PROCEEDING BOOK

THE 1th INTERNATIONAL CONFERENCE
ON INTERPROFESSIONAL
HEALTH COLLABORATION

"Combating The Growing Epidemic of Triple Burden Diseases through Interprofessional Health Collaboration in Developing Countries"

GRAGE HOTEL BENGKULU, INDONESIA
October 30-31th
2018

KEMENTERIAN
KESEHATAN
REPUBLIK
INDONESIA

HEALTH POLYTECHNIC OF HEALTH MINISTRY BENGKULU
Jl. Indragiri No.3, Padang Harapan, Kota Bengkulu, Indonesia 38225
Phone/Fax.62-736-341212. Email : icihcpoltekkesbengkulu@gmail.com

PROCEEDING BOOK

THE 1th INTERNATIONAL CONFERENCE ON INTERPROFESSIONAL HEALTH COLLABORATION

"Combating The Growing Epidemic of Triple Burden Diseases through Interprofessional Health Collaboration in Developing Countries"

GRAGE HOTEL BENGKULU, INDONESIA
October 30-31th
2018

HEALTH POLYTECHNIC OF HEALTH MINISTRY BENGKULU
Jl. Indragiri No.3, Padang Harapan, Kota Bengkulu, Indonesia 38225
Phone/Fax.62-736-341212.Email : icihcpoltekkesbengkulu@gmail.com

Proceeding Book

The 1th INTERNATIONALCONFERENCE ON
INTERPROFESSIONAL HEALTH COLLABORATION

"Combating The Growing Epidemic of Triple Burden Diseases through Interprofessional Health Collaboration in Developing Countries"

ISBN 978-623-90336-0-6

9 786239 033606

Publisher
HEALTH POLYTECHNIC MINISTRY OF HEALTH BENGKULU

Table of Contents

Address from the Governor of Bengkulu Province

Dear honorary guests and participants,

First, I Recommend Welcome To Our Guests From State Friends Of Thailaind, Malaysia, Philifina, And India And Speakers From Indonesia As The Host.
Welcome To *Bumi Rafflesia*. And Happy To Enjoy The Beauty Of Bengkulu City Which Is A Historical City For The Indonesian Nation.

To Poltekkes, Bengkulu Ministry Of Health, Which Has Implemented International Seminars Today, This Polytech Is A Higher Education, Which Is Superior In Educing Health Personnel, Bengkulu And Indonesia Property In General And Always Visiting The Tri Dharma Of Higher Education.

I Realize That An Important Thing In Life Is Health, There Is No Meaning We Life If We Are Not Healthy, Then From The Role Of Health Personnel Is Very Important To Improve Optimal Health.

Ladies And Gentlemen,

The Success Of Health Development In Indonesia Must Implement The Entire And Integrated Health Development Program According To The Health Problems Faced By The Community.

At The Time Of Existing Diseases From Infection Disease To Degenerative Diseases That Need Handling Readiness Carefully Through The Approach To The Potential And Empowerment Of The Community. With The Multi Discipline Approach.

Increasing Health Services Can Improve The Apptitude Of Community As Well As Decrease The Number Of Illness And Mortality In Any Region, And To Enhance The Available Health Service.

That Is All And Thank You

Governor Of Bengkulu

Dr Drh Rohidin Mersyah, MMA

Address from the Director of Health Polytechnic of Health Ministry Bengkulu

Dear honorary guests and participants,

Welcome to the International Conference whichis held annually in our institution Bengkulu Health Polytechnic. This is our first event of International Conference. We hope this event can be our place to share knowledge from many field studies related to health science.

It is a great pleasure to invite you in The 1st International Conference on Interprofessional Health Collaboration. The International Conference on Health Sciences Named "Combating The Growing Epidemic of Triple Burden Diseases through Interprofessional Health Collaboration in Developing Countries**".** We have missions to improve health collaboration in other health education, research and community service.This conference is one of the way to achieve our vision and mission Bengkulu Health Polytechnic.

We have a great expectation that this conference can be our good environment to develop knowledge, to share experience, to have interaction between us and of course to give contribution for our health world. We do hope the success of the conference and we hope you all enjoy it.

