



# Innovation and nutritional content analysis in making *Kue Lumpur* using green broccoli (*Brassica oleracea var. italica*) puree as substitute ingredient

*Inovasi pembuatan kue lumpur substitusi puree brokoli hijau (Brassica oleracea var. italica) dan analisis kandungan gizi*

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## Abstract

Broccoli is abundant in fiber, vitamins, and minerals and is useful as a complement to main dishes. However, the use of broccoli during baking is still limited. Therefore, an experiment was conducted to explore the use of broccoli as a substitute in the recipe of a traditional cake, Kue Lumpur, as a traditional Indonesian snack for various events. This study aimed to determine how to make green broccoli puree, the process of making Kue Lumpur with green broccoli puree substitution, the response of panelists, and the nutritional content of Kue Lumpur from green broccoli puree substitution. The experimental design research was conducted at Makassar State University from December 2021 to February 2022. The participants were 16 trained panelists. Data collection was carried out using documentation and questionnaires (Scoresheet). The process of making broccoli puree involves separation, blanching, steaming, and mashing in four formulations: F1 (10%), F2 (20%), F3 (30%), and F4 (40%). Data were analyzed using ANOVA and Duncan's t-test. The organoleptic Kue Lumpur with green broccoli puree substitution had significant acceptability ( $p < 0,05$ ) in formula F2 (20% green broccoli puree and 80% potato) according to color, texture, and taste. In conclusion, Kue Lumpur in formula F2 is very good based on organoleptic and hedonic properties, and shows that the aroma tends to be more fragrant and preferred.

**Keywords:** Green Broccoli, Kue Lumpur, substitution.

## Abstrak

Brokoli tinggi kandungan serat, vitamin, dan mineral dalam jumlah melimpah, dan bermanfaat sebagai pelengkap hidangan utama. Pemanfaatan brokoli dalam pembuatan kue masih terbatas. Oleh karena itu, dilakukan eksperimen untuk mengeksplorasi penggunaan brokoli sebagai substitusi dalam resep salah satu kue tradisional, yaitu Kue Lumpur, sebagai jajanan tradisional Indonesia sebagai makanan ringan dalam berbagai acara. Penelitian bertujuan untuk mengetahui cara membuat *puree* brokoli hijau, mengetahui proses pembuatan Kue Lumpur dengan substitusi *puree* brokoli hijau, mengetahui respon panelis, dan mengetahui kandungan gizi Kue Lumpur dari substitusi *puree* brokoli hijau. Penelitian berdesain eksperimen, telah dilakukan di Universitas Negeri Makasar, sejak Desember 2021 sampai Februari 2022. Subjek merupakan panelis terlatih sebanyak 16 panelis. Teknik pengumpulan data dilakukan dengan dokumentasi dan angket (Scoresheet). Proses pembuatan *puree* brokoli yaitu pemisahan, blanching, pengukusan, dan penghalusan pada empat formulasi yaitu F1(10%), F2(20%), F3(30%), dan F4(40%). Analisis data menggunakan uji beda ANOVA dan Duncan. Hasil, organoleptik Kue Lumpur dengan substitusi *puree* brokoli hijau memiliki daya terima yang signifikan ( $p < 0,05$ ) pada formula F2 (20% *puree* brokoli hijau dan 80% kentang) sesuai aspek warna, tekstur dan

rasa. Kesimpulan, Formula F2 sangat bagus berdasarkan organoleptik dan hedonik, serta menunjukkan bahwa aromanya cenderung lebih harum dan disukai.

**Kata Kunci:** Brokoli hijau, Kue Lumpur, substitusi

## Introduction

Indonesia has many diverse vegetable plants. Vegetables are plants that are often used as food ingredients to complement rice and side dishes. Vegetables are rich in fiber, vitamins, and minerals, which are beneficial for daily consumption. Vegetables can be divided into several groups: leaf vegetables, root vegetables, fruit vegetables, flower vegetables, root vegetables, stem vegetables, and seed vegetables. Regular consumption of vegetables with balanced portions makes the body healthier and can rejuvenate cells in the body (Arias et al., 2022; Ayu, 2014).

Green broccoli is a vegetable with many benefits. Green broccoli is a plant belonging to the *Brassicaceae* family, the *botrytis L* variety, and the *Cysoma* subvariety. The word broccoli comes from the Italian "broco," which means "bud." Green broccoli consists of a combination of dark green florets that collect and form large flowers (Nath et al., 2015). Green broccoli plants are classified as shrubs with a root system that can reach a depth of 60-70 cm, these plants grow well and thrive when planted in porous and loose soil. The scientific classification of broccoli plants includes the *Brassicaceae* or cabbage families (Pasaribu, 2007).

