CHAPTER IV
RESULT AND DISCUSSION

4.1 PRODUCT RESULT

The nutritional value of antioxidant herbal drink is depends on its ingredients. In herbal drinks the major ingredients is jackfruit seeds called beton, Beton (jackfruit seeds) have potential to be the anti cancer , it can be a herbal beverage to help prevent the growth of cancer cells because it has high antioxidants. The condiments of the ingredients is very good to be processed into a herbal drinks , in every 100 grams of jackfruit seeds, namely levels protein is 5.96%, but under these conditions the fiber content obtained is precisely the most low, namely 2.78%.Beton itself contains 11 gram of carbohydrate , 2 grams of protein , minerals and vitamins like magnesium and fosfor. Beton have the components in antimicrobes and high in fiber to help human digestion system. Also the other condiments used here all have the benefits of antioxidant like butterfly pea flower, and also mint leaves.

The process of making this herbal drinks affect the final result of the herbal drinks so it must be considered if one of the component is not processed properly , dehydrate perfectly (totally dried) it will trigger the growth of mold because of its resistance is weak against moist air. During the portioning process (weigh the portions of the ingredients) if one of the ingredients like mint we added too much in portions it can cause the change of the flavor ,into a mint tea flavor. Also during assembling the herbal beverage in a right portions of hot water it will took longer time for the color , flavor and fragrant to emerge.

Herbal beverage is good for health , some of herbal beverage are made for health treatment like gingseng tea to help increase endurance , ginger tea to help reduce sore throat,headache and others. And the last example with the most common tea easy to find in restaurants and supermarket it is , chamomile tea, to help insomnia (Dr.Airindya, 2022)

Beton is a food waste but it have a lot of benefits in this seed, it taste flavorless normally people boil the seeds until it gets the mushy texture or soft texture and its is ready to serve. Jackfruit seed is a source of carbohydrates, protein and energy, so it can be used as a potential food ingredient. Jackfruit seeds are a potential source of carbohydrates, protein and energy.

The component of jackfruit seeds in the fruit reaches 20% of the weight of the fruit. Jackfruit seed is a source of carbohydrates (36.7 g/100 g), protein (4.2 g/100 g), and energy (165 kcal/100 g), so it can be used as a potential food ingredient. Jackfruit seeds are also a good source of minerals. The mineral content per 100 grams of jackfruit seeds is phosphorus (200 mg), calcium (33 mg), and iron (1 mg) (Astawan, 2007).with the process of dehydrating this ingredients is a very important process in the manufacture of flour, because flour is a food ingredient that has a lower water content when compared to the basic ingredients. Improper drying process will result in nutritional components contained in.

4.2 NUTRITION FACT

4.2.1 Nutritional Table

The nutritional value of herbal drink is as follow

Table 4. 1 Nutritional Value Of Beton 100 g

Nutrition	Total 100 g
Energy	165 cal
Carbohydrate	36,7 g
Protein	4,2g
Fat	0,1g
Fosfor	200 mg
Calcium	33 mg
Iron	1 mg
Water	56,7 g

Source : Astawan, 2007; *Fairus dkk., 2010*

Table 4. 2 Nutritional value Of Honey Jackfruit Flesh per 100 g

Nutrition	Total 100 g
Energy	94
Calcium	27,6 cal
Carbohydrate	303,0g
Fat	1,5g
Fiber	0,3 g
Fosfor	0,6 mg
Iron	34,0 mg
Water	73,2 g
Vitamin A (IU)	297,0 (IU)
Vitamin b1	0,1mg
Vitamin C	6,7mg

Source : Direktorat Gizi Dep.*Kes, 2009.*

Table 4. 3 Nutritional value of Mint Leave per 100 g

Nutrition	Total 100 g
Energy	44 kcal
Calcium	199 mg
Carbohydrate	8.41g
Protein	3.29g
Fat	0.73g
Phosphor	60 g
Magnesium	63mg
Iron	11.87 mg
Water	85.55g
Zinc	1.09 mg
Potassium	458mg
Vitamin A	203 ug

Source Dr Laxmidutta Shukla *BAMS , MD,2018*

Table 4. 4 Nutritional value Of Butterfly Pea Flower per 100 g

Nutrition	Total 100 g
Calcium	0 mg
Carbohydrate	0 g
Fat	0 g
Iron	10 mg 56%
Protein	0g
Sodium	0 g
Cholesterol	0g
Potassium	2,500 mg 53%

4.2.2. Nutrition Calculation

Table 4. 5 Nutrition Value of Beton per 100 g

Macro nutrient	Average
Energy (kcal/100g)	165 kcal
Water (g/100g)	56,7 g
Crude protein (g/100g)	4,2 g
Crude fat (g/100g)	0,1 g
Carbohydrate (g/100g)	36,7 g
	1 mg

According to the nutritional value of beton, are low in fat content, of which is attractive to those who are health conscious. Furthermore, beton have the benefit of anti cancer and low fat content which are diabetic friendly as its glycemic index is low and effective in inhibiting LDL oxidation (Ismail-Fitry *et al.*, 2017).

