

CHAPTER IV

RESULT AND DISCUSSION

4.1 Product Result

The nutritional value of vegan burger patty depends on the ingredients used. The main ingredients for making vegan burger patty are banana peels and champignon mushrooms. Banana peels are agricultural waste which can be found everywhere, so that banana peels can be used as a food product by industry. The nutritional content of banana peels is quite complete, such as carbohydrates, fat, protein, calcium, phosphate, iron, B vitamins, vitamin C and water. Yellow banana peel is rich in chemical compounds that are antioxidants (Ode Ermawati, 2016).

The taste of the vegan burger Patty is thought to be influenced by the polyphenolic components and enzymes contained in the banana peel. The result vegan burger Patty has a slightly bitter taste if the banana peel is not cleaned properly. The brown color of the vegan burger patty is caused by the polyphenol and tannin components contained in the banana peel which react enzymatically with the carbohydrate components. The vegan burger patty has a dense structure due to protein molecules which results in the loss of water content during stirring so that it forms a gel which will determine the texture (Syaiiful et al., 2022).

Mushrooms are a better alternative to animal protein and other animal products. Several forms of vitamins in mushrooms are responsible for promoting health by lowering the risk of various diseases in humans. Mushrooms have high nutritional value because they are rich in protein, contain essential amino acids and fiber, and are poor in fat. Edible mushrooms also contain vitamins such as B1, B2, B12, C, D and E (A. Heleno et al., 2009).

4.2 Nutrition Fact

4.2.1 Nutritional Table

The nutritional value of banana peel is as follows :

Table 4.1 Nutrition of Banana peel per 100 gr

Nutrition	Total/100 g
Carbohydrate (g)	9.8
Protein (g)	7.76
Calcium (mg)	224.68
Phosphorus (mg)	212.00
Moisture (g)	1.45
Ash Content	12.96
Iron (mg)	3.33

Source : As. J. Food Ag-Ind. 2011, 4(01), 31-46

The banana peels are a rich source of carbohydrates and fibre. The banana peel is used as a carbohydrate source or a thickening ingredient. Because banana peel starch is regarded superior to maize starch (Alkarkhi et al., 2011). So the banana peel patties have a chewy texture like meatballs.

Table 4.2 Nutrition Value of Champignon Mushroom per 100 gr

Nutrition	Total/100 g
Energy	22 kcal
Moisture	92.43 g
Fats	0.34 g
Protein	3.09 g
Carbohydrates	3.26 g
Diatary Fiber	1 g
Sugar	1.65 g
Iron	0.50 mg
Vitamin C	2.1 mg
Vitamin B3	3.607 mg
Vitamin B2	0.402 mg
Vitamin B5	1.497 mg

Source : USDA Nutrient database

4.2.2 Nutrition Calculation

Table 4.4 Nutritional Value of Ingredients used in The Recipe for Banana Peel and Champignon Mushroom Frozen Vegan Patties

Ingredients	Calorie (kcal)	Carbohydrate (g)	Protein (g)	Fat (g)	Sugar (g)	Fiber (g)	Sodium (mg/100g)
Banana Peel (150 g)	105	27,00	1,00		14,00	3,0	
Champignon mushroom (200 g)	44	6,56	6,18	0,68	3,30	2,0	10
Onion (60 g)	24	5,78	0,53	0,05	2,45	0,8	2
Oat (60 g)	233	39,76	10,13	4,14		6,4	1
Bread crumb (100 g)	360	82,00	8,00	2,00			1700
Mushroom powder (10 g)	20	2,00	0,30	0,50			150
BBQ spice (5 g)	8	2,00			1,66		113
Xanthan gum (12 g)	40	0,36					
Garlic (30 g)	45	9,92	1,91	0,15	0,30	0,6	
Salt (2 g)							775
Blackpepper (1 g)	3	0,65	0,11	0,03	0,01	0,3	
Italian herb (2 g)	6	1,29	0,22	0,20	0,08	0,9	
Flax seed	64	3,47	2,19	5,06	0,19	3,3	4
Water							
TOTAL	952	180,79	30,57	12,81	21,99	17,3	2.755