Green broccoli contains various essential vitamins and minerals such as vitamin C, calcium, sodium, potassium, iron, and selenium. Other substances in broccoli include sulfur in the form of glucosinolates, antidote compounds, monoterpenes, and genistein. Likewise, flavonoids and fiber also enrich the nutritional content of broccoli (Butu & Rodino, 2019; Sunardi, 2015). The community generally only processes green broccoli in the form of stir-fry and serves as a complementary vegetable to the menu. However, in addition to complementing the menu, green broccoli can also be processed and mixed as an ingredient in wet cakes, namely *Kue Lumpur* (Devi et al., 2022).

*Kue Lumpur* is a traditional Indonesian snack with a high taste; therefore, it is still in demand by the Surabaya people. The characteristics of the *Kue Lumpur* are its round shape and soft mud-like texture. The essential

ingredients for making *Kue Lumpur* are flour, potatoes, coconut milk, butter, eggs, and sugar, with raisins garnished. *Kue Lumpur* is a light snack with the main ingredients being coconut milk, potatoes, wheat flour, and eggs (Sari, 2012; Syafitri & Mandasari, 2021). This cake is classified as wet cake, so it cannot be stored for a long time (Swandawidharma, 2016). *Kue Lumpur* is widely known by the public because these cakes are often sold in traditional markets and are often used as daily snacks during school meetings, recitations, family gatherings, traditional events, etc. *Kue Lumpur* comes from Surabaya, East Java, Indonesia. This cake has a soft texture, and its top tends to be wet and slightly soft (Abduh, 2020). Several types of *Kue Lumpur* are often found, such as *Kue Lumpur* with a mixture of potatoes (Syafitri & Mandasari, 2021) and *Kue Lumpur* with pumpkin mixture (Agustin et al., 2017), which have been mashed and added to the cake mixture.

Based on the background above, this research aims to make innovations from *Kue Lumpur*, a traditional cake popular with Indonesian people that will be substituted with green broccoli puree. Broccoli has good nutritional value because it is high in fiber, acts as an antioxidant, and is a vegetable that is easily found and cultivated in Indonesia (Kusumawardani et al., 2022). The use of broccoli in cake-making is still lacking; this research can contribute to the processing of cakes that contain better nutrition. In addition, people are presently new to *Kue Lumpur*, which is substituted with potatoes or pumpkin; therefore, this research will explore and standardize *Kue Lumpur* by adding green broccoli puree.

## Methods

An experimental method was used in this study. In this study, experiments were conducted using several different cake formulations: F0 (0% green broccoli puree and 100% potato), F1 (10% green broccoli puree and 90% potato), F2 (20% green broccoli puree and 80% potato), F3 (30% green broccoli puree and 70% potato),

and F4 (40% broccoli green puree and 60% potato). The experimental method was used to find a formula to produce good-quality *Kue Lumpur* with green broccoli puree.

This research was conducted in two locations: The Culinary Education Laboratory, Department of Family Welfare Education (PKK), Faculty of Engineering, State University of Makassar, and Makassar Health Laboratory Center, from December 2021 to February 2022. The methodology employed for data collection in this study involves both the utilization of documentation and a questionnaire in the form of a scoresheet. Subsequently, the data analysis approach adopted pertains to quantitative descriptive analysis, focusing on the outcomes derived from scoresheet data.

Experiments with four different formulations were then tested organoleptically by trained panelists. The trained panelists were students and lecturers in the Department of Family Welfare Education, totaling 16 trained panelists. These panelists possess the ability to discern the basic tastes and aromas, differentiation thresholds, concentration levels, and memory retention of flavors and scents. The panelists will be asked to rate the quality of *Kue Lumpur* with green broccoli puree substitution, namely color, aroma, texture, taste, overall score, and hedonic test.

The hedonic test is the most widely used test to measure the level of preference for a product. This level of preference is called the hedonic scale, which uses an 11-point category scale, namely the greatest imaginable like, like extremely, like very much, like moderately, like slightly, neither like nor dislike, dislike slightly, dislike moderately, dislike very much, dislike extremely, and greatest imaginable dislike (Lawless et al., 2010). The data that were successfully obtained in the organoleptic test will be analyzed using the mean test, difference test using ANOVA, and Duncan's follow-up test.