Sincerely,

Darwis, S.Kp.,M.Kes
Director Bengkulu Health Polytechnic

THE FORMULA AND DETERMINE THE EFFECT OF MUFFIN BASED ON FERMENTED GLUTINOUS BLACK RICE AND BLACK RICE ON ORGANOLEPTIC PROPERTIES, FIBER CONTENT, AND ANTHOCYANIN

Fauziyah Roro Nur, Slanikovita Arizky Kusuma, Surmita
Bandung Nutrition Department, Ministry of Health Poltekkes Bandung

ABSTRACT

Central obesity is excessive accumulation of fat in the abdominal area and one of the forms of oxidative stress triggered by a lack of antioxidants, one of which is anthocyanin. Central obesity is affected by low fiber intake. Muffin based on Fermented Glutinous Black Rice and Black Rice consists of a Fermented Glutinous Black Rice and Black Rice which contains high anthocyanins and fiber so that it is appropriate for alternating food alternatives in central obesity. This study aims to obtain the formula and determine the effect of Muffn based on Fermented Glutinous Black Rice and Black Rice on organoleptic properties, fiber content, and anthocyanin. The research method used is the hedonic quality test to determine organoleptic properties, spectrifotometry for anthocyanin testing, and gravimetric enzymatic for fiber testing. The formula of . Muffin based on Fermented Glutinous Black Rice and Black Rice consists of three counterparts, with a comparison of Fermented Glutinous Black Rice and Black Rice (%) F1 (75:25), F2 (50:50), and F3 (25:75). The results of the Kruskal Wallis test showed that there were significant differences in organoleptic results including color, aroma, taste and texture. In the results of organoleptic tests, F1 balance is superior in color, aroma, taste, and texture. The results of anthocyanin and fiber analysis were tested on superior products. Anthocyanin content is 21, 91mg / 100gr, and fiber is 5.8 gr / 100gr. Anthocyanin and Fiber meet the needs of adult central obesity.

Keywords: Fermented Glutinous Black Rice Muffin, Organoleptic Test, Anthocyanin, Fiber.

INTRODUCTION

Central obesity or visceral obesity is a condition where fat accumulation occurs excessively and far exceeds normal in the andomen[1] region. According to WHO (2000), visceral fat tissue has more adipose fat[2]. The adipose tissue makes and releases several proinflammatory cytokines[3]. The presence of proinflammatory cytokines is the beginning of the formation of ROS (reactive oxygen species) and increased oxidative stress[4]. Oxidative stress is an imbalance between free radicals or pro-antioxidants and antioxidants that are triggered by the presence of two general conditions, namely lack of antioxidants and excess free radical production[5]. Population aged ≥15 years in Indonesia in 2007, it was known that the central obesity prevalence in Indonesia was 18.8%, while in 2013 it increased to 26.6% (7.8% increase). Then the central obesity prevalence in the province of West Java (26.4%) was almost the same as the national figure (26.6%)[6].
According to research Naomi, 2012, showed that low fiber intake was associated with central obesity[7]. Fiber is part of carbohydrates and is incorporated into non-starch polysaccharides. Consuming fiber-containing foods can reduce the risk of central obesity. High consumption of fiber such as vegetables,

fruits and whole grains is associated with a reduction in BMI and abdominal circumference. It was also found that increasing fiber intake was related to adipose parameters. Increased fiber intake of 12 grams / day is associated with a decrease in 0.63 cm of abdominal circumference[10].

Anthocyanin is a sub-type of organic compounds from the flavonoid family, and is a member of a larger group of compounds namely polyphenols. 16.

Anthocyanin works as a secondary antioxidant as well as with β-carotene, which breaks down the oxydacylipid peroxide chain. Antioxidants are destructive substances or antidotes to free radicals[11].

Based on research conducted by Tsuda, 2003, conducted on mice with a high-fat diet, explained that the consumption of anthocyanins from food (purple corn) as a functional food factor can significantly prevent obesity and diabetes[12]. Then anthocyanin as a flavonoid compound works as an anti-inflammatory and reduces oxidative conditions in obesity[13].

Fermented Glutinous Black Rice (FGBR) is an alcoholic fermented food product consumed by the Indonesian people[14]. Besides that, Fermented Glutinous Black Rice has phenolic, fiber and anthocyanin components[15].

In a previous study conducted by Fauziah Nur, 2015, showed that there was a significant relationship between consumption of Fermented Glutinous Black Rice and the incidence of metabolic syndrome which showed that daily consumption of Fermented Glutinous Black Rice had a protective effect on the incidence of metabolic syndrome by 12 times compared to black consumption of rice every day and abdominal or central obesity is included in the metabolic syndrome[15].