4.2.3 Nutrition Label

Nutrition Facts	
Serving size: 150 g	
Servings: 4	
Amount per serving	
Calories	246
% Daily Value*	
Total Fat 3.7g	5%
Saturated Fat 0.7g	3%
Cholesterol 0mg	0%
Sodium 388mg	17%
Total Carbohydrate 46.3g	17%
Dietary Fiber 5.8g	21%
Total Sugars 8g	
Protein 8.8g	
<small>*The % Daily Value (DV) tells you how much a nutrient in a food serving contributes to a daily diet. <u>2,000 calorie a day</u> is used for general nutrition advice.</small>	

Figure 4.1 Nutrition Fact of Banana Peel and Champignon Mushroom Frozen Vegan Patties

4.3 Food Safety and Packaging

4.3.1 Processing and Storage Temperature

In the manufacture of burger patty has several stages of the manufacturing process including cleaning, cooking, mixing, shaping, packaging. To support the production process, it is necessary to supply raw materials for making this product by buying banana peels from fried traders. After taking the banana peel from the fried seller, the banana peel will be cleaned immediately and then processed into semi-finished ingredients then storage in the freezer. The steps for making this vegan patty are in the first step cleaning the banana peel using vinegar to remove the astringent taste on the banana peel. The cooking process of banana peels, champignon mushrooms, and other ingredients are cooked using the saute technique to get a better taste, better aroma, softer texture, and to kill microbes. The cooking process is needed before we consume a

food. Cooking can be done by frying (frying with oil) with a temperature between 150 - 300 C. The use of heat in the cooking process greatly affects the nutritional value of these foodstuffs (Lamid et al., 2015). The next step is mixing, this step is the step of mixing all the ingredients such as the main ingredients and seasonings used, after the mixing proceed is the shaping process and final step is the packaging process. This vegan patty serving suggestion is not just for burger but also can be into steak,vegan katsu, and sandwich.

Several factors must be considered in the storage of food products, namely the mass of oxygen, water vapor, light, microorganisms, compression or kickback, and toxic chemicals or off-flavors. Some of these factors are supporting the growth of fungi and will further accelerate the deterioration of food products. In the humidity and temperature values that often change, namely between 78.00%-79.91% and temperatures of 27.40 C - 28.16 C. The quality of food products can still be maintained until the sixth week of storage (Solihin et al., 2015).

4.3.2 Self Life

Banana is a very perishable fruit. The shelf life can be extended by different processes such as the way the product is packaged. The banana ripening was delayed when stored in a closed plastic cover (H et al., 2015). The microbial load of the veggie burger decreased over time storage due to the antimicrobial effect of the ingredients microorganisms if exposed to high temperatures during processing of vegetables causes damage microorganisms and freezing also inhibits their growth (De Silva et al., 2013).

4.3.3 Product Packaging

The food chain induce manufacturers to take an interest in possibilities of attracting consumers attention to reliable information on a product. The information contained on food packaging, as one of the

components of marketing information, is a factor significantly influencing the opinion of consumers about the product (Wyrwa & Barska, 2017). Vacuum packaging and modified atmosphere packaging have acquired great interest in the manufacture of food products, as means of preserving the quality and improving the image of products, and for extending the commercial shelf life and minimising the use of additives. The packaging used to package food products has a variety of basic materials. Plastic is one example of a food packaging material. The plastics used have different thicknesses depending on the type or packaging technology system. Packaging using a vacuum machine requires a plastic thickness. The selection of the thickness of the plastic packaging material will determine the quality or long shelf life of food products (Ary Wahyudie et al., 2016).



Figure 4.2 Vacuum Plastic



Figure 4.3 Box Packaging



Figure 4.4 Sticker Box Packaging



Figure 4.5 Logo

4.4 Financial Aspects

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

The company's main goal is profit, therefore marketing aspects are needed to maintain the company's survival. In an effort to dominate the market, companies must increase their ability to gain profits from product sales calculations. Processing raw materials into semi-finished products or finished products raises a number of production cost elements that make up the cost of production.

1. Start-Up Capital

Tools and Equipment	Quantity	Price (/Unit)	Sub Total
Cutting board	1	Rp 30.000 (/pcs)	Rp 30.000
Knife	1	Rp 100.000 (/pcs)	Rp 100.000
Spoon	3	Rp 20.000 (/dozen)	Rp 5.000
Large mixing bowl	2	Rp 60.000 (/pcs)	Rp 120.000
Small mixing bowl	2	Rp 25.000 (/pcs)	Rp 50.000
Spatula	1	Rp 20.000 (/pcs)	Rp 20.000
Ring cutter	3	Rp 15.000 (/pcs)	Rp 45.000
Frying pan	1	Rp 200.000 (/pcs)	Rp 200.000
Grilling pan	1	Rp 80.000 (/pcs)	Rp 80.000
Digital scale	1	Rp 100.000 (/pcs)	Rp 100.000
Vacuum sealed Machine	1	Rp 1.500.000 (/pcs)	Rp 1.500.000
Blender	1	Rp 200.000 (/pcs)	Rp 200.000
TOTAL			Rp 2.450.000

