CHAPTER IV
RESULT AND DISCUSSION

4.1 Product Result

Baba et al (2016) reported that *A. altilis* fruit contains triterpenes, flavonoids, stilbenes, arylbenzofurans and sterols that have antioxidant, antimicrobial, anticancer and anti-hyperglycemic properties (Baba et al 2016). Until now, in-depth studies on *A. altilis* are very limited, even though its potential as an alternative food and as a traditional medicine is very high. Deivanai and Bhore (2010) stated that *A. altilis* is a rich source of carbohydrates, minerals and vitamins but is often neglected in various countries (Deivanai and Bhore 2010), therefore in-depth studies are needed regarding its utilization and bioactivity as traditional medicine and food ingredients so that its potential can be developed.

The nutritional content of soybeans is quite large such as protein by 35%, fat 18% and carbohydrates 35% (Winarsi, 2010). Soybean seeds also contain phosphorus, iron, calcium, vitamin B with a complete amino acid composition, making it potential for the growth of the human body (Pringgohandoko and Padmini, 1999). Soybeans also contain unsaturated acids that can prevent the onset of arterial sclerosis, which is the hardening of arteries (Taufiq and Novo, 2004).

Oyster mushrooms are rich in protein, fiber, carbohydrates, vitamins (thiamine, riboflavin, folic acid and niacin), minerals (Ca, P, Fe, K and Na), and low in calories and fat (Adebayo, et al., 2017). The nutrients contained in 100 grams of dry weight of white oyster mushrooms consist of protein 17.12 grams, fat 2.60 grams, carbohydrates 37.87 grams, energy 243.66 grams, fiber 30.25 grams and ash 4.8 grams (Rambey, et al., 2019).

4.2 Nutrition Fact

4.2.1 Nutrition table

The nutritional value of Breadfruit is as follows:

Table 4.1 Nutritional value of breadfruit 80g

Calories (kcal)	82.5
Fat (g)	0.18
Sodium (mg)	1.6
Carbohydrate (g)	21.81
Fiber (g)	3.92
Sugar (g)	8.8
Protein (g)	0.87
Potassium (mg)	392.72
Vitamin C (mg)	23.2
Calcium (mg)	13.6
Iron (mg)	0.43
Magnesium (mg)	20
Thiamin (B1) (mg)	0.07
Vitamin B5 (mg)	0.36
Folate (mcg)	11.2

Raw breadfruit (80g) provides 82.5 calories, 0.18g of protein, 21.81g of carbohydrates, and 0.18g of fat. The protein in breadfruit is from essential amino acids that the body can't produce on its own. Breadfruit is also an excellent source of potassium, vitamin C, pantothenic acid (vitamin B5), thiamin (B1), and fiber. The following nutrition information is provided by the USDA. USDA, FoodData Central. Breadfruit, raw.

Table 4.2 Nutritional value of oyster mushrooms per 60g

Calories (kcal)	19.5
Fat (g)	0.2
Sodium (mg)	10.8
Carbohydrate (g)	3.63
Fiber (g)	1.39
Sugar ()	0.66
Protein (g)	2
Niacin (mg)	2.97

Sliced oyster mushrooms (60g) provide 19.5 calories, 2g of protein, 3.63g of carbohydrates, and 0.2g of fat. Oyster mushrooms are an excellent source of niacin, fiber, and riboflavin. This nutrition information is provided by the USDA. Mushrooms, oyster, raw. FoodData Central. U.S. Department of Agriculture.

Table 4.3 Nutritional value of soybeans paste per 60g.

Calories (kcal)	100
Fat (g)	3.3
Sodium (mg)	2767
Carbohydrate (g)	10
Dietary Fiber (g)	3.4
Sugar (g)	10
Protein (g)	6.7

https://www.prospre.io/ingredients/soybean-paste-60876

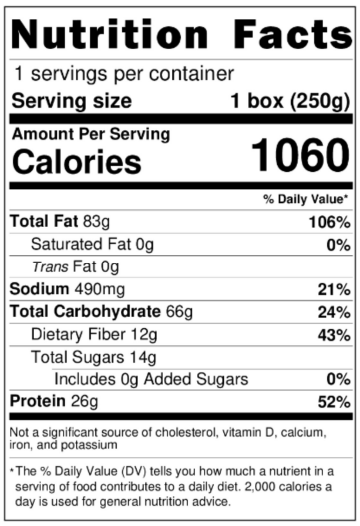
4.2.2 Nutrition calculation

Table 4.4 Nutritional calculation of ingredients used in the recipe for analogue meat dendeng balado