Black rice contains high fiber values16. Anthocyanin pigment which is one of the secondary metabolites in Fermented Glutinous Black Rice which can act as an antioxidant. The primary secondary metabolite in black rice is anthocyanin[17].

Seeing the benefits of black glutinous rice and black rice tape, it is possible to convert food in order to get a new product (Fermented Glutinous Black Rice Muffin) which is rich in anthocyanins and fiber as a functional food in preventing central obesity and can be used as a distraction.

METHOD

The research design is an experimental design. Independent variables are Fermented Glutinous Black Rice Muffin with formula F1 (75 &: 25%), F2 (50%: 50%) and F3 (35%; 75%) affecting dependent variables, namely organoleptic properties of hedonic methods, anthocyanin levels and levels fiber. with a completely randomized design (CRD).

Preliminary research

Preliminary research is the determination of the making of Fermented Glutinous Black Rice Muffin formula which consists of 3 formulas (table 1), and product manufacture. Making the product is by mixing wet and dry ingredients, stirring without a mixer, then printed on a muffin cup and baked at 150^{o}C for 30 minutes.

Main Research

The main research is the three formulas tested by organoleptic test Hedonic methods with aspects of color, aroma, taste, and texture with seven scales, namely very dislike, dislike, rather dislike, neutral, somewhat like, like, and very like, for looking for the best product.

This superior product is the next one to do anthocyanin level test and fiber content. In anthocyanin level test using spectrophotometric method, while for fiber content test using gravimetric enzymatic method.

The samples in organoleptic testing were 30 trained panelists. The research target (panelists) in question are lecturers and students of the Bandung Ministry of Health Poltekkes Nutrition Department who have

received food material regarding organoleptic testing.

The research site was conducted at the Food Technology Laboratory of the Bandung Department of Nutrition, Poltekkes for the manufacture of products. Organoleptic test laboratory for Nutrition Department of Poltekkes Bandung for organoleptic testing, and at the Center for Agricultural Postharvest Research and Development Testing Laboratory, Agricultural Research and Development Agency, Bogor for testing anthocyanin and fiber levels.

Data analysis was performed to determine the effect of different levels of Muffn based on Fermented Glutinous Black Rice and Black Rice on organoleptic properties, fiber content, and total anthocyanin. Processed using the SPSS application.

Normality test was carried out with 95% confidence ($\alpha = 0.05$). followed by the Kruskal Wallis test, then continued with the Mann Whitney test.

Tabel 1. Formula Muffin based on Fermented Glutinous Black Rice and Black Rice

No	Material	Formula 1 75:25	Formula 2 50:50	Formula 3 25:72
1	Fermented Glutinous Black Rice	225 gr	150 gr	75 gr
2	Black Rice	75 gr	150 gr	225 gr
3	Egg whites	100 gr	100 gr	100 gr
4	Soda kue	1½ tsp	1½ tsp	1½ tsp
5	Sweetener	1 tsp	1 tsp	1 tsp
6	Margarine	20 gr	20 gr	20 gr
7	Low Fat Milk	200 ml	200 ml	200 ml

RESULT

Table 2. Hedonic Test Results

Formula Type	Aspek Hedonic Aspect			
	Color	Aroma	Taste	Texture
Formula 1	63.3 %	60%	63.3	53.3%
Formula 2	26.6%	20%	19%	26.7%
Formula 3	19%	40%	6.6%	16.6%

Hedonic Test

The value of P (0.00) <α (0.05) was obtained in the data normality test for aspects of color, aroma, taste, and texture, which means that the data is not normally distributed. Thus the statistical test used for the four aspects above is the Kruskal- wallis test.

Hedonic aspects of color

The Kruskal Wallis test showed that the results obtained p (0.005) <α (0.05), which means that there were significant differences in organoleptic properties based on the color parameters between the three Muffn based on Fermented Glutinous Black Rice and Black Rice.

In the Mann Whitney test there were statistically significant differences between F1 and F2 with p values (0.007) <α (0.05), and F1 and F3 with p values (0.003) <α (0.05). But there is no significant difference between F2 and F3 p (0.937)> α (0.05). Based on these data, the color of formula 1 (75% Fermented Glutinous Black Rice: 25% of black rice) has a statistically significant difference.

