

CHAPTER IV

RESULT AND CONCLUSION

4.1 Product Result

The nutritional value of vegan jerky bits depends on its ingredients. The main ingredient used to make vegan jerky bits is chickpea seitan. Seitan is a meat alternative made from wheat gluten. According Schepker in Baksh et al. (2022) Seitan is a meat substitute that offers a chewy and flavorful texture, making it a highly suitable choice for individuals who do not have gluten sensitivity. Individuals exhibiting gluten sensitivities refrained from consuming the product. Seitan is easy to process into a variety of dishes because it has a bland taste and is easy to season however it is not a very good protein source. By adding chickpeas into the seitan dough will add to the richness and increase the protein content

Seitan with chickpea flour have high amount of nutrition, especially plant-based protein sources. Research done by Anwar and EL CHAGHABY (2019) seitan contains 205 calorie, 34.2 g of protein, and 15.2 carbohydrate per 100g of seitan. However, the nutritional composition of seitan may exhibit variability due to the different components used in its preparation. According to Anwar and El CHAGHABY (2019) Seitan possesses a high protein content and can be regarded as a viable substitute for meat. The macronutrients and amino acids in seitan manufactured from chickpeas are quite similar to those in chicken, and the former have consistently been showed to substantially reduce the risk of a wide range of chronic diseases and other negative health outcomes Ward (2021).

4.2 Nutrition Facts

4.2.1 Nutrition Table

The nutritional value of Chickpea Seitan is as follows:

Table 4. 1 Nutrition Value of Cooked Seitan with per 100 g

Calorie (kcal)	217.06
Moisture (g)	51.30
Protein (g)	16.27
Fiber (g)	0.36
Carbohydrate (g)	15.24
Ash (g)	1.62

Source: Anwar and EL CHAGHABY , (2019)

Seitan contains high protein contain. Seitan is another meat substitute for vegetarians that is also referred to as "wheat meat" or "wheat gluten." Seitan is made by repeatedly washing dough made of wheat flour until a chewy mass known as proteinaceous gluten forms. For those without gluten allergies, the delicious and durable meat substitute seitan offers a promising. Since they are created from inexpensive raw materials, seitan-based meat substitutes such vegetable burgers, sausages, and nuggets are generally thought to be the least priced. Seitan products are easy to handle with and can be seasoned and cooked in a number of different ways. The chewy fiber textures that give flesh its uniformity have a consistency resembling seitan (Arora et al., 2023).

4.2.2 Nutrition Calculation

Astiana et al. (2023) several facts about the nutritional content of chickpeas were gathered based on numerous prior studies, and they are as follows:

Table 4. 2 Nutrition Value of Chickpeas per 100 g

Calorie (kcal)	364
Fat (g)	6.04
Protein (g)	19.3
Sodium (Mg)	24
Carbohydrate (g)	60.65
Cholesterol (g)	0

Astiana et al. (2023)

According to the nutritional value of chickpeas above, chickpeas are high in protein and low in fat content, Thus, it is suitable for consume by those who are on a diet. Chickpeas are the only type of nut that is high in protein and serum. Similar to what was written and published in Volume 18 (2019) of the International Journal of Gastronomy and Food Science (Astiana et al., 2023).

Table 4. 3 Nutrition Value of Ingredients used in The Recipe for Vegan Jerky Bits

Ingredients	Calories (kcal)	Carbohydrate (g)	Protein (g)	Fat (g)	Sugar (g)	Fiber (g)	Sodium (mg/100g)
Chickpeas (200gr)	728	121,3	38,6	12.08		31.6	48
Vital Wheat Gluten (125 gr)	517	14	100	2.5		4	
White Onion (80gr)	31	7	1		4	1	
Sugar (15gr)	58	15			15		
Brown Sugar (100gr)	380				97		28
Garlic powder (5gr)	13	3	1				2
Mushroom powder (5gr)	25						
Salt (30gr)							11, 627
Vegetable oil (70 ml)	561			63.5			
Water							
TOTAL	2,316	160.3	140.6	78.08	116	36.6	11,705