Ingredients	Calories (kcal)	Carbohydrate (g)	Protein (g)	Fat (g)	Sugar (g)	Fiber (g)	Sodium (mg)
Breadfruit (80g)	82.5	21.81	0.87	0.18	8.8	3.92	1.6
Oyster mushrooms (60g)	19.5	3.63	2	0.2	0.66	1.39	10.8
Soybeans paste (60g)	113.4	7.62	12.12	4.92		0.96	108.6
Corn-starch (15g)	57.15	13.65	0.045	0.015		0.135	1.35
Mushroom powder (1 tbsp)	20	2	2.8			2.8	
Pepper (½ tbsp)	10.5	2.4	0.4	0.1		0.9	0.2
Salt (½ tsp)							290.5
Oil (70 ml)	618.8			70			

Ginger paste (½ tbsp)	20	1.4	0.1	1.6	0.1	0.2	1.1
Garlic paste (½ tbsp)	10.08	1.917	0.405	0.018	0.054		3.78
Turmeric paste (¼ tsp)	2.3	0.5	0.1			0.2	0.2
Coriander paste (¼ tsp)	0.4	0.1					0.3
Water (150 ml)							
Chili (15 pcs)	81	5.5	6.8	6.4	1	0.5	65.25
Shallot (3 pcs)	14	3.4	0.5		1.6	0.6	2.4
Sugar (½ tsp)	8.1	2.1			2.1		
TOTAL	**1,057.73**	**66.027**	**26.14**	**83.433**	**14.314**	**11.605**	**486.08**

4.2.3 Nutrition Label



Nutrition Facts

1 servings per container

Serving size **1 box (250g)**

Amount Per Serving

Calories **1060**

	% Daily Value*
Total Fat 83g	**106%**
Saturated Fat 0g	**0%**
Trans Fat 0g	
Sodium 490mg	**21%**
Total Carbohydrate 66g	**24%**
Dietary Fiber 12g	**43%**
Total Sugars 14g	
Includes 0g Added Sugars	**0%**
Protein 26g	**52%**

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 analogue meat dendeng balado

4.3 Food Safety and Packaging

4.3.1 Processing and Storage Temperature

Dendeng Balado is an Indonesian culinary dish that consists of thinly sliced beef that is drained and fried until dry, then cooked in a spicy Indonesian sauce called "Balado". This dish has a savory, spicy, and slightly sweet taste that is very appetizing. Based on Firdausni, F., & Anova, I. T. (2015), jerky is included in the category of Intermediate Moisture Meat because the water content in jerky is in the range of Intermediate Moisture Food water content, which is around 25%. The process of making jerky can generally be done by several methods, including by thinly slicing and by coarsely chopping the meat, then moulding it to form a slab.

Based on Soejanta, B. R. (2021), Analog meat is a food product that mimics the texture, color, aroma, and taste of beef, but is made from plant ingredients. This research focuses on creating an analogue meat called "Dendeng Balado" by using sustainable ingredients, namely breadfruit, soybean paste, and oyster mushrooms.

According to Pradana, A., et al. (2019), product shelf life is the maximum storage period in which the product can still maintain its sensory and physical quality which is still acceptable to consumers. For the storage temperature of Dendeng Balado analogue meat, it is recommended to store it in the refrigerator at a low temperature, which is between 0°C and 4°C. Such cold storage helps maintain the quality and freshness of the product and inhibits the growth of microorganisms that can cause damage or spoilage. Make sure to store Balado jerky in an airtight container or tight container to prevent cross-contamination with other foods in the refrigerator. If you want to store it for a longer period, consider freezing the meat analogue of Dendeng Balado, so that it can last longer and remain safe for consumption. When you want to consume it again, make sure to warm it up properly before serving.

4.3.2 Shelf Life

In general, wet jerky lasts 7-10 days in a closed seal. If the seal has been opened, it will last 3-4 days and the seal must be tightly closed again. Jerky can also be stored in the freezer so that jerky lasts longer +/- 1 month. but this analogue meat dendeng balado only has a durability of 2-3 days at room temperature and 15 days if stored in the freezer.