In addition to F1 when viewed from the percentage of likes and likes of as much as 63.3% (n = 19), at F2 percentage of likes and likes 26.6% (n = 8), and at F3 a

percentage of 26.0% (n = 6). so F1 is declared superior in color aspects. Results can be seen in table 2.

Hedonic aspects of aroma

In the Kruskal Wallis test, the results of p (0.024) p <α (0.05), which means there are significant differences. Furthermore, Mann Whitney test was performed that there was a statistically significant difference between F1 and F2, with p values (0.004) <α (0.05). But there is no significant difference between F1 and F3 with p values (0.087) <α (0.05) and F2 and F3 p (0.571)> α (0.05). Based on these data, the aroma in formula 1 (75% of black sticky rice tape: 25% of black rice) has a statistically significant difference.

Besides that in F1 when viewed from the percentage of likes and likes as much as 60.0% (n = 18), at F2 percentage of likes and likes 20.0% (n = 6), and at F3 percentage of 40.0% (n = 12), so F1 declared superior in the aspect of aroma.

Hedonic aspects of taste

In the Kruskal Wallis test, the results of p (0.000) <α (0.05) were obtained, which means that there were significant differences in organoleptic properties based on the taste parameters between the three Muffn based on Fermented Glutinous Black Rice and Black Rice.

In the Mann Whitney test there was a statistically significant difference between F1 and F2 with p (0.001) <α (0.05, F1 and F3 with p (0.000) ≤α (0.05, and F2 and F3 with p values (0.043) <α (0.05) Formula 1 (75% tape black sticky rice: 25% black rice) there is a statistically significant difference.

However, when viewed from the percentage of preference, in F1, the highest percentage is the liking and liking score of 63.3% (n = 19), at F2 percentage of likes and likes as much as 20.0% (n = 6), and at F3 percentage of likes and very like 6.6% (n = 2) so F1 is declared superior in terms of taste.

Hedonic Aspect Texture

The Kruskal Wallis test showed that p (0.006) p <α (0.05), which means there were significant differences in organoleptic properties based on the texture parameters between the three Muffn based on Fermented Glutinous Black Rice and Black Rice.

In the Mann Whitney test there was a statistically significant difference between F1 and F3 with p values (<0.002) <α (0.05), and F2 and F3 with p value (<0.045) <α (0.05). However there is no significant difference between F1 and F2 with p (0.125)> α (0.05). However, when viewed from the percentage of preference, in F1, the highest percentage is the rating of likes and likes as much as 53.3% (n = 16), at F2 percentage of likes and likes of 26.6% (n = 8), and at F3 percentage of likes and very like 16.6% (n = 5), so F1 is declared superior in texture aspects.

Organoleptic results

Based on the results of the organoleptic test of the hedonic method, F1 (75% Fermented Glutinous Black Rice: 25% black rice) is the most superior product. So that the anthocyanin and fiber test analysis is only carried out on F1.

Analysis of Anthocyanin and Fiber Content

Table 3 Results of Analysis of Anthocyanin and Fiber Content from Muffn based on Fermented Glutinous Black Rice and Black Rice

Sample	test	Result	Unit
F1 75% :25%	anthocyanin	219,18	ppm
F1 75% :25%	fiber	5.8	%

The samples analyzed in the anthocyanin and fiber assays were F1 (75% Fermented Glutinous Black Rice: 25% black rice) and the results of the analysis and Muffn based on Fermented Glutinous Black Rice and Black Rice can be seen in Table 3

Based on table 3, the results of the analysis showed that the anthocyanin content contained in the Muffn based on Fermented Glutinous Black Rice and Black Rice was 219.8 ppm which was then converted to 21.918 mg / 100 gr. then the results of the analysis showed that the fiber content contained in Muffn based on Fermented Glutinous Black Rice and Black Rice was 58% which was then converted to 5.8 gr / 100 gr.

