



# The Effect of Addition of Pumpkin Yellow Seed Flour on Characteristics and Acceptance of Roll Cake

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**Abstract** - Yellow pumpkin (*curcubita moschata*) is a plant whose meat is often used by the community as food, whether it is only processed through the steaming process or as an additional ingredient in various preparations. In addition to pumpkin flesh, there are pumpkin seeds which can also be used as food. The purpose of this study was to determine the effect of adding pumpkin seed flour to the characteristics and acceptability of roll cake. This type of research used in this study is an experimental study using a Static Group Comparison research design with 4 treatments 100%: 0% (P0), 75%: 25% (P1), 50%: 50% (P2) and, 0%: 100% (P3). Computerized dataprocessing is presented in the form of narration and tables. Data analysis was performed by SPSS. The results of this research show that P2 is the panel's most preferred sample with a hedonic assessment score of 4,55 color, taste 4,34, texture 4,48, aroma 4,24 while the nutritional value of the sample consists of water content, ash content, fat content, protein content, and carbohydrate content respectively 44.37%; 1.22%; 10.97%; 10.39%; and 33.06%. The effect of adding pumpkin seed flour to organoleptic characteristics in the manufacture of roll cake has a very significant effect such as; color, taste, texture, flavour. Roll cake with the addition of pumpkin seed flour with a percentage of 50%: 50% has the highest level of preference over organoleptic parameters compared to other roll cake products.

**Keywords:** Pumpkin seed flour, Roll cake, Nutritional value.

## I. INTRODUCTION

Roll caked was a sponge cake baked in a shallow pan, filled with jam or buttercream and rolled. The roll itself is made from flour, sugar, margarine, chicken eggs and elmusifier.<sup>1</sup>

The potential of the flour market in Indonesia is still very high. Currently the average consumption of flour in Indonesia reaches 25 kilograms / year per capita. One important factor that increases the level of consumption of wheat flour is because it is very easy to be processed into a variety of foods. Such as noodles, bread, biscuits, cake, martabak, etc. so that the ease of processing flour is able to stimulate the food industry both large and small, especially UKM's sector.<sup>2</sup>

Efforts to reduce the consumption of wheat flour in

Indonesia are classified as high, namely by replacing or substituting wheat flour with local food. Purchasing wheat flour with

local food will have an impact on the quality of the product that is made, thus preventing flour without a significant reduction in product quality by substituting wheat flour with local food ingredients. The benefits of the composition / nutrients in food can be added to the product. Potential local food as a substitute for wheat flour between potatoes, cassava, sweet potatoes, yam and pumpkin.<sup>3</sup>

Yellow pumpkin (*Cucurbita moschata*) is a type of spreading plant that is classified in the type of annual plants that are widely found in Indonesia, especially in the highlands. Pumpkin has a feature that has a sweet taste, aroma and attractive color. Pumpkin can only be processed into vegetable compote.<sup>4</sup> Pumpkin contains fairly complete nutrition containing protein, protein, pro vitamin A, vitamin B1 and vitamin C. The chemical composition of pumpkin is 32 kcal energy, protein 1.1 g. Carbohydrates 6.6 g, vitamin B1 0.08 mg, and vitamin C 5.2 mg.

Apart from the use of pumpkin flesh, pumpkin seeds which are often used as waste and are not used can also be made into a product that is rich in benefits. Traditionally the seeds of *C. moschata* Duch ex Poir are used as medicine for intestinal worms. Yellow pumpkin seeds have long been used in traditional medicine in Chinese and Indian communities in America as *antihelminthic* against *ascariasis*, *cestodiasis*, and *schistosomiasis*.<sup>5</sup> Pumpkin seeds are also used for demulsions, diuretics (art facilitators) and tonics. Other information states that since time immemorial pumpkin seeds are used to treat prostate disorders, namely enlarged prostate glands (prostatic gland hypertrophy) in elderly men.<sup>6</sup>

Nutrient content contained in pumpkin seeds include rare amino acids such as m- carboxyphenylalanine, pyrazolalanina, aminobutyric acid, ethylparagine and citrulline. There are also amino acids that are needed by the prostate gland, namely alanine, glycine, and glutamate acid. It also contains curcubidine, which is a 3-amino carboxypyrolidine which has uses as a worm medicine. There are also Zink elements that are very important for the health of the reproductive organs, including the prostate gland.

