

Use and acceptability of kamote, saluyot, malunggay and cacao in the preparation of chiffon cake

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ABSTRACT

This study aimed to determine the use and acceptability of kamote, jute, and malunggay leaves powder in preparing cacao chiffon cake. The salient findings of the study yield that: (1) The three groups of respondents' evaluation in the chiffon cake revealed that they "liked much" proportion 3 on 2 grams of kamote,

malunggay, and saluyot leaves powder in terms of the given criteria as evidenced by the average weighted means of 4.33, 4.25 and 4.23. (2) There are no significant differences in three groups of respondents' evaluation on the prepared chiffon cake with three proportions kamote, malunggay, and saluyot leaves powder as to the given criteria. The prepared cacao chiffon cake with three different proportions of kamote, saluyot, and malunggay leaves powder are all acceptable to the teenagers, young adults, and adults.

Keywords

Chiffon Cake, Jute (Saluyot), alunggay, Cocoa, Camote Tops

Introduction

Today, young and old alike want to have a healthy lifestyle. They try different foods that can help the body to be strong and healthy. In general, a healthy person doesn't smoke, eats healthy food like fruits, vegetables and drinks 8 glasses of water.

Kamote, saluyot, malunggay leaves and *cacao* can do some miracle, especially in healing several sicknesses and pains that people encounter every day. Being non-aromatic, it is also good in preparing different types of foods.

According to an online article, "*Gusto ko Healthy ka*", sweet potato tops or camote tops or sweet potato leaves or simply *talbos ng kamote* in Tagalog are excellent sources of anti-oxidative which may protect the human body from oxidative stress that is associated with many diseases including cancer and cardiovascular diseases. Its scientific

name is *Ipomoea Batatas*. It contains protein, dietary fiber, lipid, and essential minerals and nutrients such as calcium, phosphorous, magnesium, sodium, potassium, sulfur, iron, copper, zinc, manganese, aluminum and boron. Moreover, camote tops:

- ▶ lower blood sugar and cholesterol
- ▶ regulate good bowel movements
- ▶ boost the immune system in preventing infections and disease

According to the Food and Nutrition Research Institute (FRNI) of the Department of Science and Technology (DOST), one-half cup cooked *saluyot* leaves (45g) is equivalent to 20 kilo calories and will provide the following amount of nutrients: Protein-1.30 grams; Calcium-87.3 milligrams; Phosphorus-22.5 milligrams; Iron-1.0 milligrams; Beta carotene-1334 micrograms; Thiamine-0.02 milligrams; Riboflavin-0.04 milligrams; Niacin-0.30 milligrams; and Ascorbic acid-10 milligrams; Fat-0.30 grams; Carbohydrates-3.1 gram; Fiber-0.40 grams;

and Retinol Equivalent (vitamin A)–222 micrograms. Moreover, saluyot has an antioxidant activity of 77% or α -tocopherol equivalent (vitamin E) of 48.9 gram. In other words, *saluyot* contains all the important nutrients needed by the body.

One of the vegetables which have been promoted by the Department of Health (DOH) is *malunggay*, scientifically called *Moringa Oleifera*. The World Health Organization (WHO) also mentioned that *malunggay* is a low cost health enhancer in poor countries around the world. Studies show that it is rich in Vitamin C (equivalent to seven oranges) and carotene (four times found in carrots), iron and high density lipoprotein or good cholesterol. It is also high in calcium and loaded with nutrients. *Malunggay* leaves contain two times the protein in milk and three times the potassium. *Malunggay* is now being exploited for its other medicinal and market possibilities through powder form, capsules, breads, teas and even chips.

According to Zack (2012) raw *cacao* contains many important vitamins and minerals including (a) Magnesium, and other essential minerals like calcium, sulfur, zinc, iron, copper, potassium, and manganese (b) Polyphenols called flavonoids, with antioxidant properties (c) Vitamins: B1, B2, B3, B5, B9, E (d) Essential heart-healthy fat: oleic acid a monounsaturated fat (e) Protein (f) Fiber. These nutrients found in raw chocolate have been linked to a number of health benefits: (1) It can lower blood pressure & improve circulation (2) Can promote cardiovascular function & health (3) Raw chocolate can neutralize free radicals (4) Can improve digestion and enhance physical and mental well-being.

The present study seeks to determine the use and acceptability of *kamote*, *saluyot*, *malunggay* leaves powder and *cacao* as an ingredient in the preparation of chiffon cake.

There are no significant differences in the evaluations of the three groups of respondents on the acceptability of chiffon

cake with *saluyot*, *kamote* and *malunggay* leaves powder.

Methods

This study utilized the experimental method of research.

Sources of data obtained from 60 respondents – 20 teenagers, 20 young adults, and 20 adults, all from Marikina Polytechnic College.

Distribution of the Respondents by Group

Group	No. of Respondents	Age Range
Teenagers	20	16 – 20 years old
Young Adults	20	21 – 35 years old
Adults	20	36 and above
TOTAL	60	

Data Gathering Instrument

The data-gathering instrument used in this study was the questionnaire which examined the evaluation of the three groups of respondents on the finished product in terms of its sensory attribute such as appearance, color, texture, aroma, and flavor.