4.2.3 Nutrition Label

Nutrition Facts	
6 servings per container	
Serving size	(20g)
Amount Per Serving	
Calories	100
<small>% Daily Value*</small>	
Total Fat 4g	5%
Saturated Fat 0g	0%
<i>Trans Fat</i> 0g	
Sodium 590mg	26%
Total Carbohydrate 8g	3%
Dietary Fiber 2g	7%
Total Sugars 6g	
Includes 6g Added Sugars	12%
Protein 6g	12%
<small>Not a significant source of cholesterol, vitamin D, calcium, iron, and potassium</small>	
<small>*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.</small>	

Figure 4. 1 Nutrition Fact of Vegan Jerky Bits

4.3 Food Safety and Packaging

4.3.1 Processing and Storage Temperature

The procedure of making beef jerky is quite simple. Simple steps for preparing beef jerky include chopping the meat, flavoring it, and drying it. Typically, 5 to 10 cm long chunks of meat that are finely sliced crosswise are used to make jerky. Salt, sugar red, and coriander are the main components of jerky seasoning. First, all of the components are finely ground. mixed cuts of meat Stir in the ground spices until they are distributed evenly. After the combination was left for 10 minutes, the sliced meat began to absorb the flavor. Jerky can be dried either in the oven or in the sun. A method for preserving food is drying. It occurs because of dry conditions that prevent the growth of decaying microorganisms. Damage from unwanted chemicals prevents enzymes from operating normally Earle in Fuadi (2018).

According Winarno in Fuadi (2018) drying has the advantage of safeguarding easily harmed goods. Reduced water content results in

less material weight and volume, which lowers costs and storage requirements. Foodstuffs can experience undesirable discolouration, such as browning, in addition to volume shrinkage. Due to the still-traditional nature of the preparation, beef jerky is still not well packaged, making it susceptible to contamination by germs and perhaps rendering it worthless for an extended period of time. Additionally, the product still has a sizable amount of water in it. As a result, it is required.

Jerky items can endure a very long time if they are packaged properly for quality and durability. Plastic packaging and vacuum packing are two options for the packaging (Delviani, 2021)

4.3.2 Shelf Life

A jerky product with a shelf life of over 6 months and a moisture level of up to 15%, 20% and pH 4.5 - 5.1 Fuadi (2018). The drying process makes sure that the chemistry, physics, and microbiology of the beef jerky are all good. Temperature The appropriate drying conditions will result in jerky items with high quality and sufficient shelf life Ulandari et al., 2022.

This product uses the same cooking technique as floss. In a pan containing additional cooking oil, sauteed. To ensure that consumers are aware of the product's quality in the food sector, the shelf life of each product must be determined. The food's estimated shelf life was found to be 71 days when it was packaged in aluminum foil and kept at room temperature (27–30°) was 71 days Hasibuan et al. (2020). In addition to using ice or refrigeration, vacuum packaging can help prevent spoiling and increase shelf life (Mulyawan et al., 2019).

4.3.3 Product Packaging

One of the most crucial components in the food industry is packaging. Food goods need to be packaged. In order to maintain the product's cleanliness, prevent physical harm, and shield it from microbial contamination and chemical deterioration. Additionally, packaging has the purpose of putting a processing product or industrial product in a way that makes storage, transit, and distribution easier (Pratiwi et al., 2022).

Vegan jerky bits are a prepared food. Usually, the jerky is vacuumed or packed in plastic. Nowadays, jerky is not only sold in physical stores but also online, so vegan jerky bits must be packaged safely for delivery to customers and attract in customers who are interested in trying jerky made without meat. Plastic is selected to be packaging material for Vegan Jerky Bits. Plastic easily accessible and versatile use as food and drink containers. Researchers also believe that because they are not only simple to obtain but also come in a variety of attractive shapes and colours and are durable (Jumadewi, 2019)

Polypropylene (PP) and polyethylene (PE) plastics are the two types of packaging that have the same density, high permeability to water vapor, and low permeability to gases. Polyethylene (PE) and Polypropylene (PP) packing can reduce water content, retain protein content, lower pH, and suppress total bacterial colonies. Packaging types that use both hoover and non-vacuum procedures have an impact on high-quality food goods. Food products with proven vacuum packaging have longer shelf lives (Mulyawan et al., 2019).