Fiber Content Analysis

Table 4. Contribution of levels of anthocyanin and fiber per serving dose Muffn based on Fermented Glutinous Black Rice and Black Rice to the adequacy of nutrients

Sample	Nutrient	Levels per serving	Adequacy	% Adequacy
F1 75%;25%	anthocyanin	21,918 mg/100gr	10 mg	219%
F1 75%;25%	fiber	5.8 gr	2.5gr	232%

The number of serving sizes of Muffn based on Fermented Glutinous Black Rice and Black Rice is 100 grams, which is 2 servings of muffins. Anthocyanin adequacy is 100 mg / day. For interlude, the distribution of food distribution per day is 10% of the adequacy, so that the adequacy of anthocyanin in 1 time is 10 mg. Then by consuming 2 servings of Muffn based on Fermented Glutinous Black Rice and Black Rice (100 grams) was able to meet the anthocyanin adequacy of 219% in one interlude.

Adequacy of fiber is 25 gr / day. For interlude, the distribution of food distribution per day is 10% of sufficiency, so that the adequacy of anthocyanin in 1 time is 2.5 mg. Then by consuming 2 servings of Muffn based on Fermented Glutinous Black Rice and Black Rice (100 grams) was able to meet the fiber adequacy of 232% in one interlude.

Analysis of nutritional value

Table 5. Contribution Per Serving Size of 100 gr Muffn based on Fermented Glutinous Black Rice and Black Rice to Nutritional Adequacy

Nutrient	Nutrient Per Serving Size of 100 gr	Nutritional Adequacy	% Nutritional Adequacy
Energy	162.4 kcal	200 kcal	81.2 %
Protein	6.32 gr	7.5 gr	84.2%
Fat	3.24 gr	5.5 gr	58.9%
Carbohydrate	26 gr	30 gr	86..6%

The samples analyzed were F1 (tape 75% black sticky rice: 25% black rice) and the analysis and Muffn based on Fermented Glutinous Black Rice and Black Rice can be seen in Table 5. Based on Table 5. that Muffn based on Fermented Glutinous Black Rice and Black Rice can provide 81.2% of energy , 84.2% protein, 58.9%

fat and 86.6% carbohydrates. Adequacy has been fulfilled due to this snack for adults with central obesity so that snacks should not exceed the adequacy of the principle of low-calorie snacks.

DISCUSSION

Muffn based on Fermented Glutinous Black Rice and Black Rice is muffins made from a base of black sticky rice and black rice which has been ground as a substitute for flour. The resulting muffins weigh 50 grams per portion and are shaped like cupcakes, only the texture is soft but denser than cupcake. has a sweet and slightly savory taste, has a distinctive aroma of black sticky rice and black rice. Has a deep purple to purple black. Storage conditions in a dry, closed place. This product can be eaten directly or can be stored in a dry and closed place at room temperature around 1-2 days.

Color

Colors that appear on Muffn based on Fermented Glutinous Black Rice and Black Rice comes from flavonoid pigments, anthocyanins. The color of the Muffn based on Fermented Glutinous Black Rice and Black Rice with black rice, which is thick purple to purple black. Anthocyanin pigments will experience degradation in the event of cooking. This will affect the color quality and also the nutritional value[1]8.

Judging from the color, F1 has a lighter color compared to F2 and F3. This is because the content of Fermented Glutinous Black Rice is more than black rice. Black rice makes the color darker and thicker. This is possible to be the reason for the color F1 is preferred compared to F2 and F3.

Aroma

Fragrance is considered very important in the food industry because it can give results to the level of product preference. The aroma is influenced by the ingredients used, such as black sticky rice, black rice, margarine. Most of the panelists stated that they liked F1 (53.3%), F2 (20.0%), and F3 (30.3%). Among the three formulas based on the results of the aroma test most of the other panelists liked F1 (53.3%).

The aroma contained in the Muffn based on Fermented Glutinous Black Rice and Black Rice is a distinctive aroma of the black sticky tape and the distinctive aroma of black rice. The aroma will increase when the Fermented Glutinous Black Rice is more than black rice. Tape black sticky rice is a food product from alcoholic fermentation, has a watery texture with sweet and sour taste[14]. The addition of yeast makes the fermentation process which then produces tape with a sweet, sour, and distinctive flavor of the tape[15]. In addition to the fermentation process, the yeast rice sticky rice is wrapped in campolai leaves which adds a distinctive aroma to the Fermented Glutinous Black Rice[15]. The longer the fermentation process causes an increase in ethanol levels[15].

This is because in F1 the Fermented Glutinous Black Rice content is more than F2 and F3. In F1, The distinctive aroma of Fermented Glutinous Black Rice is more out due to the roasting process and makes the aroma more fragrant. Compared to F2 and F3. This might be the reason F1 is preferred.

