



SUGAR BEET AND ZUCCHINI CAKES: A PRODUCT DEVELOPMENT

Melchor S. Lumiked

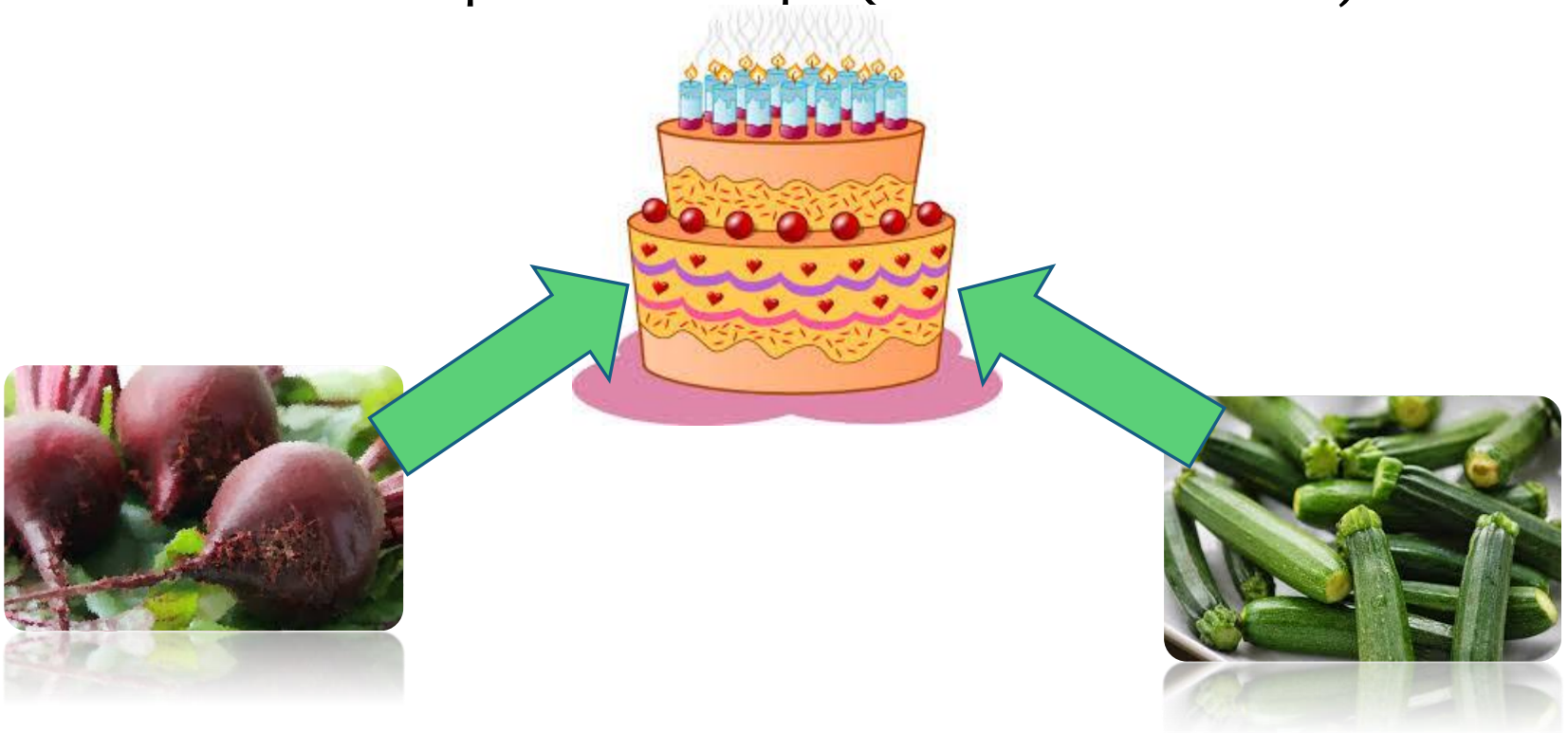
Reasons why the study was conducted:

- * Low utilization and production of sugar beets and zucchini
- * To give consumers a new and healthy cake as an option
- * Entrepreneurs will have a new baked product to offer to their costumers

OBJECTIVES OF THE STUDY

General objective:

To develop a cake recipe (one-bowl method)



Specific objectives:

1. determine the quality characteristics of sugar beet and zucchini cakes in terms of color, appearance, texture, and flavor by an expert panel
2. determine the consumer's acceptability of the sugar beet and zucchini cakes in terms of color, appearance, texture, flavor and overall liking when panelists are grouped according to:
 - a. age and
 - b. gender
3. determine the cost of producing a sugar beet and zucchini cakes
4. determine the nutritional facts of sugar beet and zucchini cakes
5. identify the factors that influence the panelists in accepting sugar beet and zucchini cakes

MATERIALS AND METHODS

- Place and Time of the Study
- Treatments
- Preparation of Cake
- Treatment of Data

PLACE

TAWANG ELEMENTARY SCHOOL



TIME → May to December

TREATMENTS

	INGREDIENTS		
Sugar beet cake T1	Bread flour 187 g / 1 ½ C White sugar 250 g / 1 ¼ C Salt 5 g / 1 t Cinnamon 5 g / 1 ½ t Baking powder 5 g / ¾ t Baking soda 5 g / ¾ t Whole eggs 102 g / 2 pcs Vegetable oil 100 ml / ½ C	150 g / 1 C	Grated Vegetable
Sugar beet cake T2		300 g / 2 C	
Zucchini cake T1		150 g / 1 C	
Zucchini cake T2		300 g / 2 C	

PREPARATION OF CAKE



1



2



3



4



Baking Powder



5



6



7

TREATMENT OF DATA

9-Point Hedonic Scale

1.00 – 1.88	Like extremely (LE)	Super like
1.89 – 2.77	Like very much (LVM)	Like very much
2.78 – 3.66	Like moderately (LM)	Like moderately
3.67 – 4.55	Like slightly (LS)	Like a little
4.56 – 5.44	Neither like nor dislike (NLD)	Maybe like or maybe not
5.45 – 6.33	Dislike slightly (DS)	Dislike a little
6.34 – 7.22	Dislike moderately (DM)	Dislike moderately
7.23 – 8.11	Dislike very much (DVM)	Dislike very much
8.12 – 9.00	Dislike extremely (DE)	Super dislike

T-test and ANOVA












RESULTS

1. Quality characteristics of the vegetable cakes

	Sugar Beet Cake T1	Sugar Beet Cake T2	Zucchini Cake T1	Zucchini Cake T2
Color	Brown	Dark Brown	Light Brown	Light Brown
Appearance	Sunken	Symmetrical	Flat	Symmetrical
Texture	Moist	Moist	Moist	Moist
Flavor	Moderately distinct vegetable flavor	Very distinct vegetable flavor	Moderately distinct vegetable flavor	Moderately distinct vegetable flavor

2. Consumer's Acceptability - AGE

Color				
	Sugar Beet Cake T1	Sugar Beet Cake T2	Zucchini Cake T1	Zucchini Cake T2
APPEARANCE				
	Sugar Beet Cake T1	Sugar Beet Cake T2	Zucchini Cake T1	Zucchini Cake T2
TEXTURE				
	Sugar Beet Cake T1	Sugar Beet Cake T2	Zucchini Cake T1	Zucchini Cake T2
FLAVOR				
	Zucchini Cake T2	Sugar Beet Cake T1	Sugar Beet Cake T2	Zucchini Cake T1
OVERALL LIKING				
	Sugar Beet Cake T1	Sugar Beet Cake T2	Zucchini Cake T1	Zucchini Cake T2



SIGNIFICANT





NOT SIGNIFICANT

AGE

zucchini cake, the panelists
accepts all attributes of the cake
at the same level