The scale below was used in evaluating the finished product.

Range	Rating Scale	Descriptive Value
4.50 – 5.00	5	Like Very Much (LVM)
3.50 – 4.49	4	Liked Much (LM)
2.50 – 3.49	3	Slightly Liked (SL)
1.50 – 2.49	2	Disliked Much (DM)
1.00 – 1.49	1	Very Much Disliked(VMD)

CRITERIA	5 EL	4 VL	3 ML	2 SL	1 D
Appearance					
1. The chiffon cake has unique appearance.					
2. It is attractive.					
3. It is free from cracks.					
4. It is free from crust.					
5. It has flat/evenly rounded top.					
Aroma					
1. The chiffon cake has very strong aroma.					
2. It has a chocolate smell.					
3. It has no distinctive odor.					
4. It has no bitter smell.					
5. It has a sweet smell.					
Taste					
1. The chiffon cake tastes very good.					
2. It has well blended flavor.					
3. It is palatable.					
4. It has chocolate taste.					
5. It has no aftertaste.					
Texture					
1. The chiffon cake is slightly moist.					
2. It looks presentable.					
3. It is foamy.					
4. It is crumbly.					
5. It has a fine grain.					
Color					
1. The chiffon cake has uniform color.					
2. It has strong brown color.					
3. It is attractive to the eyes.					
4. It is chocolate in color.					
5. It has dark brown edges.					

The data gathering procedure started with the experiment itself. The *kamote*, *saluyot*, and *malunggay* leaves powder were first prepared. Then this was utilized as an ingredient of the *cacao* chiffon cake.

The steps in making *cacao* chiffon cake with *kamote*, *saluyot*, and *malunggay* leaves powder are the following:

A) Process of preparing Leaves

1. Gather fresh *kamote*, *saluyot*, and *malunggay* leaves.

2. Wash the *kamote*, *saluyot*, and *malunggay* leaves in running water.
3. Destalk the *kamote*, *saluyot*, and *malunggay* leaves in their stem.
4. Air-dry for five days.
5. Sun-dry for 2-3 days or oven dry at 110°C for 5-10 minutes.
6. Pulverize the dried *kamote*, *saluyot*, and *malunggay* leaves.
7. Weigh/Measure the ground *kamote*, *saluyot*, and *malunggay* leaves.

Ingredients needed for the Preparation of Cacao Chiffon Cake with Kamote, Saluyot, and Malunggay Leaves Powder

INGREDIENTS	Proportion 1	Proportion 2	Proportion 3
1. Cake flour	170 g	170 g	170 g
2. Baking powder	10 g	10 g	10 g
3. White sugar	220 g	220 g	220 g
4. Cacao, grated	45 g	45 g	45 g
4. Butter, melted	170 g	170 g	170 g
5. Eggs	6 pcs.	6 pcs.	6 pcs.
6. Evaporated milk	180 mL	180 mL	180 mL
7. Vanilla	5 ml	5 ml	5 ml
8. Kamote, Jute and Moringa leaves powder	0.6 %	0.9 %	1.2 %

B) Steps in preparing Cacao Chiffon Cake with Kamote, Saluyot, and Malunggay Leaves Powder

1. Preheat oven to 350 degree Fahrenheit.
2. Grease and lined a 9 inch cake pan.
3. Sift all the dry ingredients and then measured them accurately.

4. Mix flour, baking powder, sugar, grated *cacao*, *kamote*, *malunggay* and *saluyot* leaves powder.
5. Melt the butter at low heat and add to the dry ingredients then add the milk, eggs and vanilla.
6. Mix all the ingredients until smooth, either by hand or by using an electric mixer at slow speed.
7. Transfer to cake pan and bake at 350 degrees Fahrenheit until a cake tester inserted in center comes out clean, approximately 35 to 45 minutes.

After baking the chiffon cake, the researcher had it tasted by the evaluators who rated the finished product according to the given criteria. The research instruments were administered by the researcher herself to ensure that the raters would be rating the right products in three different proportions. During the administration of the evaluation instruments, the respondents were assured that their responses would be treated with strict and utmost confidentiality. The researcher personally retrieved the evaluation instrument, then tallied the gathered data.

Results

Table 1
Summary of the Evaluation of the Teenager Respondents on the Cacao Chiffon Cake in Three Different Proportions

Criteria	0.6%		0.9%		1.2%	
	Mean	V. I.	Mean	V. I.	Mean	V. I.
Appearance	3.74	LM	3.96	LM	4.21	LM
Aroma	3.66	LM	3.73	LM	4.13	LM
Taste	3.74	LM	3.98	LM	4.35	LM
Texture	3.66	LM	3.44	LM	4.10	LM
Color	3.92	LM	3.96	LM	4.45	LM
Overall WM	3.74	LM	3.81	LM	4.25	LM

Table 2 yields that the teenager respondents' have overall weighted means of 4.06, 4.11 and 4.33 for the 0.6%, 0.9% and 1.2% respectively which are all interpreted as "liked much". This finding implies that the prepared *cacao* chiffon cake in three different proportions of *Kamote*, *Saluyot*, and *Malunggay* leaves powder are acceptable to the teenager respondents in terms of the five criteria, namely: appearance, aroma, taste, texture, and color.

