

CHAPTER II

LITERATURE REVIEW

2.1 Ingredient Review

2.1.1 Apel Skin

Most people only consume or process apple flesh and the skin will only become waste. Even though the apple skin contains more active compounds than the flesh. Wolfe (2003) said that apple skin waste contains active substances consisting of polyphenolic and flavonoid compounds such as catechins, quercetin, phloridzin, and chlorogenic acid (Khoiroh et al, 2018). Flavonoid compounds can increase antioxidant levels which are useful for counteracting free radicals in the body (Baiti, 2021). Catechin compounds are useful for reducing excessive oxidative stress through direct or indirect antioxidant effects, increasing the activation of antioxidant substances, and preventing cancer. (Princess, 2022). Quercetin has antioxidant and anti-inflammatory effects that can help reduce inflammation, kill cancer cells, control blood sugar, and help prevent heart disease. Phloridzin is a compound that can increase the absorption of sugar from the digestive system into the blood, and can reduce the risk of diabetes. Besides that, apple skin also contains vitamins A and C, various minerals, including calcium, potassium, and phosphorus (Garcia, 2021).

Apple skin is easy to get because it is a waste from using the apple flesh. We can get apple skins from someone who only uses apple flesh and throws away the skin like fruit juice traders (apple juice) and restaurants that sell apple juice. In making jam, the use of apple skin is considered cheaper than using apple flesh.

2.1.2 Banana Skin

Banana skin contains nutrients that are beneficial to the body such as 10.80% carbohydrates, 1.205% protein, 3.187% fat and 0.15% vitamin C. Banana peel contains antioxidant activity which is quite high compared to the banana flesh. The antioxidant activity of banana skins reached 94.25% at a concentration of 125 mg/ml while that of the fruit was only about 70% at a concentration of 50 mg/ml. Antioxidant compounds found in banana peels are catechins, gallocatechins, and epicatechins which are a class of flavonoid compounds. Flavonoid compounds can increase antioxidant levels which are useful for counteracting free radicals in the body (Baiti, 2021). Therefore, banana skins have good potential to be used as a source of antioxidants (Gurning et al., 2021).

In general, banana peels have not been used significantly, only thrown away as organic waste or used as animal feed. The amount of banana skin is quite a lot, which is around 1/3 of a banana that has not been peeled. Banana peel waste, which is usually thrown away by banana processing traders, can be used to make products that have a selling value and can be accepted by the community (Gurning, 2021). Nutritional content and easy to obtain, this make the processing of banana peels into jam considered more affordable with the presence of nutrients that are beneficial to the body. We can get banana peels by buying them from traders who sell processed banana products, such as fried banana traders.

2.2 Product Review

In general, when consuming or processing fruit, people only use the flesh of the fruit, while the skin of the fruit is only thrown away and becomes waste. Examples are apple peels and banana peels. Both of these fruit peels contain nutrients that are beneficial to the body (Baiti et al., 2021; Gurning et al., 2020), so it would be a shame if apple skins and banana skins were not used or processed into products.

2.2.1 Apple and Banana Skin Jam

Jam is a food product with a gel or semi-solid consistency made from fruit pulp with the addition of pectin acid and sugar (Arsyad and Abay, 2020). Jam from apple skins and banana skins is the production of jam by utilizing apple skin and banana skin waste which are rich in nutrients into jam at an affordable price. However, jam products made from apple peels and banana peels will be quite difficult for some people to accept because some people believe fruit peels cannot be eaten or processed because fruit peels are dirty and contain pesticides (Lukyani, 2021).

2.3 Process Review

The process of making jam from apple peels and banana peels start with the weighing method, next is washing method, which aims to remove dirt and reduce the amount of pesticides. The washing method using running water can reduce peptides by up to 70-99% of pesticide residues that stick (Haryati, 2020). Next is the soaking method, the fruit skin is soaked in water with added salt and citric acid or lemon which aims to help get rid of dirt along with chemicals and pesticides (Wibowo, 2018).

Blending method, in this method the fruit skin is in a blender to get fruit skin pulp. Next is the mixing method, the fruit peel pulp will be mixed with sugar, pectin and other additives. And the last method is heating and thickening, the fruit skin that has gone through the mixing method will then be cooked at a temperature of 103 - 106 degrees Celsius until the texture becomes thick.