4.3.3 Product Packaging

Packaging that is used as a food storage container must meet several requirements, including being able to maintain product quality so that it remains clean and is able to protect the product from contamination and physical damage and can withstand the transfer of gas and water vapor (Herawati, 2005). Plastic packaging has the advantage of having the ability to protect products from physical, chemical, and biological influences while also not reacting with packaged products (Suprapti, 2002). Analogue meat dendeng balado is a type of frozen food so that the packaging must use vacuum plastic so that there is no air left behind which can cause a short shelf life. Then refined packaging using a box that can be used to warm analogue meat dendeng balado with microwave. One way that can be used to extend the shelf life of product shelf life is using vacuum plastic packaging (Renate, 2009). Under vacuum conditions, insects and aerobic microorganisms die off due to oxygen depletion and increased CO2 concentration (Renate, 2009). aerobic insects and microorganisms will die by themselves due to the depletion of oxygen and the increasing concentration of CO2 which is produced during respiration of insects and microorganisms as well as product materials (Syarifand Irawati, 1991). In general, entrepreneurs in the frozen food sector always use plastic vacuum with nylon type, because it can reduce the risk of product damage to maintain the nutritional value of the product.

Polypropylene plastic container and nylon plastic for the analogue meat dendeng balado have dimension of 17 cm x 11.5 cm (500 ml) and 15 x 20 cm.

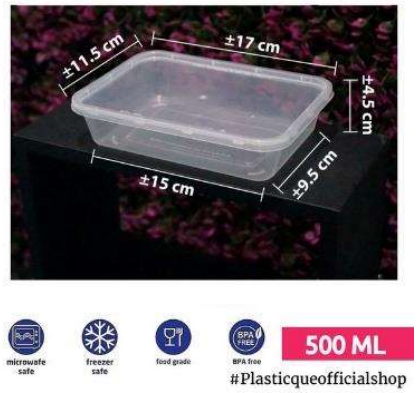


Figure 4.2 Polypropylene Plastic Container 500 ml

Source: https://images.app.goo.gl/kqw34aeT7pL7MWbK6

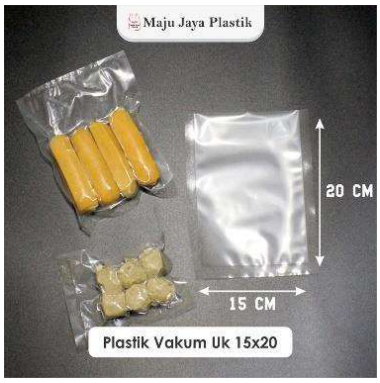


Figure 4.3 Plastic vacuum nylon 15 x 20

Source: https://images.app.goo.gl/wVp4yY8QCL8cF54Z9

The major objective of packaging is to protect and preserve foods from possible physical, chemical, microbiological, or other hazards that ultimately can impact their quality and safety (Lee, 2010).

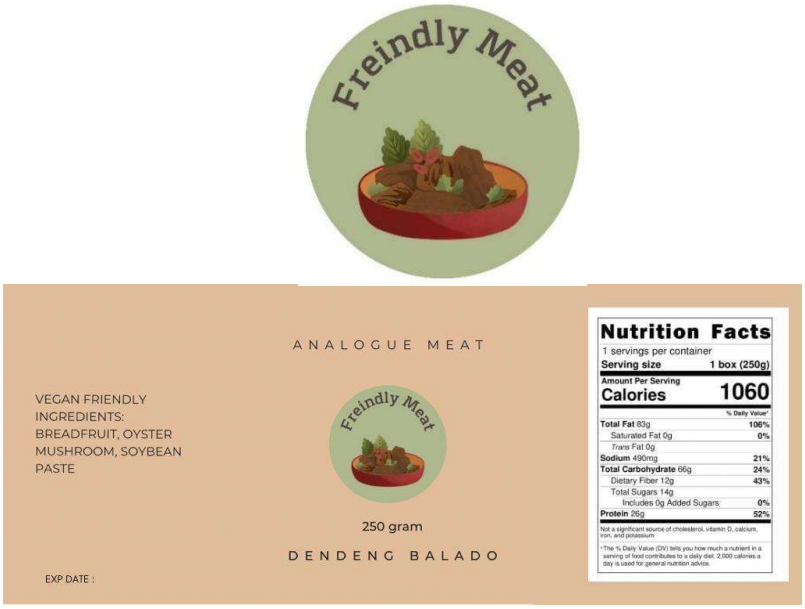


Figure 4.4 Logo

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 costs consist of labour cost, raw material cost, packaging cost, and utility cost. The labour cost is considered based on monthly working days, which are 28 days per month. As for raw material, the quantity of raw materials is counted as 20 recipes per day or 560 recipes per month, which are 20 portions per day or 560 portions per month.