Magnesium which is also important for prostate gland health. The main fatty acids, namely linoleic acid (43.56%) and oleic acid (24.38%). Vitamin E or tocopherol, namely  $\beta$ -tocopherol and  $\gamma$  tocopherol. Carotenoids, namely lutein and  $\beta$ -carotene. Data from the United States Department of Agriculture (USDA), every 2 tablespoons of pumpkin seeds (about 28 grams) contains 163 calories, 4 grams of carbohydrates (including 2 grams of fiber and less than 1 gram of sugar), 8 grams of protein, 8% daily iron needs.<sup>7</sup>

Based on the explanation above it is very clear that this pumpkin seed have many health benefits, therefore, in this study we chose a product target more focused on children because as we know that worms are more often found in children although adults can also get worms. However, this product is also best consumed by elderly men who have a risk of prostate gland hypertrophy. If in the previous explanation the pumpkin seeds were only consumed directly without being processed, then in this study the pumpkin seeds will be made into pumpkin seed flour and substituted with wheat flour so that they can produce a new product that is processed "pumpkin seed flour roll cake"

From this background, we are interested in conducting research on the Effect of Addition of Pumpkin Seed Flour to on Characteristics and Acceptance of Roll cake.

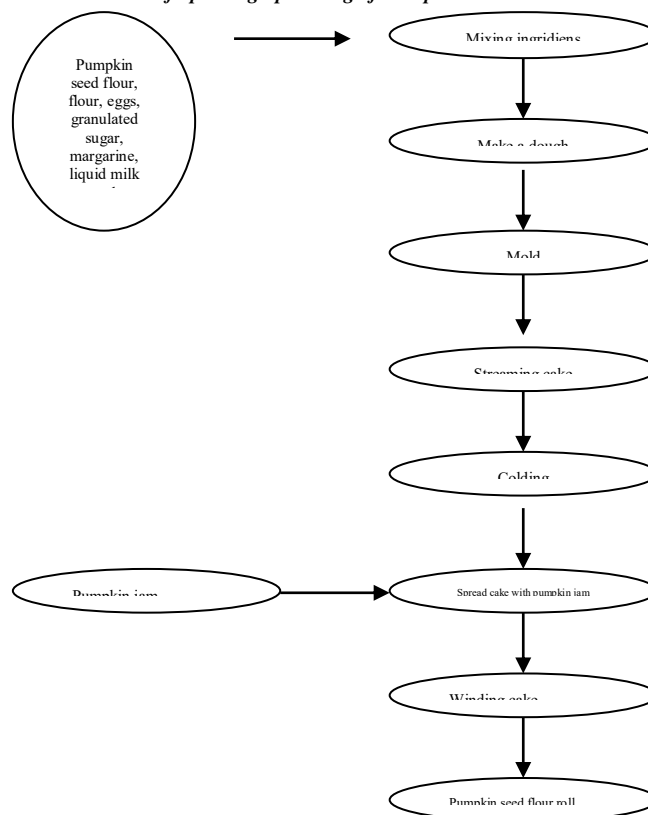
## II. RESEARCH METHODOLOGY

This research was an experimental study using a non-factorial Completely Randomized Design (CRD). Formula used: 1. P0 (ROLL CAKE) = 0 g pumpkin seed flour + 40 g wheat flour; P1 (ROLL CAKE) = 10 g pumpkin seed flour + 30 g wheat flour; 3. P2 (ROLL CAKE) = 20 g pumpkin seed flour + 20 g wheat flour and 4. P3 (ROLL CAKE) = 40 g pumpkin seed flour + 0 g wheat flour

The research was carried out at the Nutrition Technology Laboratory at Polytechnic of Health Palembang. The equipment used are stoves, pans, silk, stainless steel spoons, mixers, strainer, bowls, dough basins, plates, knives, digital scales, plastic gloves, blenders, questionnaire forms, stationery and proximate analysis tools.

