

Protein Fat, Carbohydrates and the Acceptance Level toward Durian Seed Flour Cookies

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Abstract

Background: Durian fruit is commonly consumed the flesh of the fruit while the seeds are discarded. One alternative for utilizing the seed is processed as flour that can be used as a substitute of dry baking powder.

The Objective: This study aimed to identify the moisture, ash, protein, fat and carbohydrates as well as acceptance of durian seed flour cookies.

Method: The research applied completely randomized design pattern of a single factor with three stage treatments mixing the durian seed flour of 10%, 20%, 30% with mocaf flour. Nutrition substance analysis used the proximate test include: moisture, ash, protein, fat and carbohydrates. Acceptance level employed the hedonic test include: color, aroma, flavor, and texture. To determine the effect of substitution of the nutrients ANOVA test was performed.

Result: The hedonic test indicates that the panelist like color (66.7%), less like aroma (63.3%), do not like the taste (53.3%), and like the texture (56.7%). There is a significant difference between the substitution of durian seed flour with moisture, ash, protein, fat and carbohydrates. The more durian seed flour substitutes the less moisture and carbohydrates and more ash, protein and fat.

Conclusion: It is advisable for people to take advantage of durian seeds as food and as other flour substitution which is not more than 10%.

Keywords: Nutritional substances, Acceptance level, Cookies, Durian wheat seeds.

1. INTRODUCTION

Durian is only consumed flesh of the fruit, while the seeds are discarded and not used. One alternative is that the durian seed is processed into flour and chips. Durian seeds processing into flour can increase the storage and usage. Durian seed flour can be used as a flour substitute in the manufacture of cakes and pastries (Department of Agriculture, 2012). Some studies say that every durian seeds contain about 27% amylose. Every 100 grams of durian seeds contains 51 grams of water, 46.2 grams carbohydrates, and 2.5 grams of protein and 0.2 grams of fat. The high carbohydrate content allows durian seeds used as a substitute source of carbohydrates in the form of flour. (Djaeni and Prasetyaningrum 2010) found out that durian seeds in protein, calcium, and phosphorus were higher than wheat flour. Therefore, durian seeds can be used as

alternative to processed foods that can add information about nutrition in the community, and also to create a clean environment. (Suhaimi, Ratna and Siregar, 2016). Making flour durian seed can be produced as a substitute for wheat flour, so durian seeds processing is expected to become cookies can provide added value and increase farmers' income and contribute to the diversification of durian food.

2. MATERIALS AND METHODS

Research used completely randomized design pattern of a single factor, namely the composition of the flour with three levels of treatment include: mixing durian seed flour 10%, 20%, 30% with mocaf flour. The study was conducted at the Laboratory of Food Nutrition Department Provision for three months. Composition Cookies of cookies is shown in Table 1.

Hedonic test is performed by giving the panelists using hedonic test form contained the preference level (extremely liked, love, love, kind of like, dislike). Each panelist was given 3 pieces of cookies in a dish consisting 1 cookie made of durian seed flour 10%, 20% and 30%.

Proximate test analyzed moisture, ash, protein, fat and carbohydrate use proximate test. Univariate analysis is used to describe the moisture, ash, protein, fat and carbohydrates in the form of data and the ratio of the average, and the level of acceptance in the form of data and percentage ratios. Based on the ANOVA test, if $P \geq 0.01$ then H_0 is accepted meaning there is no substitution effect durian seed flour cookies to moisture, ash, protein, fat and carbohydrates. If $P \leq 0.01$ then H_0 is rejected it means no substitution effect cookies with moisture, ash, protein, fat and carbohydrates.

Table1. *Substitutes Flour and Wheat Seeds Durian*

Composition	10%	20%	30%	Unit
Durian seed flour	14	28	42	grams
Mocaf Flour	126	112	98	grams
Cornstarch		50		grams
Baking powder		½		tea spoon
Margarine			50	grams
Butter		50		grams
Egg yolk	1			egg
Milk Frisian Flag		50		cc
Refined sugar		70		grams of
Vanilla	½			Tea poon

3. RESULT AND DISCUSSION

The test results of proximate average water levels on treatment 1 (durian seed flour substitution 10%) 3.52%, treatment 2 (durian seed flour substitution 20%) 3.02%, and the third treatment (substitution durian seed flour 30%) 2.44%. 2:15 minimum water content, maximum 3.82, the mean and standard deviation 2.99 0.49. The more durian seed flour substitutes the less water content.

