

Based on the Directorate General of Community Health Development [1], the maternal mortality rate (MMR) in Indonesia stands at 359 deaths per 100,000 live births with the highest cause of maternal death due to bleeding (42%). According to Estiningtyas [2], bleeding in pregnant women can be triggered by the incidence of anemia during pregnancy. Anemia in pregnancy occurs between 20% to 89% and most anemia that occurs is due to iron deficiency, where iron is needed by pregnant women to maintain optimal fetal growth [3].

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Since 1989, efforts have been made by the government to improve the health status of pregnant women through programs for supplementation with blood-added tablets (TTD) and Supplementary Feeding (PMT). Supplements given in tablet form include ferrous sulfate, ferrous gluconate, or Na-fero bisirate [4].

PMT is an alternative strategy to improve the nutritional status of the community that is generally given to certain population groups, for example, groups of pregnant women, nursing mothers, children under five years old (Toddler), and school children [5]. PMT given to pregnant women is for mothers from poor families who are malnourished to improve their health status [6].

Papua Province is an area that is rich in food ingredients such as tubers, fish, beans and vegetable leaves of Moringa. Moringa is dubbed as "Best's Friend and" Miracle Tree because it contains high nutrients and many benefits. Since 1988 the World Health Organization (WHO) has introduced Moringa as an alternative food ingredient to overcome nutritional problems (malnutrition) [7]. Besides that, the foodstuffs above are the daily food consumed by the community. Based on that background, this study aims to make Kasifu biscuits (Peanuts, sweet potatoes, cassava, knowing the acceptability of biscuits and knowing the energy and nutrient content).

II. METHOD

This research is a Quasi Experiment by making biscuits using a mixture of flour-starch ingredients from tubers, fish, nuts and Moringa leaves, which are made in certain compositions and nutritional value needed by pregnant women. The making of biscuits and accepting organoleptic tests were carried out at the Food Technology Laboratory of the Nutrition Department of the Polytechnic of the Ministry of Health, Jayapura, and the analysis of nutrient content was carried out at the Laboratory of Quality Testing and Food Safety of the Department of Agricultural Product Technology, Faculty of Agricultural Product Technology, University Brawijaya Malang. The study design was a randomized complete block design [8] with 6 treatments and 3 replications. Random Complete Block Design Model: $Y_{ij} = \mu + \beta_1 + \pi_j + \epsilon_{ij}$. If the test results are significantly different, it will be continued with the smallest real difference test (LSD).

As a sample/panelist in this study were lecturers and students majoring in nutrition as panelists somewhat trained to test the organoleptic nature. The number of samples is 20 people. Each sample was asked to provide organoleptic assessment using 6 hedonic scales. The organoleptic assessment was carried out 3 times. The test procedure is before the organoleptic test begins, panelists will be given an explanation of the aims and objectives of the test. Panelists were presented with 6 types of Kasifu biscuits and forms. Then the Panelists were asked to evaluate the color, aroma, taste, and texture of the 6 types of biscuits by giving a checkmark and commenting on the biscuit on the form provided. Organoleptic assessment data analysis of each variable using non-parametric statistical methods Friedman test followed by multiple comparative Tests [9]. Data were analyzed using the SPSS version 16.0 program.

III. RESULTS

Kasifu Biscuits Formula

Making biscuits using the main raw materials are red bean flour, green bean flour, sago flour, cassava flour, sweet potato flour, each formula has a different main raw material composition, while the supporting ingredients of all the same

composition formula. The composition of the main raw materials and supporting raw materials in all biscuits compositions are equal to 100 g. The composition of the main raw materials and supporting raw materials of each formula is as in Table 1.

Table 1. Main Composition of the Kasifu Biscuits Formula

Material	Composition of Flour Formula (F)					
	F I (gr)	FII (gr)	FIII (gr)	FIV (gr)	FV (gr)	F VI (gr)
Sweet Potato flour	45	30	0	0	5	0
Cassava flour	10	20	40	50	5	20
Sago flour	0	0	10	0	45	35
red bean flour	0	10	0	10	0	5
green bean flour	5	0	10	0	5	0
fish flour	15	15	15	15	15	15
Moringa leaf flour	5	5	5	5	5	5
Sugar	15	15	15	15	15	15
Cooking oil	5	5	5	5	5	5
Amount	100	100	100	100	100	100

Nutritional Value of Main Ingredients of Kasifu Biscuits Formula

The nutritional value of the main ingredients of each kasifu biscuit formula is based on an analysis of the list of [10]. The amount of nutritional value per serving of the biscuit formula is equivalent to the standard snack for pregnant women. From the analysis obtained the nutritional content in 100 g of each main ingredient kasifu formula as in Table 2.