Table 4. 6 Nutritional Value of Ingredients used in The Recipe For Antioxidant Herbal Drink

Ingredients	Calories (kcal)	Carbohydrate (g)	Protein (g)	Fat (g)	Water (g)	Fiber (g)	Iron (g)
Beton (3 g)	4,95	1,101	1,287	0,003	1,701	0,99	0,03
Honey jackfruit flesh (2 g)	5,52	1,515	-	0,0032	0,366	0,006	0,17
Butterfly pea flower (0.5 g)	0	0	0	0	-	0	0,05
Mint leave (0.5 g)	0,995	0,010	0,1645	0,0004	0,106	-	0,0014
Total	11,465	7,20305	2,626	1,4515	0,0066	0,996	0,2514

4.2.3 Nutrition Label

Nutrition Facts

2 servings per container

Serving size **1 tea bag**

Amount Per Serving

Calories **10**

	% Daily Value*
Total Fat 1g	**1%**
Saturated Fat 0g	**0%**
Trans Fat 0g	
Sodium 0mg	**0%**
Total Carbohydrate 7g	**3%**
Dietary Fiber 1g	**4%**
Total Sugars 0g	
Includes 0g Added Sugars	**0%**
Protein 3g	**6%**

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 Antioxidant Herbal Drink

4.3 Food Safety and Packaging

4.3.1 Processing and Storage Temperature

Antioxidant herbal drink consists of several operation units that are sorted in specific order, those operation are washing , slicing and drying Each of operation units have individual intentions in order to prepare beton to be processed , proceed to the next step which is dehydrating method. . Not only the processing units, but also the ratio and quality of ingredients will determine the end-product quality and its nutritional value. (Mursidi *et al.*, 2019).

Washing and slicing is the first step of the processed that have to be done with the step of the process to make it easier to dry during the hydrating process, when its slice into a thin size it will help the process of drying the jackfruit seeds to dry completely in a short time. Also, size reduction will turn the ingredients to edible product and is easy to dissolve during the serving inside the bag so the essence and the nutrition can dissolve with the water together since the particles of the ingredients are smaller.

Moving to the next step of the process , is to dehydrate the jackfruit flesh completely so when ever it is packed into the bag the jackfruit flesh will help to not contaminate the moist and the mold to grow inside the packaging. It can atleast stay longer. After drying the fruit (jackfruit flesh) we move to the process of drying the mintlaeve only by picing the big stems and the old leave that already fade, to keep the quality of the product. And the last process is to dehydrate the butterfly pea flower too. To keep all the ingredients to be kept as long as possible , to maintain the quality of the product so its not fading through time. During the serving of the antioxidant herbal drink it needs to be served with a hot water to helps dissolve the particle of the ingredients.

4.3.2 Self Life

Herbal drink is categorized as a tea, tea should contain 3-5 percent of moisture and that tea should be packed containing 5-6 percent of moisture if tea is packed with more moisture than allowed above , it is liable to go off on storage arid in transit . Such high moisture content will provoke the enzyme and microbial activity that make herbal drink can only be stored for around 27-33 hours in room temperature. The signs of deterioration are initiated by the formation of sludge on the surface, changing of texture and colour, and production of off-odour (Karneta *et al.*, 2013).

In other storing a instan beverage is like sachet drinks it is good in a dry area and cold temperature keep inside its package, it can last for a 4 months to store in a normal temperature , with no oxygens. Meanwhile storing in a normal temperatures but moist area can cause the change of the texture of the product. and with the vacuumed packaging may reach 51 hours (Pratama *et al.*, 2016).

4.3.3 Product Packaging

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).

Antioxidant herbal drink is a ready-to-drink beverage , where it is usually served in a mug Since it is serve whenever we it is suggested to immediately served and drink while it is still warm. However the global has change the population era and now entering the digital era world wehere things are put into a online platform as well. There for the packaging of

antioxidant herbal drink is required to be packed completely dry or vacuum to make the age of storaging longer , while waiting the courier to to grab the package and deliver to the customer safely , it may take a while if it is send in to a different city.

The disposable plastic cups are manufactured by thermoforming technique that they are fast in replacing conventional cups for the liquid product like water , tea coffee ice cream and other liquid dairy products. This disposable cup have been use in canteens , café and many others food and beverage business store. This disposable cup are made of polypropylene or polystrene sheets that have 0.35 mm thickness – 2 mm thickness in the thermoforming machine. This cups have recently used more than ceramics cups to serve customers even used in airline , railway , fast food business and many other organization (Sh. Harinder Kumar, 2014)

The plastic used to packed antioxidant herbal drink is selected to be the packaging of the material for this herbal tea. Plastic and tea bag has a positive attributes , which are low cost , light weight , transparent and low gas and moisture permability (sezgin et., al 2017) polypropylene (PP) is one of the common plastic materials to be used as food packaging in a form of cup,plastic spoon ,plastic fork and plastic bowl. Polypropylene are fine and tested with the lab that it is safe to be a packaging that has direct contact with either food or beverage this plastic has already fully met the safety requirements (Tice, 2002). This antioxidant herbal drink needs a proper packaging to prevent it from leaking. HDPE plastic offers more moisture protection, lower gas permeability, and high temperature resistance , HDPE is suitable for keeping the liquid product safe.

