

## CHAPTER II

### LITERATURE REVIEW

#### 2.1 Ingredients Review

##### 2.1.1 Honey Jackfruit

Jackfruit *Artocarpus heterophyllus* the origin from India and one of the species from Moraceae family , which has been used as a nutraceutical. This fruit flesh have the fruit gum taste and smells smukky. Jackfruit be the most huge fruit in the world, the tree it self can rich 10-20 meters. this fruit is a low calories and rich in minerals and vitamin. The vitamin B1 in jackfruit seeds is the highest compared to other carbohydrate sources, 51 cal , 2,0 (g) protein ,0,4 (g) fat , 11,3 g carbohydrate , 45 (g) calcium , 25 (SI) Vitamin A, ),07 (mg) Vitamin B1, 9(mg) Vitammin C (sindumarta 2012)Normally jackfruit are harvest in the summer season so its included seasonal fruits . Jackfruit major weakness are they only can be stored in several days and the texture will turn into watery. Here we use the ripe honey jackfruit , ripe honey jackfruit have flesh is yellow and thick the taste of the fruit is sweet like a honey according to its name.( Kristyanti et al.,2019).

Eating too much jackfruit will cause kidney illness meanwhile jackfruit have antimicrobe, Microbial infection causes various diseases in humans such as diarrhea, tuberculosis, and food poisoning. This compounds used to inhibit the growth of microbial death referred to as anti-microbe compounds ; antiinflammation , AH bioactivity as an anti-inflammatory with compounds flavonoids, antioxidant Antioxidants are inhibitory compounds oxidation of various molecules in the body. Most of the disease with the occurrence free radicals in the body cause various diseases, such as diabetes mellitus and stroke, therefore consumption indirect antioxidants will helps to prevent it.( Jagtap et al.,2010).

### 2.1.2 Beton

Beton is the seed of the jackfruit and normally people throw beton and be a food waste. Which beton actually have lots of nutrients more than the fruit flesh. The taste of beton is flavorless and it have a firm teksture. Normally people process beton into a flour , chips , tewel , tempe , and many others way to process beton. Beton have lots of benefits when consuming it helps human digestion, the fiber that is owned by jackfruit seeds is also quite a lot. With this much fiber, the body can meet dietary fiber and digestive disorders will not occur ; beton is high in antioxidant so it have the anti cancer , it helps to reduce the cholesterol. Beton have the component of antimicrobe to help overcome food poison too. Jackfruit seeds are rich in nutrition, especially carbohydrates, potassium, phosphorus, and fat. The energy content (165 kcal) and carbohydrates (36.7 kcal) of jackfruit seeds are quite high compared to the same content of jackfruit seeds (beton)contain high level of protein , minerals ,vitamins , antioxidant (sindumarta , 2012).

Antioxidants are naturally found in plants, in the form of secondary metabolites that have been isolated from various types of plants and used as raw materials for medicines (Sitorus et al, 2013) Jackfruit seeds contain nutrients which include carbohydrates, organic acids, Vitamin B and Vitamin C as well as nutritional content and potential antioxidant activity functional food development (Restu et al, 2015) .In every 100 grams serving portion of beton it contains 36,7 (g) carbohydrate , 4,2 (g) protein , 0,1 (g) fat ,165 cal energy , 200 (mg) fosfor , 33 (mg) calcium , 56,7 (g) water ( Astawan ,2007 ; fairus ,*et al*, 2010). The major weakness of beton are when they are dried and the texture became very hard to be crusted or destroy , the other disease of beton are it cannot be stored in a long time if its in a moist area. From the results of the research that has been done, it can be concluded that the antioxidant activity and ethanol extract of jackfruit seeds (*Artocarpus heterophyllus* Lam) with an average of 4.8819 mgQE/g extract (Andi Maulana Kamri et,al.)

### 2.1.3 Butterfly Pea Flower

Butterfly pea flower known as blue tea, this bright petals from the flower, the other name of this flower is clitoria ternatea, blue pea , cordofan pea ,or Asian pigeon wings, this flower originated from south America and Asia and in the 17<sup>th</sup> century this flower brought into India and Europe. Usually used as one of the ingredients in herbal tea and it is caffeine free. The blue flowers when steeped in warm or hot this tea liquid changes color based on the PH level added to this liquid , for example by adding a lemon juice to the tea it will turn purple. In Ayurveda they use clitoria flower or blue tea as medical properties. In culinary this blue flowers commonly are used to dyes for coloring confectionaries.

This flower is one of the ingredients of nasi kerbau ,kuih tekan ,pulut inti in Malaysia. This flower also serve with lime juice and pandan syrup in Thailand , Philippines and India eats this flower as a vegetables meanwhile in Burma they are dipped in batter and fried before serving and as a garnish of salad. In the other uses of this flower , this flower are used as an artificial coloring, Beside they eat this flower like a vegetable in Philippines they also use this flower as a medical support to help treating a swollen joint , this leaves and the juice of this flowers also help to treat a inflamed eyes. (Pwee, Timothy, 2004) Butterfly Pea Flower has the potential as an anti-cancer because it contains flavonoids containing kaempferol which have this potential, the results shos the decrease in tumor volume and there was also an increasing in the number of non-viable cells and the average survival time (Jacob & Latha 2012). Butterfly Pea Flower or known as Clitoria Ternatea this flower contains anti-proliferative compounds to inhibit the growth of cancer cells, the results of cytotoxic effect shows an out on normal cells and cancer cells that this prove that butterfly pea flower contains pentanal and inositol. It is estimated that these two substances can inhibit cancer cells. This flower results have an antimicrobe like jackfruit seeds (beton) it shows that the