Taste

Taste and aroma are one of the interconnected properties. The taste can be known after the product is eaten. Taste can be distinguished as sweet, salty, and tasteless and is influenced by the ingredients used.

On Muffn based on Fermented Glutinous Black Rice and Black Rice the difference in taste is very different between F1, F2 and F3. In the recipe, the sugar added to the dough uses slim tropical sugar where there is less calories than regular sugar. Then the amount of sugar added to each formula is the same. So the difference will

be clear because the Fermented Glutinous Black Rice has a sweet, sour taste and a distinctive tape aroma[15]. This is because the fermentation process increases the level of reducing sugars so that the taste will get sweeter if the fermentation process takes longer [15].

In F1, the tape content is more than black rice, compared to F2 and F3. So that sweetness increases in F1. Sweetness decreases when black rice is added more. This allows the taste of Muffn based on Fermented Glutinous Black Rice and Black Rice F1 black rice is preferred compared to F2 and F3.

Texture

The texture of the Muffn based on Fermented Glutinous Black Rice and Black Rice is different for each. In F1 the texture is softer compared to F2 and F3. This is because the Fermented Glutinous Black Rice makes the texture softer. Whereas the more black rice the texture will be more dense and a little hard as F3. Fermented Glutinous Black Rice has a watery texture while black rice flour has a dry and dense texture. So that it will affect the results of the Muffn based on Fermented Glutinous Black Rice and Black Rice. The distinctive feature of muffins is shaped similar to cupcake, cracking on the top surface, soft and dense inside texture19.

F1 is preferred because in F1 the texture is softer and closer to the muffin texture in general so it is preferred compared to F2 and F3.

Anthocyanin

The biggest contribution of anthocyanins among the two main food ingredients are Fermented Glutinous Black Rice and Black Rice. The anthocyanin content of 100 grams of Fermented Glutinous Black Rice is 25.7 mg and anthocyanin in black rice is 53.22 - 650.37 mg / 100 gr20. However, based on the results of anthocyanin analysis Muffn based on Fermented Glutinous Black Rice and Black Rice obtained 21.9 mg, which should be able to get a higher amount of anthocyanin.

On the Muffn based on Fermented Glutinous Black Rice and Black Rice there is a roasting process. In the roasting process research carried out on an ordinary stove oven with an average temperature of 150^{o}C. Whereas anthocyanin levels are very influential on temperature. Based on Suhartatik's research, Naniek (2013), the stability and color of anthocyanin extract from fermented black glutinous rice during the heating and storage process. The results show that the higher the heating temperature and the longer the heating time, causing more anthocyanin damage. Except for heating <50oC no more than 15 minutes which can increase the anthocyanin stability[21].

A decrease in anthocyanin levels is also experienced when heating at temperatures above 30^{o}C. A decrease in anthocyanin levels >50% was experienced in anthocyanins heated at temperatures>70^{o}C21. Some researchers have also stated that temperatures during storage have a logarithmic effect on anthocyanin damage. This is in line with previous studies that the results of the anthocyanin content of Muffin based on Fermented Glutinous Black Rice and Black Rice were small because of the roasting process with a temperature of >70^{o}C[21].

Besides that the contribution of black sticky tape to a product can be said to be large. This is based on the research of Aminah, et al (2017) showing brownies with Fermented Glutinous Black Rice raw materials have high levels of anthocyanin which is 1,144.41 ppm or equivalent to 114.4 mg / 100 g of product[22]. This can be said to be of considerable value for products made with roasting process. Research by Fauziyah, et.al (2017) showed that snack bar products made from Fermented Glutinous Black Rice had anthocyanins of 1,115.28 ppm or equivalent to 111.53 mg of anthocyanin /

100 gr[23]. And this was said to be large enough for the product made. with the roasting process. This is the reason why Muffin based on Fermented Glutinous Black Rice and Black Rice is still getting enough anthocyanin values and can meet 219% of the need for anthocyanin values for interruption in central obesity adults.

Fiber

The food fiber content obtained was 5.8 gr / 100 g of ingredients. Based on needs, the recommended fiber content is 25 grams / day. so that in intervals per day (estimated 10% of daily needs) needs are 2.5 gr. The value of muffin fiber levels is sufficient for the needs of intermittent fiber for central obesity.

