

CHAPTER IV

RESULT AND DISCUSSION

4.1 Product Result

This Kabocha Crispy has a good shape and has an interesting aroma. However, there are some problems with texture and taste. In terms of texture, most of the panelists seem to like products with a crunchier or crunchier texture. They stated that the texture of this crispy kabocha was slightly chewy and not thin enough. In addition, in terms of taste, there were some panelists who didn't really like the taste.

4.2 Nutrient Facts

4.2.1 Nutrition Table

The nutritional value of Kabocha Flesh is as follows

Table 4. 1 Nutrition Value of Kabocha Flesh per 100 gr

Calorie (kcal)	51
Fat (g)	0.50
Carbohydrates (g)	10
Protein (g)	1.70
Sodium (g)	0
Fiber (g)	2.70
B-Karoten (mcg)	1569

Kabocha flesh is also contain 0.20 mg Vitamin B1, 0.10 mg Vitamin B3, 40 mg of calcium, 180 mg fosfor, and 200 mg calium.

The nutrition value of Kabocha Seeds is as follows

Table 4. 2 Nutrition Value of Kabocha Seeds per 100 gr

Calorie (Kcal)	446
Fat (g)	15.4
Protein (g)	18.55
Carbohydrate (g)	53.57
Sodium (mg)	18
Kalium (mg)	9.19

Kabocha seeds are also known as a source of essential amino acids such as histidine, isoleucine, leucine, methionine, phenylalanine, threonine, and valine (Kim, *et al.*; Dotto, 2020), minerals such as zinc, phosphorus, iron, potassium, magnesium, sodium and calcium.

4.2.2 Nutrition Calculation

The nutrition value of ingredients used in the recipe for kabocha crispy

Table 4. 3 Nutritional Value of Ingredients used in The Recipe for Kabocha Crispy

Ingredients	Calories (kcal)	Carbohydrate (g)	Protein (g)	Fat (g)	Fiber (g)	Sodium (g)
Kabocha	10.2	2	0.34	0.1	0.54	0
Flour (20g)						
Egg whites (50g)	25	0.40	5.4	0	0	0
Butter (30g)	247.3	0.46	0.16	27.2	0	0
Powdered sugar (50 g)	1.18	28.2	0	0	0	0
Baking powder (½ tsp)	0	0	0	0	0	0
Kabocha seeds (30 g)	133.8	16.07	5.56	4.62	0	5.4
Cheese (150 g)	525	10.5	30	30	0	0
TOTAL	942.47	57.17	36.06	61.92	0.54	5.4

4.2.3 Nutrition Label

Nutrition Facts	
15 servings per container	
Serving size	3 (27g)
Amount Per Serving	
Calories	190
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 12.3g	62%
<i>Trans Fat</i> 0g	
Sodium 0mg	0%
Total Carbohydrate 3g	1%
Dietary Fiber 1g	4%
Total Sugars 3g	
Includes 0g Added Sugars	0%
Protein 7g	14%
Not a significant source of cholesterol, vitamin D, calcium, iron, and potassium	
*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	

Figure 4. 1 Nutrition Fact of Kabocha Crispy

4.3 Food Safety and Packaging

4.3.1 Processing and Storage Temperature

The process of making Kabocha Crispy is divided into two parts, the first is makes Kabocha Powder, which takes approximately two days for dehydrate the kabocha, and the second is processing kabocha crispy into a snack in the form of crackers.

Like many other dry food, kabocha crispy is best stored in cool, dry conditions to maintain its quality and extend its shelf life. Kabocha crispy can be stored in room temperature for 2 weeks with the silica gel inside the packaging. The silica gel packets, they are used to absorb moisture and help maintain the product's crispiness. Silica gel

can be effective in preventing moisture-related issues, such as sogginess or mold growth.

4.3.2 Self Life

Cookies are baked goods that typically have flour, sugar, and fat as their three main ingredients. They typically have low moisture content (1–5%) (Tuhumury et al., 2022). The low moisture content of crispy kabocha can make it difficult for enzyme and microbial activity to occur. This can contribute to the extended shelf life of crispy kabocha when stored at room temperature.