Table 2. Nutritional Content of Formula Kasifu Biscuits Formula I – VI

Nutrient content	Energy content and substances in the Biscuit Formula					
	F I (gr)	FII (gr)	FIII (gr)	FIV (gr)	FV (gr)	F VI (gr)
Amount of Ingredients	100	100	100	100	100	100
Energy	375	375.1	370.1	373.9	370.2	372.1
Protein	18.7	19.8	19.1	18.5	19.8	18.9
Iron	4.6	4.9	5.5	4.7	5.4	5.1

Composition of additional ingredients Kasifu Biscuits

The ingredients for making biscuits are made from a mixture of formulas I to VI with an ingredient composition of 100 grams after which they are added with other ingredients such as wheat flour, cornstarch, milk powder, refined sugar, margarine and eggs as in Table 3.

Table 3. Nutritional Composition of Kasifu Biscuits Additives.

No.	Material	Weight (gr)	Energy	Protein	Iron
1.	Wheat flour	100 gr	333	8.9	1.2
2.	Cornstarch	20 gr	68.6	0.06	0.3
3.	Milk powder	10 gr	36.2	3.56	0.06
4.	Fine granulated sugar	50 gr	182	0	0
5.	Margarine	70 gr	504	0.42	0
6.	Chicken eggs	50 gr	158	6.2	1.35
	amount	300 gr	1281.8	19.1	2.9

Kasifu Biscuit Nutrition Value

The weight of the biscuits made in formula I to formula VI in the mixture material is 100 grams and added to the additives, the average mixture in one recipe is 400 grams. the weight of the biscuits after cooking is 360 gr. The nutritional value of kasifu biscuits can be seen in table 4.

Table 4. Nutrient Composition of Kasifu Biscuits in 400 grams

No.	Formula	Weight Material (gr)	Energy (Kkal)	Protein (gram)	Iron (mg)
1.	Formula 1	400 gr	1656.8	37.8	7.5
	Formula 2	400 gr	1656.9	38.9	7.8
	Formula 3	400 gr	1651.9	38.2	8.4
	Formula 4	400 gr	1655.7	37.6	8.3
	Formula 5	400 gr	1652	39	7.9
	Formula 6	400 gr	1653.9	38	8

Calculation of biscuit composition in 1 recipe, 400 grams, obtained average biscuit energy of 1654.5 Kcal, a protein of 38.2 grams, and average iron content of 7.9 mg.

Nutrition Value One Chip Kasifu Formula Biscuits

The dough of each biscuit formula is divided into 20 pieces, and the nutritional value of Kasifu biscuits per piece is as in Table 5.

Table 5. Nutritional Value of Kasifu Biscuits one chip.

No.	Formula	material weight (gram)	Energy (Kkal)	Protein (gram)	Iron (mg)
1.	Formula 1	20 gr	82.8	1.9	0.4
	Formula 2	20 gr	82.8	1.9	0.4
	Formula 3	20 gr	82.6	1.9	0.4
	Formula 4	20 gr	82.8	1.9	0.4
	Formula 5	20 gr	82.6	1.9	0.4
	Formula 6	20 gr	82.7	1.9	0.4

Based on table 5 above, it can be seen that the nutritional value of biscuit biscuits at an average energy is 82.3 Kcal, protein 1.9 g and iron is 0.4 mg.

Organoleptic Color of Kasifu Biscuits

Panelist assessment of the biscuit color of formula I to formula VI was carried out 3 times repetition for 3 consecutive days. From the panelists' level of preference for the color of the biscuit the average score is 4 (somewhat like). There are 55% of panelists who prefer biscuit color with formula II, which is a mixture of ingredients: sweet potato, cassava, kidney beans, fish and Moringa leaves. Based on ANOVA statistical test obtained F count (0.57058) table level of 5% is (3.15) this means that the null hypothesis (Ho) is accepted ie there is no difference in the panelist's assessment of colors, that the colors of the six formulas are the same or not different.

Organoleptic results of Kasifu Biscuit Aroma

The panelists' preference level for aroma in the 6 biscuits formula is 4 (somewhat like). There are 66.7% who like it, and the ANOVA test results obtained F count (0.3925) is smaller than F table level of 5% (3.15) which means that the null hypothesis (Ho) is accepted ie panelist's assessment is no difference the aroma in the six biscuit formulas presented.

Organoleptic Results of the Kasifu Biscuit Flavor

The panelist's level of preference for average taste is 4 (somewhat like). there is a higher rating in formula 3 and formula 6 that is the value of 5 (likes) there are 70% of panelists who say they like the biscuit kasifu formula 6. Based on the ANOVA statistical test the F count (0.3536) is smaller than the F table at the level of 5% (3,15), this shows that the null hypothesis (Ho) is accepted which means that the panelists' level of preference for taste is no difference in taste in the six Kasifu biscuit formulas.