Tea bag are commonly made of a filter paper or cotton muslin that are food grade tested such as a nylon or PLA. This may be sealed by glue or stapling , this tea bag normally sealed with heat or ultra sound. The first it was made out of a plastic which is a wonky choice and not recommended for a hot liquid to be drink. Then it is madeout of nylon bags this are unlike paper and cotton. Food grade plastics are often known as silken , this tea bag are made of various type of plastic which are food grade there are several benefits of this tea bags , when it is semi transparent it is good that is seen through able to be seen the ingridients like the leave , flowers and spices. Here we have some reasons that a tea bag are restrict amount of space that leave have in which to unful during the steeping process , this tea will likely release the flavor of the igredients and nutrients into the cup or pot where it serve the tea. This means it have much benefit found in a high quality tea will be lost when it is too steeped in a tea bag

Figure 4. 2 Tea Bag

Figure 4. 3 Plastic Zip Lock

Figure 4. 4 Packaging Label

Figure 4. 5 Logo

4.4 Financial Aspects

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

Product cost refers to the total expense incurred during the development , production and maintainance of a software product or technology solutions.this wide range costs of includes the research , design ,development , testing , ongoing support and maintainance. Thre labor cost of can be count through monthly working days which are 25 days per month such like we count the raw material for 7 recipe per days =175 recipe per month this are equal to 56 portions per day = 1400portions per month.

- Direct material : raw material that are easily measurable used to directly manufactured products.
- Direct labor : wages , payroll taxes , benefits and insurance of employee who work for the product
- Overhead – these are the cost of manufacturing product but not from the result of direct labor or material

1. Start-Up Capital

Table 4. 7 start up capital

Tools & equipment	quantity	Price (/unit)	Sub total
Food dehydrator	1	Rp. 400,000	Rp. 400,000
Tea spoon	1	Rp.4,000	Rp. 4,000
Scissors	1	Rp. 10,000	Rp. 10,000
Digital scale	1	Rp. 100,000	Rp. 100,000
Blender	1	Rp. 150,000	Rp. 150,000
Knife	1	Rp. 50,000	Rp. 50,000
Cutting board	1	Rp. 20,000	Rp. 20,000
Plastic Zip bag	30	Rp. 10,000 (30 pcs)	Rp. 10,000 (30 pcs)
Measuring cup	1	Rp. 10,000	Rp. 10,000
Tea bag	30	Rp. 10,000 100 pcs)	Rp. 10,000 100 pcs)
	Total		Rp. 764,000

2. Labour Cost

Table 4. 8 Labour Cost

occupation	Personal	Salary (/month)	Sub total
Barista	1	Rp.3,000,000	Rp.3,000,000
Administration office	1	Rp. 2,000,000	Rp.2,000,000
	Total		Rp. 5,000,000

3. Packaging Cost

Table 4. 9 Packaging Cost

Packaging	Quantity	Price (/unit)	Sub total
Tea bag	30	Rp.10,000 (pax 30 pcs)	Rp.10,000
Plastic zip lock	30	Rp.10,000 (pax 30 pcs)	Rp.10,000
Label sticker	30	3,500 / paper 10 sticker	Rp. 10,500
	Total		Rp. 30,500

4. Utility Cost

Table 4. 10 Utility Cost

Facilty	Quantity	Price (/unit)	Sub total
Water	750 L	Rp. 2,000(/m3)	Rp.1,500
Electricity	10 KWH	Rp 1,500 (/kWh)	Rp.15,000
		Total/ day	Rp. 16, 500
		Total / month	Rp. 412, 500

5. Raw Material Cost

Table 4. 11 Raw Material Cost

Raw Material	Quantity	Price (/unit)	Sub total
Jackfruit seed (beton)	3 g	Rp.10,000 (/500g)	Rp.10,000
Jackfruit	2 g	Rp.8,000(/200 g)	Rp.8,000
Mint leave	0,5 g	Rp.2,000 (/ ikat)	Rp. 2,000
Butterfly pea flower	0,5 g	Rp.10,000 (/10 g)	Rp.10,000
		Total/day	Rp. 30,000
		Total/month	Rp.90,000

6. Rent Cost

Table 4. 12 Rent Cost

Facility	Size	Price	Sub total
Land	10 m x 5 m	Rp.2,500,000/ month	Rp.2,500,000
Building	8 m x 5 m		
		Total	Rp2,500,000

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 5,000,000 + Rp 90,000+ Rp 30,500+ Rp 412,500 + Rp 2,500,000 = **Rp 8,033,000**

4.4.2 Selling Price = $\frac{\text{Total cost (/month)}}{\text{Total cost products/units (/month)}}$

$\frac{8{,}033{,}000}{900 \text{ tea bag (450 pax)}}$

Product price = Rp.8,925

Product selling price = product price + (product price x profit percentage)

=8,925+(8,925 x50%)

=8,925 + 4,462,5

=13,387,5 ≈ 13,000