The biggest fiber contribution between the two ingredients is Fermented Glutinous Black Rice and Black Rice. This can be seen from the fiber content on Fermented Glutinous Black Rice and Black Rice. Fermented Glutinous Black Rice has 5.9 gr / 100 gr 14 fiber. While black rice has a fiber content of 20.1 gr / 100 gr [24].

Muffin based on Fermented Glutinous Black Rice and Black Rice is also inseparable from the contribution of its constituent ingredients, namely black sticky tape. Based on research by Aminah, et al (2017) showed brownies with Fermented Glutinous Black Rice raw material has a fiber content of 3.84 grams[22]. Research Fauziyah, et al (2017) showed that snack bar products made from Fermented Glutinous Black Rice had 6 fiber content, 31 gram 23. Based on this, products Muffin based on Fermented Glutinous Black Rice and Black Rice have the advantage that they are made from materials that have high fiber content and have fulfilled 232% of the fiber requirements in intervals.

CONCLUSION

1. There are differences in the balance of the organoleptic properties of Muffin based on Fermented Glutinous Black Rice and Black Rice from aspects of color, aroma, taste, and texture. Based on the results of the hedonic test, F1 with a 75%: 25% balance excels in all aspects, namely color, aroma, taste and texture.
2. Anthocyanin test results in Formula 1 75%: 25%, namely 21,918 mg / 100 g of ingredients and have met the anthocyanin needs 219%.
3. In one interlude the test results of food fiber in Formula 1 were 75%: 25% ie 5.8 gr / 100 g of ingredients and had fulfilled the fiber requirement of 232% in one interlude.
4. Giving products 2 servings of muffin tape black rice black rice can meet the needs of Energy, Protein, Fat, Carbohydrates, Anthocyanin, and Fiber for interlude for adults with central obesity.

SUGGESTION

1. This product cannot be applied as an alternative to interfering with the central obesity community because it is only examined from the organoleptic aspects and nutrient content.
2. From that, researchers expect further research on the effectiveness of giving Black Rice Black Glutinous Muffin Tape to central obese adults.
3. In addition, further research can be conducted on products made from Tape, black sticky rice and black rice to make it more varied, such as making Black Rice Glutinous Muffins as a distraction for central obesity.

THANK-YOU NOTE

Our thanks go to the panelists and all parties involved in this research.

REFERENCE

1. Techrnof, A dan Depres, J.P. 2013. *Pathophysiology of human visceral obesity*. Physiol Rev.93.

2. WHO/WPR/IA/IOTF. 2000. *The Asia pacific perpective refiding obesity and its treatment*. World Health Organization.

3. Pusparini. 2007. *Obesitas Sentral, Sindroma Metabolik, dan Diabetes Melitus Tipe Dua*. Jurnal Penelitian Vol.26. Jakarta: Fakultas Kedokteran Universitas Trisakti. 2007

4. Rahmawati, Ana. 2014. *Mekanisme Terjadinya Inflamasi dan Stress Oksidatif*. Jurnal Penelitian. Malang: Universitas Negeri Islam (UIN) Maulana Malik Ibrahim.

5. Susantiningsih, Tiwuk. *Obesitas dan Stress oksidatif (Jurnal Kedokteran)*. Lampung: bagian Biokimia, Fakultas Kedokteran. 2015.

6. Departemen Kesehatan RI. 2013. *Riset Kesehatan Dasar*. Jakarta: Badan Penelitian dan Pengembangan Kesehatan Kementrian Kesehatan RI

7. Harikedua, Veri T. dan Naomi M, Tando. 2012. *Aktifitas fisik dan pola makan dengan obesitas sentral pada tokoh agama di Kota Manado* (Jurnal). Manado: Gizido 4:1.

8. Almatsier, S. 2010. *Prinsip Dasar Ilmu Gizi*. Jakarta: PT Gramedia Pustaka

9. Muchtadi, D. 2012. *Pangan Fungsional dan Senyawa Bioaktif*. Bandung: Penerbit Alfabeta.

10. Koh-Benerjee, Pauline, Nain-Feng Chu, Donna Spiegelman, Bernard Rosner, Graham Colditz, Walter Willett, and Eric Rimm. 2013. *Prospective Study If The Association Of Changes In Dietary Intake, Physical Activity, Alcohol Consumption, And Smoking With 9-Y Gain In Waist Circumference Among 16587 Us Men*. American Journal Clinical Nutrition 78, 2003:719-727

11. Lucioli S. 2012. Anthocyanins: *Mechanism of action and therapeutic efficacy Research* Signpost hal:27-57.

12. Tsuda, Takanori. 2003. *Dietary Cyanidin 3-O--D-Glucoside-Rich Purple Corn Color Prevents Obesity and Ameliorates Hyperglycemia in Mice*. *International Journal*. Research Center For Biomarkers Of Preventive Medicine. Japan: Doshisha University.