In the vacuum-packing system, oxygen is taken out of the air before being immediately sealed to produce an anaerobic condition (Wambui & Stephan, 2019)

The amount of free water that can be utilised by microorganisms for growth determines how durable a food product is against microbial attack based on its water content. Microorganisms have a significant risk for contamination due to water activity in jerky products. Foods with a lot of

water activity deteriorate due to microbial or enzymatic degradation. The relationship between water activity and water content, which is often depicted as an isothermic curve, is also true for the development of bacteria, fungus, and other microorganisms. When the water level is high, the material will absorb air; conversely, if the amount of free water in the material is more than in the air, the air will absorb the water material until a condition of equilibrium is reached (Delviani, 2021)



Figure 4. 2. Plastic Bag

According to Willy and Nurjanah (2019) shows the great value and positive and considerable impact of product packaging design and advertising appeal on brand awareness and impact on purchasing interest.

In the current era of globalization, there is fierce competition among businesses to reach their clients. As a result, many businesses are beginning to consider strategies that will persuade customers to purchase their goods. Utilizing packaging that is intriguing is one strategy used by businesses to draw customers.



Figure 4. 3. Logo

4.4. Financial Aspect

4.4.1 Product Cost (Variable, Cost, Overhead Cost, Fixed Cost)

Product cost is calculated based on the total of all cost per month. The cost consists of labor cost, raw material cost, packaging

cost, and utility cost. The labor cost is considered based on monthly working days, which are 25 days per month. As raw material, the quantity of raw materials is counted 5 recipes per day or 125 recipes per month, which are 20 portions per day or 500 portions per month

1. Start-Up Capital

Table 4. 4 Start-Up Capital

Tools and Equipment	Quantity	Price (Unit)	Sub Total
Knife	1	Rp 120,000	Rp 120,000
Cutting board	1	Rp 100,000	Rp 100,000
Digital Scale	1	Rp 30,000	Rp 30,000
Blender	1	Rp 300,000	Rp 300,000
Spoon	5	Rp 5,000	Rp 25,000
Wooden spatula	1	Rp 20,000	Rp 20,000
Large Bowl	2	Rp 20,000	Rp 40,000
Small bowl	2	Rp 10,000	Rp 20,000
Pan	1	Rp 200,000	Rp 200,000
Serving Plastic Bag	25	Rp 5,000	Rp 125,000
TOTAL			Rp 980,000

2. Packaging Cost

Table 4. 5 Packaging Cost

Packaging	Quantity	Price (Unit)	Sub Total
Serving Plastic Bag	500pcs	Rp 800	Rp 400,000
Plastic Bag	500 pcs	Rp 60	Rp 30,000
TOTAL (/month)			Rp 435,000

3. Utility Cost

Table 4. 6 Utility Cost

Facility	Quantity	Price (/unit)	Sub Total
Water	750 L	Rp 2,800 (/m3)	Rp 2,800

Electricity	13 kWh	Rp 1,500 (/kWh)	Rp 19,500
TOTAL (/day)			Rp 22,300
TOTAL (/month)			Rp 557,500

4. Raw Material Cost

Table 4. 7 Raw Material Cost

Raw Material	Quantity	Price (/unit)	Sub Total
Chickpeas	200 gr	Rp 55,000 (/kg)	Rp 11,000
Vital Wheat	125 gr	Rp 41,000 (/500gr)	Rp 10,250
Mushroom Powder	5 gr	Rp 12,500 (/80gr)	Rp 750
Garlic Powder	5 gr	Rp 15,000 (/130gr)	Rp 600
Garlic	80 gr	Rp 29,400 (/kg)	Rp 2,352
Brown Sugar	100 gr	Rp 26,500 (/kg)	Rp 2,650
Sugar	15 gr	Rp 12,000 (/kg)	Rp 240
Lime Leaves	7 leaves	Rp 400 (/pcs)	Rp 2,800
Galangal	15 gr	Rp 3,000 (/250gr)	Rp 181
Red Chili	5 gr	Rp 23,000 (/kg)	Rp 115
Turmeric	5 gr	Rp 10,000 (/kg)	Rp 50
Cumin	5 gr	Rp 12,000 (/40gr)	Rp 1,500
Coriander powder	10 gr	Rp 30,000 (/kg)	Rp 300
Oil	70 ml	Rp 34,000 (/2L)	Rp 1,192
Salt	30 gr	Rp 4,700 (500gr)	Rp 293
Gas	1 kg	Rp 155,000 (/3kg)	Rp 51,600
TOTAL (/day)			Rp 85,873