Steps of Research. The flowchart of making the modified roll sponge looks like in the Figure below :

Picture: Process of Spinning Spreading of Pumpkin Seed Flour Roll Cake



## III. RESULTS AND DISCUSSION

The formulation of pumpkin powder flour roll cake that has been made subsequently goes through the organoleptic test stage to determine its acceptability. Organoleptic test is a sensory analysis of a product which includes taste, texture, color and flavor.

Organoleptic test is carried out using a 1-5 score scale with the category from the smallest to the largest namely very dislike, dislike, rather not like, like and really like. Organoleptic test was carried out on the three formulas of pumpkin roll flour, namely P1, P2, and P3.

### 1. Result of Organoleptic Test Based on Taste Criteria

Table 1. Result of Organoleptic Test Based of Taste Criteria

Organoleptic	P1		P2		P3	
	n	%	n	%	n	%
Very dislike	0	0	0	0	0	0
Dislike	0	0	1	3,4	1	3,4
Rather not like	3	10,3	5	17,2	5	17,2
Like	12	41,4	6	20,7	8	27,6
Really Like	14	48,3	17	58,6	15	51,7
	<b>29</b>	<b>100</b>	<b>29</b>	<b>100</b>	<b>29</b>	<b>100</b>

Based on Table 1 it can be seen from the total score of the three treatments in the organoleptic test on texture, the roll cake that has the highest total percentage is 48.3% with criteria very fond of P1 treatment, while the roll cake that has the lowest total percentage is 3.4 % with very criteria do not like the treatment of P2 and P3. This shows that the majority of panelists preferred the sponge texture in P1 treatment compared to P2 and P3 treatments.

Food taste is an assessment factor for the results of the incorporation of material formulations in making a food product that is assessed with the tongue, by measuring sweetness, acidity, salty, bitter or other combinations and is a determinant of the level of preference for food products. The taste in the three treatments of roll cake is influenced by the use of basic ingredients namely flour substitute for pumpkin seed flour. From the results of the organoleptic test it was found that the roll cake with P1 treatment was preferred over P2 and P3. This is thought to be caused by the percentage of pumpkin seed flour addition which is only slightly compared to the flour, so the flavor arising from the pumpkin seed flour itself does not greatly affect the taste of the roll cake. Whereas in P2 and P3 the percentage of the addition of pumpkin seed flour was more than P1, it was the effect on the assessment of the taste of the roll cake because the panelists had just tasted food made from pumpkin seed flour.

## 2. Result of Organoleptic Test Based on Texture Criteria

**Table 2. Result Of Organoleptic Test Based On Texture Criteria**

Organoleptic	P1		P2		P3	
	n	%	n	%	n	%
Very dislike	0	0	0	0	1	3,4
Dislike	0	0	0	0	0	0
Rather not like	6	20,7	4	13,8	7	24,1
Like	11	37,9	7	24,1	10	34,5
Really Like	12	41,4	18	62,1	11	37,9
<b>Total</b>	<b>29</b>	<b>100</b>	<b>29</b>	<b>100</b>	<b>29</b>	<b>100</b>

Based on Table 2, it can be seen from the total score of the three treatments in the organoleptic test on texture, the roll cake that has the highest total percentage is 62.1% with criteria very fond of P2 treatment, while the roll cake that has the lowest total percentage is 3.4 % with very criteria do not like the treatment of P3. This shows that the majority of panelists preferred the sponge texture in P2 treatment compared to P1 and P3 treatments.