13. Nabavi, S.F., Russo, G.L., Daglia, M., dan Nabavi, S.M. 2015. *Role of Quercetinas an Alternative For Obesity Treatment: You Are What You Eat! Food Chemistry*: 179: 305–310.

14. Yustina, I. 2011. *Studi Pengaruh Lama Fermentasi Tape Ketan Hitam terhadap Kadar Antosianin dan Aktivitas Antioksidan*. Malang: Universitas Brawijaya.

15. Fauziah, Nur. 2015. *Hubungan Konsumsi Tape Ketan Hitam dengan Pencegahan kejadian Sindrome Metabolik Pada Usia 40 Tahun Keatas Di Kabupaten Bandung Barat, Provinsi Jawa Barat*. [Desertasi]. Jakarta: Universitas Indonesia

16. Ryu S. N, Park S. Z, Ho C. T. 1998. *High Performance Liquid Chromatographic Determination of Anthocyanin Pigments in Some Varieties of Black Rice. J. Food and Drug Analysis*: 6 (4):729-736

17. Choi, Sun Phil, 2010. *Protective Effects of Black Rice Bran Againts Chemically- Induced Inflamatioj of Mouse Skin, J.Agric.Food Chem*. Hal: 53(25):41-45

18. Suhartatik,Nanik.Karyantina, Merkuria.2014.*Karakteristik*

Fermentatis Medium de Mann Regosa Sharpe (MRS) Antosianin Beras ketan hitam (oryza sativa var. glutinosa) Menggunakan Pediococcus Pentosaceus N.11.16. Jurnal Agritechnology. Surakarta: Universitas Slamet Riyadi.

19. Rosmania, Amanah. 2013. Pengaruh Pengurangan Jumlah Gula Terhadap Kualitas *Muffin* tepung Ubi Ungu. Food Science and Culinary Education Journal. Semarang: Universitas Negeri Semarang.

20. Litbangkes. 2009. Beras Hitam. Warta Penelitian dan Pemngembangan Pertanian. Bogor: Balai Besar Penelitian dan Pengembangan Bioteknologi dan Sumberdaya Genetik Pertanian.

21. Suhartatik, Nanik. Merkuria Karyantina, Akhmad Mustofa, Muhammad Nur Cahyanto, Sri Raharjo, Endang Sutriswati Rahayu. 2013. Stabilitas Ekstrak Antosianin Beras ketan (Oryza sativa var. glutinosa) Hitam Selama Proses Pemanasan dan penyimpanan. Surakarta: Universitas Slamet Riyadi

22. Aminah M, Hastuti W, Par'I HM.Kandungan Zat gizi, Tingkat Kesukaan serta Efektifitas Pemberian Brownies Tape Ketan Hitam terhadap Penurunan Lingkar Pinggang pada Obesitas Abdominal [Laporan Penelitian]. 2017. Penelitian tidak dipublikasikan . Bandung: Politeknik Kesehatan Kementrian Kesehatan Bandung

23. Fauziyah N, Syarief O, Suparman, HendriyaniH.StudiEfikasi Pemberian Snack Bar Tinggi Antioksidan dan Serat Berbasis Tape Ketan Hitam terhadap Profil Lipida Darah pada penderita Dislipidemia. [Laporan Penelitian] 2017. Penelitian tidak dipublikasikan. Bandung: Politeknik Kesehatan Kementrian Kesehatan Bandung.

24. Elisa,P. Fulvio, M. Johnson, Creina,S. 2013. The Case for Anthocyanin Consumption To Promote Human Health: A riview. Comprehensive Reviwesin Food Science and Food Safety. Volume 12. [Diakses 1 oktober 2017]. Available from: http://onlinelibrary.wiley.com/doi/10.1111/1541-4337.12024/full.