The low moisture content creates an environment that is unfavorable for microbial growth and enzymatic reactions, which are typically responsible for food spoilage. Microorganisms require water to survive and reproduce, so the limited moisture in crispy kabocha inhibits their growth. Similarly, enzymes, which are proteins that facilitate biochemical reactions in living organisms, also require water to function properly. The low moisture content slows down enzymatic activity, thus reducing the rate of deterioration in the kabocha.

As a result, crispy kabocha can be stored for about 2 weeks at room temperature without significant spoilage. However, it's important to note that environmental conditions, such as humidity and temperature fluctuations, can affect the shelf life of any food item. Proper storage in a cool, dry place is recommended to maintain the quality and freshness of crispy kabocha for the stated duration.

4.3.3 Product Packaging

Various materials, such as plastics, glass, metals, and papers and their composites, have been used for food packaging, serving the purposes of ensuring the safety of food products and facilitating easy handling and transport. However, due to consumers' increased health

awareness, the significance of transferring harmful materials from packaging materials into foods is of great concern. Food packaging is used to protect the food along the supply chain.

Otherwise, the handling of food product could be pricey and inefficient. Moreover, food packaging is to preserve the food from possible hazards; such as physical, chemical, or even microbiological; that can impact on quality and safety of the food itself. Selecting food packaging material has to consider cost, quality of product, and its ability to protect the food (Alamri et al., 2021). Glass, plastics, and metals are widely used as packaging containers since ages, but there are some main product and health safety concern of packaging, for example the bisphenol movement and some metals like cadmium. Today, packaging of food offers an active part in food quality and has progressed from basically a container to contain food which is convenient from harvesting to marketing of foods (Jan et al., 2020).

Kabocha Crispy is a ready-to-eat food, where it is usually served in a plastic jar . Plastic jar is selected to be the packaging material for Kabocha Crispy. PET is a thermoplastic polymer, which means that it can be easily reprocessed at high temperatures. Additionally, PET is easily recyclable because, as was previously mentioned, almost the entire beverage bottle production industry (including water and CSD) uses this particular polymer extensively (Nisticò, 2020). Polyethylene terephthalate (PET) is one of common plastic materials to be used as food packaging in a form of plastic jar. Polyethylene terephthalate (PET) plastic jar for the Kabocha Crispy have dimensions of 9.5 cm x 11 cm (500 ml).



Figure 4. 2 Polyethylene terephthalate Plastic Jar

The packaging label for the Kabocha Crispy includes information; such as product name, product excellences, ingredients, nutrition fact table (see Appendix).

Kabocha Crispy

100% Natural Ingredients
High Fiber & Protein

Nutrition Facts	
1b servings per container	
Serving size	3 (27g)
Amount Per Serving	
Calories	190
	% Daily Value*
Total Fat 0g	0%
Saturated Fat 12.3g	62%
Trans Fat 0g	
Sodium 0mg	0%
Total Carbohydrate 3g	1%
Dietary Fiber 1g	4%
Total Sugars 3g	0%
Includes 0g Added Sugars	0%
Protein 7g	14%

*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Kabocha Crispy
Kabocha Crispy is a type of cookie that is distinguished for having kabocha powder, and kabocha seeds as a principal ingredients. This cookie is modification from Almond Crispy

Ingredients:
Kabocha Seeds, Egg Whites, Butter, Sugar, Kabocha Powder, Baking Powder

BEST BEFORE

NETTO 135 GR



Figure 4.3 Logo Product

4.4 Financial Aspects

4.4.1 Product Cost

Product cost is calculated based on the total of all cost per month. The costs consist of raw material cost, packaging cost, and utility cost. The raw material cost is, is counted as 5 recipes per day.