Food texture, is an assessment factor determined by the senses of the centuries or by touch by measuring the hardness or consistency of food products. Texture is influenced by all the ingredients that comprise flour, sugar, fat, milk, eggs. Food texture is determined by water content, fat content, carbohydrates and protein. The greater the protein content, the greater the water absorption.

Pumpkin seed flour is a source of high protein which increases water absorption so that the resulting sponge roll texture is more robust.<sup>8</sup>

Evidenced by the formula P2 roll cake that is more 50%: 50% addition of pumpkin seed flour with flour so that the texture is solid but still soft and fluffy well. Whereas in the P1 roll the flour is used more than the pumpkin seed flour which is 75%: 25% with the resulting texture is also dense and soft and well developed. But in the P3 roll cake with all the main ingredients using yellow pumpkin seed flour, the resulting texture remains soft but does not expand properly.

## 3. Result of Organoleptic Test Based on Colour Criteria

**Table 3. Result Of Organoleptic Test Based On Colour Criteria**

Organoleptic	P1		P2		P3	
	n	%	n	%	n	%
Very dislike	0	0	0	0	0	0
Dislike	0	0	0	0	3	10,3
Rather not like	4	13,8	2	6,9	6	20,7
Like	6	20,7	9	31	10	34,5
Really Like	19	65,5	18	62,1	10	34,5
<b>Total</b>	<b>29</b>	<b>100</b>	<b>29</b>	<b>100</b>	<b>29</b>	<b>100</b>

Based on Table 3 above, it can be seen from the total score of the three treatments in the color organoleptic test, the roll cake

that has the highest total percentage is 93.1% with the criteria for like and really like to the P2 treatment, while the roll cake that has the lowest total percentage is 10.3% with the criteria of not liking P3 treatment. This shows that most of the panelists preferred the color of the roll cake in the P3 treatment.

The color of the roll cake can be influenced by the addition of various concentrations of raw materials used, and the process of steaming the sponge roll. This roll cake is a blend of pumpkin seed flour which produces greenish. In P1 rolls the color produced is paler due to the use of a small pumpkin seed flour so that the color of the pumpkin seed flour is inferior to the white color of the dough produced by the flour.<sup>9</sup>

In P2 sponge the resulting color is balanced not too thick and not too pale due to the composition of the main ingredients namely flour and yellow pumpkin seed flour. While the P3 roll sponge has a slightly thicker green color than the two previous formulas because the P3 sponge material the main used is only pumpkin seed flour. In increasing the level of interest of the panelists we also added a little food coloring to make the motif on the roll cake.

#### 4. Result of Organoleptic Test Based on Flavour Criteria

**Table 4. Result Of Organoleptic Test Based On Flavour Criteria**

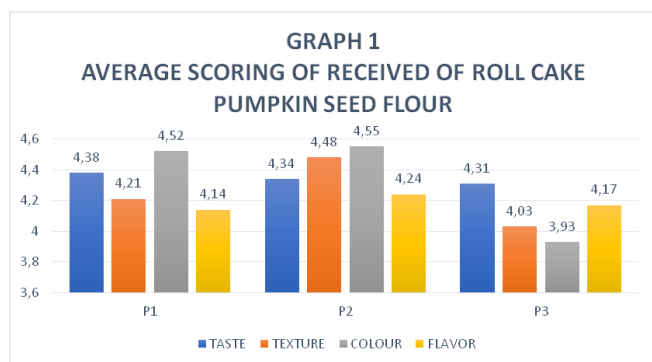
Organoleptic	P1		P2		P3	
	n	%	n	%	n	%
Very dislike	0	0	0	0	0	0
Dislike	1	3,4	1	3,4	2	6,9
Rather not like	6	20,7	4	13,8	5	17,2
Like	10	34,5	11	37,9	8	27,6
Really Like	12	41,4	13	44,8	14	48,3
<b>Total</b>	<b>29</b>	<b>100</b>	<b>29</b>	<b>100</b>	<b>29</b>	<b>100</b>

Based on Table 4 above, it can be seen from the total score of the three treatments in the organoleptic test for flavour, the roll cake which has the highest total percentage of 82.7% with the criteria for like and really like to the P2 treatment, while the roll cake which has the lowest total percentage is 3.4% with the criteria of not liking treatment P1 and P2. This shows that most of the panelists preferred the flavour of roll sponge in P2 treatment compared to P1 and P3 treatments.