2. Labour Cost

Occupation	Personnel	Salary (/month)	Sub Total
Cook Helper	1	Rp 3.000.000	Rp 3.000.000
TOTAL			Rp 3.000.000

3. Packaging Cost

Packaging	Quantity	Price (/Unit)	Sub Total
Vacuum plastic	10 pcs	Rp 25.000 (/100 pcs)	Rp 2.500

Box	10 pcs	Rp 3.000 (/pcs)	Rp 30.000
Sticker	10 pcs	Rp 1.000 (/pcs)	Rp 10.000
TOTAL (/day)			Rp 42.500
TOTAL (/month)			Rp 1.062.000

4. Utility Cost

Facility	Quantity	Price (/Unit)	Sub Total
Water	10 m ³	Rp 3.000 (/m ³)	Rp 30.000
Electricity	20 kWh	Rp 2.500 (/kWh)	Rp 50.000
TOTAL (/day)			Rp 80.000
TOTAL (/month)			Rp 2.000.000

5. Raw Material Cost

Raw Materials	Quantity	Price (/Unit)	Sub Total
Banana	200 gr	Rp 5.000 (/gr)	Rp 10.000
Champignon mushroom	300 gr	Rp 20.000 (/100 g)	Rp 60.000
Onion	50 gr	Rp 5.000 (/gr)	Rp 10.000
Oat	200 gr	Rp 40.000 (/kg)	Rp 8.000
Bread crumb	350 gr	Rp 15.000 (/kg)	Rp 5.250
Mushroom powder	50 gr	Rp 20.000 (/200 gr)	Rp 10.000

Vinegar	350 ml	Rp 15.000 (/650 ml)	Rp 8.077
Garlic	20 gr	Rp 35.000(/kg)	Rp 700
Santan gum	40 gr	Rp 15.000 (/50 gr)	Rp 12.000
Salt	10 gr	Rp 15.000 (/kg)	Rp 150
Blackpepper	5 gr	Rp 20.000 (/250 gr)	Rp 400
Italian herbs	10 gr	Rp 20.000 (/40 gr)	Rp 5.000
Ground flax seed	40 gr	Rp 15.000 (/100 gr)	Rp 6.000
Brown sugar	80 gr	Rp 20.000 (/500 gr)	Rp 3.200
Smoked paprika	80 gr	Rp 25.000 (/70 gr)	Rp 28.571
Chili powder	80 gr	Rp 18.000 (/65 gr)	Rp 22.154
Onion powder	40 gr	Rp 25.000 (/90 gr)	Rp 11.111
Gas (3 kg)	3 kg	Rp 160.000 (/3 kg)	Rp 160.000
TOTAL (/day)			Rp 360.613
TOTAL (/month)			Rp 9.015.325

6. Rent Cost

Facility	Size	Price	Sub Total
building	20 m × 10 m	Rp 4.000.000	Rp 4.000.000
TOTAL (/month)			Rp 4.000.000

7. Total Cost

$$\begin{aligned}
 \text{Fixed Cost} &= \text{Rp } 7.000.000 \\
 \text{Total Cost (/month)} &= \text{Rp } 3.000.000 + \text{Rp } 9.015.325 + \\
 &\quad \text{Rp } 1.062.000 + \text{Rp } 2.000.000 + \\
 &\quad \text{Rp } 4.000.000 \\
 &= \text{Rp } 19.077.325 \approx \text{Rp } 19.080.000
 \end{aligned}$$

4.4.2 Selling Price

$$\begin{aligned} \text{Product Price} &= \frac{\text{Rp } 19.080.00}{500 \text{ packs}} \\ &= \mathbf{\text{Rp } 38.160 / \text{pack}} \\ \text{Product Selling Price} &= \text{Rp } 38.160 + (\text{Rp } 38.160 \times 50\%) \\ &= \text{Rp } 38.160 + \text{Rp } 19.080 \\ &= \text{Rp } 57.240 \approx \text{Rp } 57.000 \end{aligned}$$