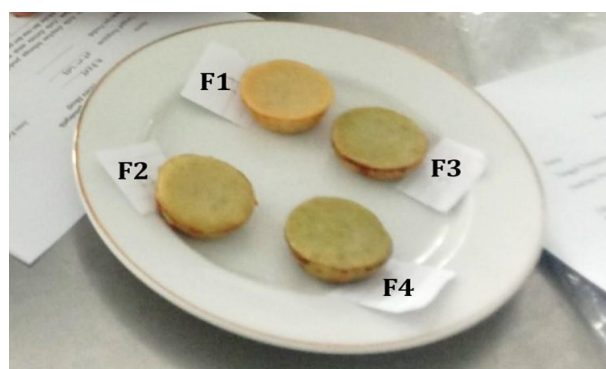
After conducting organoleptic tests, the selected *Kue Lumpur* with green broccoli puree substitution will be tested for nutritional content analysis at the Makassar Health Laboratory Center to determine its nutritional content. Analysis of nutritional content (proximate) is a process of chemical analysis to identify nutritional content, such as carbohydrates, proteins, fats, water, and ash in a food substance.

## Result and Discussion

The process for producing green broccoli puree is as follows: (1) The first step is to separate the broccoli flower heads and stems; (2) Then, the blanching process is carried out for 10 s so that the bacteria attached to the broccoli can disappear and lighten the color of the broccoli flowers. The blanched broccoli was then soaked in cold water to prevent the broccoli from wilting and to retain its color; (3) the process of steaming green broccoli for 5 min to ripen and soften the broccoli; (4) finally, the process of grinding green broccoli used a grinder to obtain puree results with good texture and consistency.

The steps for making *Kue Lumpur* with green broccoli puree substitution are as follows: (1) Prepare the materials and tools to be used; (2) Next, steam the potatoes until cooked and mashed; (3) Do the weighing for all ingredients according to the *Kue Lumpur* formulation; (4) Sugar, eggs, and salt are added to the mixture and then mixed using a high speed until thickened; (5) In the next step, flour and mashed potatoes are added to the mixture; (6) Coconut milk is added little by little; (7) Then add melted margarine; (8) Add the green broccoli puree and continue stirring until the mixture is evenly distributed; (9) Prepare a mold, and grease it with margarine; (10) The dough is poured into the mold, then steamed for 15 minutes; (11) After the dough is cooked, it can be removed and cooled.

Experiments were conducted with four cake formulations, namely F1, F2, F3, and F4, as shown in Figure 1. The *Kue Lumpur* recipe formulation for green broccoli puree substitution is shown in Table 1.



**Figure 1.** *Kue Lumpur* green broccoli puree substitution with a comparison of formulation

### Organoleptic Test Results

After making four types of *Kue Lumpur* with green broccoli puree substitution composition, the four types of *Kue Lumpur* were presented to the panelists for organoleptic tests with the aim of determining the hedonic quality and

fondness or hedonic tests of these products. Table 2 shows the results of the panelists' assessment of the quality of *Kue Lumpur* substitution of green broccoli puree with formulations F1 (10%), F2 (20%), F3 (30%), and F4 (40%) using ANOVA.

**Table 1.** Recipe formulation of *Kue Lumpur* with green broccoli puree substitution (%)

Ingredients	F0	F1 (10%)	F2 (20%)	F3 (30%)	F4 (40%)
Broccoli puree	0	2,91	5,82	8,73	11,64
Potato	29,10	26,19	23,28	20,37	17,46
Sugar	14,54	14,54	14,54	14,54	14,54
Egg yolk	2,79	2,79	2,79	2,79	2,79
Margarine	5,81	5,81	5,81	5,81	5,81
Egg whites	3,83	3,83	3,83	3,83	3,83
Flour	14,54	14,54	14,54	14,54	14,54
Coconut milk	29,10	29,10	29,10	29,10	29,10
Salt	0,29	0,29	0,29	0,29	0,29
Total	100	100	100	100	100