There was no significant difference in the flavour in the three treatments of kissed roll cake. This is because one of the basic ingredients in the production of pumpkin flour rolls is not much different between treatments. The distinctive aroma of pumpkin seed flour is very dominating and due to the presence of other basic ingredients such as milk, vegetable oil, so the resulting aroma is balanced.

The scent is a flavour that is difficult to measure so that it usually causes different opinions in assessing the quality of the aroma. Differences in opinion can be caused by everyone having different smells, although they can distinguish scents, but each person has different preferences.<sup>10</sup>

#### 5. Graph Average Scoring of Received of Roll Cake



Pumpkin Seed Flour

The graph above shows that the type of formula most favored by panelists from all aspects of evaluation is the P2 roll cake with the main ingredient being 20 grams of flour and 20 grams

of pumpkin seed flour. Although the average difference is very small from the results of the graph. That way this graph shows the results that the addition of pumpkin seed flour in making roll cake can still be accepted by the community, this is very good where in the future the use of wheat flour can be reduced.

#### 6. Result of Proximate Analysis of Roll Cake Pumpkin Seed Flour

**Table 5. Result of Proximate Analysis of Cake Pumpkin Seed Flour**

No	Cod e	Water (%)	Ash (%)	Fat (%)	Protein (%)	Carbohy drate (%)
1.	P1	44,37	0,61	10,39	10,39	33,67
2.	P2	37,95	0,61	10,44	10,44	40,04
3.	P3	37,74	0,59	10,36	10,36	40,58
		40,02	0,60	10,39	10,39	38,09

Based on Table 5 above, it is known that the proximate analysis results of roll cake pumpkin seed flour tested on the three formulas used obtained formula P1 (per 100 grams), protein 10.39%, fat 10.97%, carbohydrate 33.67%, Ash 0.61%, and Water 44.37% and then formula P2 (per 100 grams), protein 10.44%, fat 10.97%, carbohydrate 40.04%, Ash 0.61%, and Water 37.95% and formula P3 (per 100 grams), protein 10.36%, fat 10.73%, carbohydrate 40.58%, Ash 0.59%, and Water 37.74%.

#### 7. Target of Production

Based on the explanation above it is very clear that this pumpkin seed has many health benefits, therefore, in this study we chose a product target more focused on children because as we know that worms are more often found in children although adults can also get worms. However, this product is also best consumed by elderly men who have a risk of prostate gland hypertrophy.

### IV. CONCLUSION

From the results of the study concluded that the best roll formula according to the assessment of the organoleptic test was P2 roll cake (20 grams of flour, 20 grams of pumpkin seed flour). The results of the proximate analysis of the best pumpkin seed flour roll formulation were 291.93 Kcal (per 100 grams), protein 10.39%, fat 10.89%, Carbohydrate 38.09%, Ash 0.60%, and Water 40.02%. From the analysis results, the fat content exceeds the standards in SNI 01-3840-1995.

### V. RECOMMENDATION

It is necessary to reduce the high fat content in the roll cake by looking for a better composition of ingredients with the same functional and lower fat content.

Further research needs to be carried out on the chemical analysis of the levels of tannin and curcubine in pumpkin roll flour products as an antihelmintic. And the effect of the administration of pumpkin flour roll is for the treatment or prevention of intestinal worms in children.

### VI. ACKNOWLEDMENT

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