1. Start-up Capital

Table 4.5 Start-up capital

Utensils	Quantity	Price (/unit)	Sub Total
Hand gloves	1	Rp 9,000	Rp 9,000
Knife	1	Rp100,000	Rp 100,000
Digital scale	1	Rp 75,000	Rp 75,000
Stock pot	1	Rp 250.000	Rp 250,000
Saucepan	2	Rp 125,000	Rp 250,000
Blender	1	Rp 200,000	Rp 200,000
Measuring spoon	1	Rp 15,000	Rp 15,000
Large mixing bowl	2	Rp 60,000	Rp 120,000
Steamer	1	Rp 250,000	Rp 250,000
Frying pan	1	Rp 100,000	Rp 100,000

Spatula	2	Rp 25,000	Rp 50,000
Measuring cup	1	Rp 20,000	Rp 20,000
Oil drainer	1	Rp 80,000	Rp 80,000
Cobek	1	Rp 65,000	Rp 65,000
Cutting board	1	Rp 50,000	Rp 50,000
TOTAL			**Rp 1,634,000**

2. Labour Cost

Table 4.6 Labour cost

Occupation	Personnel	Salary (/month)	Sub Total
Chef	1	Rp 3,700,000	Rp 3,700,000
Cook Helper	1	Rp 2,500,000	Rp 2,500,000
Helper	1	Rp 2,000,000	Rp 1,000,000
TOTAL			**Rp 7,200,000**

3. Packaging Cost

Table 4.7 Packaging cost

Packaging	Quantity	Price (/unit)	Sub Total
PP Plastic Container	20 pcs	Rp 29,000 (25 pcs)	Rp 23,200
Plastic Vacuum Nylon	20 sheets	Rp 27,000 (50 pcs)	Rp 10,800
Plastic Bag	20 pcs	Rp 30,000 (50 pcs)	Rp 12,000
TOTAL (/day)			**Rp 46,000**
TOTAL (/month)			**Rp 1,288,000**

4. Utility Cost

Table 4.8 Utility cost

Facility	Quantity	Price (/unit)	Sub Total
Water	750L	Rp 2,000 (/m^3)	Rp 1,500
Electricity	10 kWh	Rp 1,500 (/kWh)	Rp 15,000
Gas	250 g	Rp 30,000 (/3kg)	Rp 2,500
TOTAL (/day)			**Rp 19,000**
TOTAL (/month)			**Rp 532,000**

5. Raw Material Cost

Table 4.9 Raw material cost

Raw Materials	Quantity	Price(/unit)	Sub Total
Half ripe breadfruit	1,6 kg	Rp 25,000 (/1kg)	Rp 40,000
Oyster mushrooms	1,2 kg	Rp 6,500 (/250g)	Rp 31,200
Soybeans paste	1,2 kg	Rp 10,800 (1kg)	Rp 21.600
Corn-starch	300 g	Rp 9,250 (/300g)	Rp 9,250
Mushroom powder	20 tbsp	Rp 27,500 (/200g)	Rp 21,450
Pepper	10 tbsp	Rp 60.000 (/kg)	Rp 4,200
Salt	20 tsp	Rp 17,200 (/kg)	Rp 1,958
Oil	5,2 ml	Rp 63,500 (/5l)	Rp 66,040
Ginger paste	10 tbsp	Rp 8,000 (/250g)	Rp 8,000
Garlic paste	10 tbsp	Rp 14,500 (/500g)	Rp 23,200
Turmeric paste	5 tsp	Rp 3,000 (/250g)	Rp 1,500
Coriander paste	5 tsp	Rp 3,500 (/20g)	Rp 1,000
Chili	420 pcs	Rp 45,000 (/kg)	Rp 94,500
Shallot	84 pcs	Rp 30,000 (/kg)	Rp 15,120
Sugar	10 tsp	Rp 15,000 (/kg)	Rp 630
TOTAL (/day)			**Rp 339,648**
TOTAL (/month)			**Rp 9,510,144**

6. Rent Cost

Table 4.10 Rent cost.

Facility	Size	Price	Sub Total
Store	20 m x 10 m	Rp 1,200,000	Rp 1,200,000

7. Total Cost

Fixed cost = Labour cost and Rent cost

Variable cost = Raw material cost, Packaging cost, and Utility cost

Total cost (/month) = Labour + Raw material + Packaging + Utility +Rent cost

= Rp 7,200,000 + Rp 9,510,144 + Rp 1,288,000 + Rp 532,000 + Rp 1,200,000

= **Rp. 19.730.144**

4.4.2 Selling Price

Produk Price = $\frac{Total\ cost\ (/month)}{Total\ product\ unit\ (/month)}$

= $\frac{Rp\ 19{,}730{,}144(/month)}{560\ portions}$

= **Rp 35,232 /portion**

Produk Selling Price = Produk price + (product price x profit percentage)

= Rp 35,232 + (Rp 35,232 x 30%)

= Rp 35,232 + 10,569

= Rp 45,801 ≈ Rp 46,000