Table 2
Summary of the Evaluations of the Young Adult Respondents on the Cacao Chiffon Cake in Three Different Proportions

Criteria	0.6 %		0.9 %		1.2 %	
	Mean	V. I.	Mean	V. I.	Mean	V. I.
Appearance	3.86	LM	4.06	LM	4.15	LM
Aroma	3.89	LM	4.07	LM	4.29	LM
Taste	4.24	LM	4.17	LM	4.37	LM
Texture	4.04	LM	3.92	LM	4.37	LM
Color	4.28	LM	4.34	LM	4.45	LM
Overall WM	4.06	LM	4.11	LM	4.33	LM

As reflected in table 1, the young adult respondents' have overall weighted means of 3.74, 3.81 and 4.25 in the 0.6%, 0.9% and 1.2%, respectively which are all interpreted as "liked much".

This finding implies that the prepared *cacao* chiffon cake in three different proportions of *Kamote*, *Saluyot*, and *Malunggay* leaves powder are acceptable to the young adult respondents' in terms of appearance, aroma, taste, texture and color.

Table 3
Summary of the Evaluation of the Adult Respondents on the Cacao Chiffon Cake in Three Different Proportions

Criteria	0.6%		0.9%		1.2%	
	Mean	V. I.	Mean	V. I.	Mean	V. I.
Appearance	3.87	LM	3.96	LM	4.25	LM
Aroma	3.78	LM	3.54	LM	3.85	LM
Taste	3.78	LM	4.02	LM	4.42	LM
Texture	3.61	LM	3.75	LM	4.26	LM
Color	4.00	LM	4.03	LM	4.36	LM
Overall WM	3.81	LM	3.86	LM	4.23	LM

Table 3 shows that the adult respondents have overall weighted means of 3.81, 3.86 and 4.23 in the 0.6%, 0.9%, and 1.2%, respectively which are all interpreted as “liked much”. This result implies that the prepared cacao chiffon cake in three different proportions of *Kamote*, *Saluyot*, and *Malunggay* leaves powder are acceptable to the adult respondents’ in terms of the five cited criteria. It further means that whether the cacao chiffon cake were prepared with 1 gram, 1.5 grams or 2 grams of *Kamote*, *Saluyot*, and *Malunggay* leaves powder, they are acceptable to the adults as a snack food.

Table 4
Analysis Of Variance Test among the Three Groups of Respondents’ Evaluations of Chiffon Cake with 1.2% of *Camote*, *Saluyot* and *Malunggay* Leaves Powder

Source of Variation	Sum of Squares	df	Mean Square	Computed F	Critical F value	Decision
Between Groups	0.0683	2	0.0341	0.256	3.1531	Do not reject Ho
Within Groups	7.8685	59	0.1334			
Total	7.9367	61				

Table 4 reveals that the ANOVA result among the three groups of respondents’ evaluation according to 1.2% of *Kamote*, *Saluyot*, and *Malunggay* leaves powder to *Cacao* Chiffon Cake had a computed F value of 0.256 which is lesser than critical F value of 3.1531, thus, the null hypothesis is not rejected. Therefore, there are no significant differences among the three groups of respondents according to 1.2% of the aforesaid leaves powder to *Cacao* Chiffon Cake. These findings imply that the three groups of respondents’ have a common evaluation of the *Cacao* chiffon cake with 2 grams proportion of *Kamote*, *Saluyot*, and *Malunggay* leaves powder.

Discussion

The evaluation of the three groups of respondents on the cacao chiffon cake

revealed that they “liked much” proportion 3 which is the 2 grams of *kamote*, *malunggay*, and *saluyot* leaves powder in terms of appearance, aroma, taste, texture and color as evidenced by the average weighted means of 4.33, 4.25 and 4.23 for teenager, young adults and adult.

There is no significant difference in the evaluation of the three groups of respondents on the cacao chiffon cake for all proportions as regards the criteria, as evidenced by all their critical F values which are higher than the computed F values.

Recommendations

The suggestions offered by the respondents’ to further improve the *cacao* chiffon cake are the following: (a) Make the *cacao* chiffon cakes foamier, (b) The *cacao* chiffon cake has a great blending of flavors, and (c) Add some toppings to make it look more attractive. They commented that the cacao chiffon cakes don’t have an aftertaste for all proportions of *kamote*, *malunggay* and *saluyot* leaves powder, and that; they are good snacks for those who don’t eat vegetables.

Conclusions

Based on the findings of the study, this conclusion was drawn:

The prepared cacao chiffon cake with three different proportions of *Kamote*, *Saluyot*, and *Malunggay* leaves powder are all acceptable to the teenagers, young adults and adults.

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