The organoleptic texture of Kasifu Biscuits

The texture of the kasifu biscuit is not too brittle but also not hard when bitten or eaten. The results of the panelists' level of preference for the texture of the 6 formulas on average are 4 (somewhat like), but in formula 3 and formula 6 are 5 (like) there are 70% of panelists who say they like. Based on ANOVA statistical test it was found that the calculated F value (0.7753) <from the F table value at the level of 5% (3.15), this shows that the null hypothesis (Ho) is accepted which means that the assessment of the level of preference of the panelist for the texture is not there is a difference in texture between the six Kasifu biscuit formulas.

IV. DISCUSSION

The results of this study indicate that biscuits for pregnant women can be made from various local foodstuffs in the city of Jayapura, Papua. Foodstuffs are rich in carbohydrates, proteins such as sweet potatoes, sago, green beans, red beans, and Moringa leaves. The reason for the selection of local foodstuffs is that these ingredients are generally eaten individually as sweet potatoes are only boiled, sago is made papeda or as porridge and beans are usually boiled or made with green bean porridge and Moringa leaves are made as boiled vegetables. These local food ingredients made in the form of flour have higher nutritional value and are good to be made in the form of biscuits, which can be given to pregnant women.

The purpose of making kasifu biscuit with the addition of Moringa leaves is a lot of Moringa leaves in the market and is a vegetable that is widely eaten by people in the city of Jayapura, Papua. Besides the dried Moringa leaves have a high nutritional value as reported by Judge Bey in 2010 in "All Things Moringa" iron in the Moringa leaves in (every 100 grams of leaves) obtained in the form of pods is 5.3 mg, fresh leaf shape amounted to 0.7 mg while in the form of leaf powder amounted to 28.2 mg. so it's very good to add it to food. Also in making kasifu biscuits.

Fuglie [11] in Bina Media Scientific 2 magazine reported that enough with 8 g of Moringa leaf powder a day can contribute nutrients to infants (1-3 years), namely 14% protein, 40% calcium, 23% iron and almost all the needs of vitamin A. Whereas in 100 grams of Moringa leaf powder, can provide more than a third of the needs of calcium, iron, protein, copper, sulfur and vitamin B in women of childbearing age.

The results of making kasifu biscuits were organoleptically assessed namely the "Hedonic Scale" assessment by asking panelists to state their level of preference for the color, aroma, taste, and texture of the kasifu biscuit by lecturers and students

majoring in nutrition. Panelist assessment of the biscuit color of formula I to formula VI was carried out 3 repetitions for 3 consecutive days. From the panelists' level of preference for the color of the biscuit, the average score is 4 (somewhat like).

The aroma of the Kasifu biscuit is scented with Moringa leaves, the smell of fish and the smell of milk which is not too strong. This is because of the addition of other ingredients. From the assessment of the panelists' preference level for aroma in the 6 biscuit formulas is a value of 4 (rather like).

The taste of biscuit kasifu is the taste of Moringa leaves, the taste of fish, which is also mixed with the taste of milk. From the assessment of the panelists' level of preference for the average taste is a value of 4 (rather like). But there is a higher rating in formula 3 and formula 6, which is the value of 5 (likes) on kasifu biscuits.

The texture of the kasifu biscuit is not too brittle but also not hard when bitten or eaten. From the results of the assessment of the panelists' level of preference for the texture of the 6 formulas the average value is 4 (rather like), but in formula 3 and formula 6 is a value of 5 (likes).

Based on the calculation results, it appears that the nutritional content of kasifu biscuits is still lacking when compared to biscuits from the Ministry of Health of the Republic of Indonesia.

V. CONCLUSION

Panelist evaluation of the Kasifu biscuit Formula is an assessment by testing the level of preference for color, aroma, taste, and texture. The panelist's assessment of color and aroma is an average of 4 (rather like) and there are 55% of panelists who prefer formula 5 and formula 2, Statistically there are no differences in color and aroma f arithmetic (0.57058), (0.3925) <F Table 3.15 While the assessment of taste and texture is an average of 5 (like) there are 70% of panelists like biscuit formula 6, with a mixture of sago, red bean, cassava, fish and Moringa leaves. Statistically, there is no difference in taste and texture. F calculate each (0.3536), (0.7753) <F. Table 3.15.

The nutritional value of 20 grams per kasifu biscuit is obtained Energy of 82.6 Kcal, 1.9 grams of protein and 0.4 mg of iron, while biscuit for pregnant women from the Ministry of Health 20 grams per piece is 100 Kcal of energy, 3 grams of protein, and iron 12.03 mg, folic acid 626.86 mcg. The nutritional value of kasifu is lower than the biscuit of pregnant women from the biscuit of the Ministry of Health on protein and iron nutrients.

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