**Table 2.** Organoleptic test results of *Kue Lumpur* with green broccoli puree substitution using ANOVA

Indicators	F1	F2	F3	F4	p-value	Trend	Conclusion
Color	6,25±1,065 <sup>d</sup>	5,50±0,516 <sup>c</sup>	3,75±1,000 <sup>b</sup>	2,75±0,775 <sup>a</sup>	0,000**	-1,225x	Tends to be darker
Aroma	5,50±1,211 <sup>a</sup>	5,56±0,512 <sup>a</sup>	5,44±1,209 <sup>a</sup>	5,88±1,147 <sup>a</sup>	0,659	0,1x	Tends to be more fragrant
Texture	6,00±0,730 <sup>b</sup>	6,25±0,577 <sup>b</sup>	5,50±1,155 <sup>ab</sup>	5,00±1,633 <sup>a</sup>	0,011*	0,375x	Tends to be less soft
Taste	6,00±0,632 <sup>c</sup>	6,25±0,775 <sup>c</sup>	4,50±1,673 <sup>b</sup>	3,50±1,751 <sup>a</sup>	0,000**	-0,925x	Tends to be more bland
Overall	5,50±1,317 <sup>b</sup>	5,75±0,683 <sup>b</sup>	5,25±1,390 <sup>a</sup>	4,00±1,506 <sup>a</sup>	0,001**	-0,5x	Tends to be more unpleasant
Fondness / Hedonic Test	8,06±1,769 <sup>bc</sup>	8,50±1,633 <sup>c</sup>	7,00 ± 2,477 <sup>ab</sup>	6,00±2,066 <sup>a</sup>	0,004**	-0,768x	Tends to be more disliked

Note: F1 (10%), F2 (20%), F3 (30%), F4 (40%); \*\* p < 0,01 = Very Different; \* p < 0,05 = Different; p > 0,05 = Indifferent

### Color

The organoleptic test results for *Kue Lumpur* color in the four formulations showed a significant color difference. This is due to the pigment content of green broccoli. Pigments are substances that produce color. In the *Kue Lumpur* product, the substitution of green broccoli puree produces a green color compared to *Kue Lumpur*, which has not been substituted

with green broccoli puree. Thus, it can be concluded that the more green the broccoli puree, the darker the green color (not bright).

In a study (Syarifah, 2019) that examined the effect of *tempeh* flour substitution and the proportion of liquid (water and green broccoli puree) on the organoleptic properties of dry noodles, the results showed that the more green broccoli puree was added, the greener the dry

noodles produced with the proportion of liquid (10%: 90%) will have a dark green color because green broccoli contains chlorophyll (Zhang et al., 2021). The quality of the color selected in the formula *Kue Lumpur* substitution of green broccoli puree was F1 with the addition of 10% green broccoli puree with the "bright" color measure.

#### Aroma

The aroma of food is one of the determinants of whether it is considered delicious. The results of the organoleptic test on the aroma of *Kue Lumpur* substitution of green broccoli puree showed that with the addition of green broccoli puree, the aroma of *Kue Lumpur* increased even though there was one formula that experienced a slight decrease, namely at F3—evidenced by the value of 0,1x from the results of the panelists, showing that the acceptance of *Kue Lumpur* aroma increased with the addition of green broccoli puree.

This is in line with previous research (Jalasena & Anjani, 2016), which found that antioxidant activity, physical properties, and acceptance level of marshmallow candy with the addition of broccoli obtained panelists' preference for the aroma, increased with the addition of 15% green broccoli to marshmallow candy. From the panelists' assessment, the formula chosen was F4 with 40% green broccoli puree substitution, with the criteria of a slightly fragrant aroma.

#### Texture

Texture is complex and related to the structure of the material, which consists of three elements: mechanical (hardness and elasticity), geometric (gritty and crumbly), and mouthfeel (oily and runny) (Chen & Rosenthal, 2015). In addition, texture plays an essential role in determining the quality of a food product. The results of the organoleptic test on the texture of the *Kue Lumpur* showed that the more green broccoli puree was added, the softer the texture of the *Kue Lumpur*, even though F2 experienced a slight increase of 6,25.

In a study conducted by Afriani et al. (2015), who studied the preparation of snakehead fish *pempek*s with the addition of green broccoli, the resulting texture showed that the higher the concentration of green

broccoli added, the lower the stickiness of the *pempek*. In line with this study, the green broccoli puree substitution *Kue Lumpur* produced showed that adding green broccoli into the *Kue Lumpur* would create a texture that was not soft in each formulation. From the panelist's assessment, the formula chosen was F2, which used 20% green broccoli puree and 80% potato puree with the criteria of "soft."

#### Taste

Taste is the most important aspect in determining the quality of *Kue Lumpur* besides color, aroma, and texture. Taste can support food products that are acceptable to consumers. The results of the organoleptic test on the taste quality of green broccoli puree substitution *Kue Lumpur* showed that product F2 was the most preferred formulation by panelists with the addition of 20% green broccoli puree.