1. Start-Up Capital

Table 4. 4 Start-Up Capital

Tools and Equipment	Quantity	Price (/unit)	Sub Total
Dehydrator	1	Rp. 385.000,00	Rp. 385.000,00
Mandoline	1	Rp. 62.000,00	Rp. 62.000,00
Sieve mesh 80	1	Rp. 5.000,00	Rp. 5.000,00
Whisk	1	Rp. 7.000,00	Rp. 7.000,00
Spoon	2	Rp. 5.600,00	Rp. 11.200,00
Scales	1	Rp. 24.000,00	Rp. 24.000,00
Grated Cheese	1	Rp. 3.200,00	Rp. 3.200,00
Baking Sheet	2	Rp. 24.000,00	Rp. 48.000,00
Baking Paper	5	Rp. 1.500,00	Rp. 7.500,00
Mixing Bowl	1	Rp. 9.500,00	Rp. 9.500,00
Oven	1	Rp. 700.000,00	Rp. 700.000,00
Almond Crispy Mold	1	Rp. 30.000,00	Rp. 30.000,00
Blender	1	Rp. 112.000,00	Rp. 112.000,00
TOTAL			Rp. 1.404.400,00

2. Packaging Cost

Table 4. 5 Packaging Cost

Packaging	Quantity	Price (/unit)	Sub Total
PET Plastic Jar	10	Rp. 4.000,00	Rp. 40.000,00
Sticker Logo	10	Rp. 600,00	Rp. 6.000,00
Sticker Label	10	Rp. 250,00	Rp. 2,500,00
Plastic Bag	10	Rp. 100,00	Rp, 1.000,00
Silica Gel	10	Rp. 60,00	Rp. 600,00
TOTAL (/day)			Rp. 50.100,00
TOTAL (/month)			Rp. 1.503.000,00

3. Utility Cost

Table 4. 6 Utility Cost

Facility	Quantity	Price (/unit)	Sub Total
Water	5 m ³	Rp. 2.000,00	Rp. 10.000,00
Electricity	10 kWh	Rp. 2.500,00	Rp. 25.000,00
			(kWh)
TOTAL (/day)			Rp. 35.000,00
TOTAL (/month)			Rp.1.050.000,00

4. Labour Cost

Table 4. 7 Labour Cost

Occupation	Personnel	Salary(/month)	Sub Total
Chef	1	Rp. 1.000.00,00	Rp. 1.000.000
TOTAL			Rp. 1.000.000

5. Raw Material Cost

Table 4. 8 Raw Material Cost

Ingredients	Quantity	Price (/unit)	Sub Total
Kabocha	10	Rp 48.000,00	Rp. 480.000,00
Flesh & Seeds		/kg	
Butter	300 gr	Rp. 16.500,00/ 250 gr	Rp. 19.800,00
Egg Whites	500 gr	Rp. 9.000/500 gr	Rp. 9.000,00
Baking	15 tsp	Rp. 13.000,00/ 110 gr	Rp. 7.000,00
Powder			
Powdered	200 gr	Rp. 9.500,00/ 500 gr	Rp. 3.800,00
Sugar			
Cheese	300 gr	Rp. 15.500,00/ 165 gr	Rp. 31.000,00
TOTAL (/Day)			Rp. 550.600,00
TOTAL (/Month)			Rp. 13.765.000,00

6. Total cost

$$\begin{aligned} \text{Fixed Cost} &= \text{Labour Cost} \\ \text{Variable Cost} &= \text{Raw Material, Packaging, Utility Cost} \\ \text{Total Cost (/month)} &= \text{Raw Material} + \text{Packaging} + \\ &\quad \text{Utility} + \text{Labour Cost} \\ &= \text{Rp. } 13.765.000 + \text{Rp.} \\ &\quad 1.503.000,00 + \text{Rp. } 1.050.000,00 \\ &\quad + \text{Rp. } 1.000.000,00 \\ &= \text{Rp. } 17.318.000,00 \end{aligned}$$

4.4.2 Selling Price

$$\begin{aligned} \text{Product Price} &= \frac{\text{Total Cost (/month)}}{\text{Total Product Units (/month)}} \\ &= \frac{\text{Rp. } 17.318.000,00}{250} \\ &= \text{Rp. } 69.272 \\ &= \text{Rp. } 69.300,00 \\ \text{Product Selling Price} &= \text{Product Price} + (\text{product price} \times \text{profit percentage}) \\ &= \text{Rp. } 69.300 + (\text{Rp. } 69.300 \times 35\%) \\ &= \text{Rp. } 69.300 + \text{Rp. } 24.225 \\ &= \text{Rp. } 93.555 / \text{Jar} \\ &= \text{Rp. } 94.000,00 / \text{Jar} \end{aligned}$$