The test results of proximate average ash content in treatment 1 (durian seed flour substitution 10%) 0.58%, treatment 2 (durian seed flour substitution 20%) 1.09%, and treatment 3 (durian seed flour substitution 30%) 1.39%. Minimum ash content 0:32, 1:53 maximum, mean and standard deviation 1:02 0:38. The more substitutions more durian seed flour ash content. Minimum ash content 0:32, 1:53 maximum, mean and standard deviation 1:02 0:38.

The test results of proximate average protein content in treatment 1 (durian seed flour substitution 10%) 6.96%, treatment 2 (substitution of durian seed flour 20%) 12.09%, and treatment 3 (durian seed flour substitution 30%) 18.37%.

The more substitutions of durian the more seed flour protein content. The minimum protein content 5:59, 21:02 maximum, mean and standard deviation 5:12 12:47.

The test results of proximate average fat content in treatment 1 (substitution durian seed flour 10%) 11.68%, treatment 2 (substitution of durian seed flour 20%) 15.92%, and treatment 3 (durian seed flour substitution 30%) 19.16%. The more substitutions durian seed flour more fat content. The minimum fat content of 10:42, 20:00 maximum, mean and standard deviation 3:31 15:58.

The test results of proximate average carbohydrate levels on treatment 1 (substitution durian seed flour 10%) 77.18%, treatment 2 (substitution of durian seed flour 20%) 67.89%, and treatment 3 (durian seed flour substitution 30%) 60.89%. Minimum carbohydrate content of 56.77, 79.81 maximum, mean and standard deviation 68.65 7:40. The more substitutions durian in seed flour the fewer the levels of carbohydrate.

The results of hedonic (test of passions) revealed that the panelists liked the colors on treatment 2 (cookies with flour substitution durian seed 20%) as much as 66.7%, while the less liked in treatment 3 (cookies with flour substitution durian seed 30%) of 56.7%. Furthermore, the panelists do not like the scent of the treatment 3 (cookies with durian seed flour substitution 30%) as much as 63.3%, while very fond of treatment 1 (cookies with durian seed flour substitution 10%) as much as 36.7%. Besides, the panelists do not like the taste in treatment 3 (cookies with substitution durian seed flour 30%) as much as 63.3%, while very fond of treatment 1 (cookies with durian seed flour substitution 10%) as much as 46.7%. However,, panelists liked the texture in treatment 2 (cookies with durian seed flour substitution 20%) as much as 56.7%, while the less liked in treatment 3 (cookies with durian seed flour substitution 30%) as much as 50.0%.

One way ANOVA test result revealed that there were significant differences between durian seed flour substitution of 10% to 30% of the content water ($p = 0.000$). There were significant

differences between flour substitution durian seed of 20% to 30% of the content water ($p = 0.002$). There were significant differences between durian seed flour substitution of 10% to 30% of content ash ($p = 0.000$). There were significant differences between flour substitution of durian seed 20% to 10% of content ash ($p = 0.001$). There were significant differences between durian seed flour substitution of 10% to 30% of the content protein ($p = 0.000$). There were significant differences between substitution durian seed flour of 20% to 30% of the content protein ($p = 0.001$). There were significant differences between durian seed flour substitution of 10% to 30% of the content fat ($p = 0.000$). There were significant differences between flour substitutions durian seed of 20% to 30% of the content fat ($p = 0.001$). There were significant differences between durian seed flour substitution of 10% to 30% of the levels carbohydrate ($p = 0.000$). There were significant differences between substitution durian seed flour of 20% to 30% of the levels carbohydrate ($p = 0.006$).

4. CONCLUSION

The hedonic test indicates that the panelist like color (66.7%), less like aroma (63.3%), do not like the taste (53.3%), and like the texture (56.7%). There is a significant difference between the substitution of durian seed flour with moisture, ash, protein, fat and carbohydrates. The more durian seed flour substitutes the less moisture and carbohydrates and more ash, protein and fat. It is recommended for people to take advantage of durian seeds as food and as other flour substitution but not more than 10%.

SOURCES OF FUND

Research was financed by the Development Research funding Health Workers of Health Polytechnic Health Ministry Semarang.

ACKNOWLEDGMENTS

The authors would like to thanks the Director of Health Polytechnic Semarang for supporting the project.

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Citation: Estuasih Dyah Pertiwi, Wiwik Wijaningsih & Susi Tursilowati. *Protein Fat, Carbohydrates and the Acceptance Level toward Durian Seed Flour Cookies*. *ARC Journal of Nutrition and Growth*.2018; 4(1):1-3. DOI: [dx.doi.org/10.20431/2455-2550.0401001](https://doi.org/10.20431/2455-2550.0401001).

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