These results are in line with those of a previous study (Afriani et al., 2015), which found that if more green broccoli was added to *pempek*, then the organoleptic results in terms of taste showed that panelists were less fond of it with an average A0 organoleptic test score of 6,42 (without the addition of broccoli) and A4 of 5,38 (20% addition of green broccoli).

#### Overall

The overall assessment of *Kue Lumpur*, with green broccoli puree as a substitute ingredient, is an overall assessment of hedonic quality, including color, aroma, texture, and taste. The organoleptic test results showed that F2 was in the highest position with the addition of 20% green broccoli puree.

Based on the results of the organoleptic test, the addition of green broccoli puree had a significantly different effect on the overall liking of appearance. It can be seen that F1 (10% green broccoli puree) with a value of 5,5, F3 (30% green broccoli puree) with a value of 5,25, and F4 (40% green broccoli puree) with a value of 4,00 has no significant effect on the whole *Kue Lumpur*. In comparison, F2 (20% green broccoli puree) was the preferred formulation, with a value of 5,75 compared to other formulations.

### Hedonic Test Results

The acceptance assessment of the green broccoli puree substitution *Kue Lumpur* product is a preference assessment using an 11-point category scale from the greatest imaginable-like to the greatest imaginable-dislike Lawless et al., (2010). Based on the organoleptic test, as many as 16 panelists showed that the acceptance of the hedonic test for *Kue Lumpur* with green broccoli puree substitution decreased. However, at one point, it experienced an increase, namely in formula F2. The results of the acceptance test show that product F2 obtained the highest score, with an average value of 8,5.

Acceptance of a product if the value of the acceptance test exceeds half the approval. Therefore, the *Kue Lumpur* substitution of green broccoli puree was categorized as acceptable by 15 people, or 93,7%, as shown in Table 3. It can be concluded that the *Kue Lumpur* formula that was selected after the organoleptic and hedonic tests was the F2 formula (20% broccoli and 80% potato).

**Table 3.** Fondness/hedonic test results of *Kue Lumpur* with green broccoli puree substitution

Indicators	F1	F2	F3	F4
Accepted	13 (87,5%)	15 (93,7%)	10 (62,6%)	8 (50%)
Neutral	2 (12,5%)	0	0	0
Unaccepted	1 (6,3%)	1 (6,3%)	6 (37,5%)	8 (50%)

### Nutritional Content Analysis

To find out the nutritional content of *Kue Lumpur* with green broccoli puree as a substitute ingredient, nutrient calculations were carried out using the Food Composition List (*Data Komposisi Bahan Makanan - DKBM*) shown in Table 4. In addition, an analysis was also carried out using the results of the energy analysis from the Makassar Health Laboratory Center for the selected formulation F2, as shown in Table 5.

**Table 4.** Results of nutritional content analysis of *Kue Lumpur* with green broccoli substitution based on List of Food Ingredients

Parameter	F0	F1	F2	F3	F4	Trend	Conclusion
Energy (Kcal)	246	244	242	241	240	-1,5x	Decreased
Protein (g)	3,55	3,55	3,54	3,54	3,53	-0,005x	Decreased
Fat (g)	12,52	12,52	12,53	12,53	12,53	0,003x	Increased
Carbohydrate (g)	31,07	30,73	30,4	30	29,64	-0,359x	Decreased
Water Content (%)	47,9	47,56	46,95	46,36	45,77	-0,005x	Decreased
Ash Content (g)	0,7	0,69	0,68	0,67	0,67	-0,008x	Decreased

#### Energy

Using DKBM calculations, the result of adding green broccoli puree to each *Kue Lumpur* formulation decreased by six points. The results of the DKBM calculations for the F2 formula with the addition of 20% green broccoli puree produced 242 kcal of energy. Then, compared with the results of the energy analysis from the Makassar Health Laboratory Center on the selected formulation F2, which is equal to 312 kcal, it can be concluded that energy has increased by 70 points. This is because the protein, fat, and carbohydrate levels in green broccoli, as determinants of energy, are also relatively high.

#### Protein

Proteins are macromolecules with molecular weights between five and several million, consisting of two essential and non-essential

amino acids. The amount of protein per 100 g contained in *Kue Lumpur* without green broccoli puree substitution, based on DKBM calculations, was 3,55%. After adding green broccoli puree with the selected formula F2 20%, it decreased to 3,54%. It was then compared with the results of the analysis of protein content from the Makassar Health Laboratory Center in the selected formulation F2 which was 3,91% so, it could be concluded that the protein content increased by 0,36%.