leaf extract showed stronger antibacterial activity than the root extract. The leaves have strong antibacterial activity against *E. coli* and *Vibrio cholera*, which are known to cause dysentery, and *Staphylococcus aureus*, which causes fever (Gupta et al, 2010). This flower is high in antioxidant, Natural antioxidants are needed and in a great demand because of its synthetic antioxidants, this helps to cure or reduce such as allergies, asthma, inflammation, headaches, decreased consciousness, eye and stomach disorders (Sharmila et al., 2016). *Clitoria ternatea* flowers contain antioxidants and known by seeing from the color of the crown because it contains anthocyanins, Anthocyanins are pigments from flavonoids which are antioxidants. (Swamy et al., 2011). This flower contains 92,0765 % of water, 6,5067% of fiber, 0,05002 % of anthocyanin and 98,72% of antioxidant activity. (Chusak et al., 2018).

#### **2.1.4 Mint Leaves**

Mint or *Mentha* leaves belongs to a Lamiaceae family this plants contains around 15-20 species, this include peppermint and spearmint this popular herbs mostly usually dried and used in many dishes, beverages and manufacture product like toothpaste, beauty product, gum candy. This herbs have the calming character, this mint leaves contain a rosmarinic acid that have the benefits of antioxidant and anti-inflammatory agent. Mint leaves is rich in nutrients, each 1/3 cup it contains 6 calories, 12% of vitamin A, 95 of iron, 4 % of folate. Mint leaves can help to relieve bad breath this mint leaves are the first thing people find to prevent or get rid of bad breath, by drinking peppermint or chewing fresh leaves may be able to mask bad breath and kill bacteria. Mint leaves also improve cold symptoms, menthol is one of the effective nasal decongestant to improve airflow breathing. This leaf also used as a medical to decrease the pain of breastfeeding mothers, head ache, digestive disorders, period cramps, this also helps to maintain healthy teeth. Mint contains menthol, which is a natural compound that can have

a relaxing effect on the muscles of the digestive tract. Apart from mint leaf oil, tea mixed with mint leaves can also have a similar effect. Mint leaves are one of the aromatic herbal plants that produce an essential oil called peppermint oil (Ardisela, 2012). Mint leaves are a aromatic herbal plants commonly utilized as a herbal drinks or herbal tea.

Aromatic herbal tea normally processed with dehydrating method. Drying temperature make a significant effect on the antioxidant activity of herbal mint leaf tea. The antioxidant activity of herbal mint leaf tea ranges from 27.94% to 54.55%. The lowest average value of antioxidant activity was found in treatment drying temperature 70 C, 27.94%, meanwhile the highest average value of antioxidant activity was found in the treatment drying temperature 60 C ,54.55%. Due to the drying temperature can caused the results of the antioxidant activity of herbal mint leaf tea. According to Salunkhe and Kadam in Muawanah's research (2012) antioxidant activity is influenced by phenol and flavonoid compounds contained in mint leaf herbal tea. When the result of phenols and flavonoids is higher than the higher the antioxidant activity. Mint leaves have phenol components such as limonene, cineole, menthone, menthol, which is the antioxidants that can prevent the oxidation process by blocking or capturing free radicals. (Alankar, 2009).

## 2.2 Product Review

### 2.2.1 Antioxidant Herbal Drink

Antioxidant herbal drink is a drink made of herbal ingredients normally made of dried leaves , seeds , flowers with the drying process method. This antioxidant herbal drinks are made of beton seeds , jackfruit flesh , butterfly pea flower and mint leaves that are dried. Here we use and mix all the components of herbal drinks, butterfly pea flower to add color and the mint leave to add the flavor and fragrance and we used the food waste from jackfruit seeds that normally people throw away and the result it became a food waste , the point of this herbal drink as new development herbal drink is to reduce the food waste into a new product. There many type of herbal drink with their own unique taste from many region such like temulawak , wedang uwuh , stmj and ronde, e.g ronde known with the strong ginger taste. This new development of a new product from a food waste into a herbal drink , the consumers that are commonly are interested for the health maintenance or medicine replacement for a healing need.

Herbal beverages are good to consume within a balance diet it helps to improve the antioxidant status and to reduce oxidative stress in human and the most important thing Is herbal beverages uses natural product and do not contain caffeine like in tea or coffee. This are the benefits of consuming herbal beverages anti cancer,antidyslipidaemia , antihyperglycemic , antidiabetic , antinflammantory. (Anoma *et al.*, 2018) one cup of herbal beverage contains of approximately 6 kcal per serving , in organic dried butterfly pea flower it contains of 10 grams of carbohydrates and 0 % of fat and protein, 36% of dietary fiber. Mint leaves contains of 0,3 gram of carbohydrates, 4% calories ,0% of fats and protein, 1% of dietary fiber, 1 % of calcium , The population uses of herbal beverages in the markets for slimming , weigh loss is in a high

demand and so the conclusion from the data we get, is this herbal beverages with the main ingredients from natural product it is suitable for diet and health. The process to obtain the antioxidant herbal beverage is the drying time, this research says that the best drying temperature is ((50°C, 60°C, 70°C) and the drying time using a oven is 3-4 hours. This temperature treatment and drying time had a significant effect on the color and results , the higher temperature of the heating apply to the ingredients it will react caramelize and the color tend became darker. (Fransixkus Jamadin Saragi)