2. Consumer's Acceptability - GENDER

Color				
	Sugar Beet Cake T1	Sugar Beet Cake T2	Zucchini Cake T1	Zucchini Cake T2
APPEARANCE				
	Zucchini Cake T1	Sugar Beet Cake T1	Sugar Beet Cake T2	Zucchini Cake T2
TEXTURE				
	Sugar Beet Cake T1	Sugar Beet Cake T2	Zucchini Cake T1	Zucchini Cake T2
FLAVOR				
	Sugar Beet Cake T1	Sugar Beet Cake T2	Zucchini Cake T1	Zucchini Cake T2
OVERALL LIKING				
	Sugar Beet Cake T1	Sugar Beet Cake T2	Zucchini Cake T1	Zucchini Cake T2

GENDER

Zucchini cake T1 (with 150 grams grated zucchini), the males and females does not accept the cake sample at the same level

3. Cost of Producing the Vegetable Cakes

		Sugar beet cake T1	Sugar beet cake T2	Zucchini cake T1	Zucchini cake T2
A. Direct Material Cost		55.02	61.02	54.27	59.52
B. Direct Labor Cost (30%)		16.51	18.06	16.28	17.86
C. Manufacturing Overhead Costs (Utilities 10% + Transportation)		22.50	23.10	22.43	22.95
D. Total Production Cost		94.03	102.18	92.98	100.33
E. Profit (20%)		18.81	20.44	18.6	20.07
G. Selling Price	Per slice (8 slices)	14.11	15.33	13.95	15.05
	Whole cake	112.84	122.62	111.58	120.4

4. Nutritional Facts of Sugar Beet and Zucchini Cakes

CAKE SAMPLES	NUTRITIONAL FACTS OF VEGETABLE CAKES PER RECIPE						PERCENTAGE ADEQUACY TO THE RENI PER DAY FOR FILIPINOS BASED ON THE 13-15 AGE BRACKET				
	Energy (kcal)	Protein (g)	Fat (g)	Carbohydrates (g)	Calcium (mg)	Iron (mg)		Energy (kcal)	Protein (g)	Calcium (g)	Iron (mg)
Sugar Beet Cake T1	349.6	4.85	14.13	51.08	44.82	1.81		12.31%	6.83%	4.48%	9.05%
Sugar Beet Cake T2	357.31	5.16	14.16	52.58	52.13	1.96		12.58%	7.27%	5.21%	9.8%
Zucchini Cake T1	345.12	4.75	14.15	50.17	40.5	1.73		12.15%	6.69%	4.05%	8.65%
Zucchini Cake T2	348.3	4.98	14.2	50.75	43.5	1.81		12.26%	7.01%	4.35%	9.05%

13-15 year olds (male) - RENI per day

Energy

• 2800 kcal - 12.31%

Protein

• 71 g - 6.83%

Calcium

• 1000 mg - 4.48%

Iron

• 20 mg - 9.05%

5. Factors Influencing the Panelists in Accepting the Vegetable Cakes

FACTORS	FREQUENCY	RANK
1. Aesthetic appeal	30	2
2. Cost	4	3.5
3. Hunger	4	3.5
4. Nutrients	31	1

CONCLUSION

1. Characteristics - are within the quality expected in a cake
2. Acceptable in all attributes
3. Cost of producing the cake samples and selling price vary
4. A good alternative snack to fulfill the RENI of an individual
5. Nutritious and aesthetic appeal

RECOMMENDATIONS

1. Further study in maintaining the natural color of sugar beets in making cakes by using cream of tartar and removing salt.
2. Promote the utilization of sugar beets and zucchini in cake making to increase awareness about its nutritional benefits and also the consumption of the said vegetables.
3. Schools can produce vegetable cakes enriched with sugar beets and zucchini since it was generally accepted by the students who served as panelists and to help them minimize the consumption of unhealthy foods.
4. Test the marketability of the vegetable cakes outside the school to determine whether it is a viable option for entrepreneurs.