#### Fat

Fat is an important food substance for human health. In addition, fat is present in almost all food ingredients with different contents (Bentsen, 2017). The amount of fat per 100 g contained in *Kue Lumpur* without green broccoli puree substitution was 12,52%. After

adding green broccoli puree with the selected formula F2 20%, it increased to 12,53%.

It was then compared with the results of the analysis of fat content from the Makassar Health Laboratory Center in the selected formulation F2 which was 15,50%, so it could be concluded that the fat content increased by 2,98%. Based on the Indonesian National Standards (SNI) requirements for wet cake quality standards, generally, the maximum fat content is 3% (Badan Standardisasi Nasional, 1996; Sirait et al., 2019; Tilohe et al., 2020), so the *Kue Lumpur* with green broccoli puree substitution exceeds the SNI requirements. This is because the fat content of coconut milk is considered high.

**Table 5.** Nutritional content analysis of *Kue Lumpur* with green broccoli substitution F2

Parameter	Selected Formulation F2
Energy (Kcal)	312
Protein (g)	3,91
Fat (g)	15,50
Carbohydrate (g)	39,24
Water Content (ml)	40,70
Ash Content (g)	0,65

#### Carbohydrate

The primary sources of carbohydrates in plant-derived food are starch (amylum) and sugars (mono- and disaccharides). The amount of carbohydrates per 100 g contained in *Kue Lumpur* without green broccoli puree substitution, based on DKBM calculations, was 31,07%. After adding green broccoli puree with the selected formula F2 20%, it decreased to 30,4%.

It was then compared with the results of the analysis of carbohydrate content from the Makassar Health Laboratory Center on the selected formulation F2, which was 39,25%, so it could be concluded that the carbohydrate content increased by 8,85%. Based on the SNI requirements for wet cake quality standards, in general, the maximum carbohydrate content is 8% (Badan Standardisasi Nasional, 1996); therefore, the *Kue Lumpur* with green broccoli puree substitution exceeds the SNI requirements. This is because the carbohydrate content of wheat flour and potatoes was relatively high.

#### Water Content

Water is a component of food that has recently been considered in food processing because it affects the durability of food ingredients during storage. The amount of water content per 100 g contained in *Kue Lumpur* without green broccoli puree substitution based on DKBM calculations was 47,9%. After adding green broccoli puree with the selected formula, F2, the water content decreased to 46,95%.

Then, it was compared with the results of the analysis of water content from the Makassar Health Laboratory Center on the selected formulation F2 which was 40,70%, it could be concluded that the water content had decreased by 6,25%. Based on SNI requirements for wet cake quality standards, the maximum water content is generally 40% (Badan Standardisasi Nasional, 1996; Khofifah & Mardiana, 2023), so *Kue Lumpur* with green broccoli puree substitution slightly exceeds the SNI requirements.

#### Ash Content

Ash is an inorganic or mineral mixture found in processed foods. The total ash content per 100 g contained in *Kue Lumpur* without green broccoli puree substitution, based on DKBM calculations, was 0,7%. After adding green broccoli puree with the selected formula, F2, 20% decreased to 0,68%.

It was then compared with the results of the analysis of ash content from the Makassar Health Laboratory Center in the selected formulation F2 which was 0,65%, so it could be concluded that the ash content decreased by 0,3%. Based on the SNI requirements for wet cake quality standards, generally, the maximum ash content is 3% (Badan Standardisasi Nasional, 1996); therefore, *Kue Lumpur* with green broccoli puree substitution fulfills the SNI requirements.

## Conclusion

This experimental study explored the substitution of *Kue Lumpur* with green broccoli puree. Four *Kue Lumpur* formulations were tested. The best formula based on organoleptic testing and hedonic testing is F2. The test results for the F2 formula indicated that the aroma tended to be more fragrant and favored by the panelists.

In addition, the cake has a very good nutritional value because it contains optimal nutritional value, fiber, and antioxidants. Based on the results of the analysis of nutritional content, the protein content in *Kue Lumpur* with the F2 formulation increased and the ash content decreased, which met the requirements of the Indonesian National Standards (SNI). Meanwhile, the carbohydrate and fat contents are still relatively high because *Kue Lumpur* was initially made from flour and potatoes. For future research, it is hoped that more attention will be paid to nutritional content so that processed food intake can be made more nutrient-rich.

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