

CHAPTER II

LITERATURE REVIEW

2.1 Ingredient Review

2.1.1 Purple Sweet Potato

Sweet potatoes are considered as a crop for food security and are among the seven most important crops in the world because they can be harvested throughout the year (Kartiningsih et al., 2020). Purple sweet potato (Figure 2.1) is a type of sweet potatoes that has purple color in the skin and flesh. One of the major nations that produces sweet potatoes for market is Indonesia (Kurnianingsih, 2019). Farmers frequently grow purple sweet potatoes because they are simple to adapt to the environment. Many studies have stated that purple sweet potato has a high anthocyanin content. The raw storage roots of purple sweet potato have anthocyanin contents that range from 107.8 mg to 174.7 mg/100 fresh weight (Kurnianingsih et al., 2019).



Figure 2.1 Purple Sweet Potato

The antioxidant activity of anthocyanin from purple sweet potato is greater than that of anthocyanin found in purple corn, red cabbage, and elderberry (Kurnianingsih et al., 2020). Even though the anthocyanin from purple sweet potato is not the best, but purple sweet potatoes are a potential raw material for making commercial anthocyanin products due to their advantages of low cultivation costs, short growth periodicity, strong adaptability to different environments, and year-round planting (Chen et al., 2019). Anthocyanin itself is a polyphenol derivative

compound that is found in large quantities in many different types of plants and serves a variety of essential physiological roles in all living things.

2.1.2 Miana Leaves

Because of secondary metabolites, the majority of Indonesian plants have the potential to be medicine. According to reports, one of the plants was effective in a variety of therapy is *Scutellarioides Plectranthus* (L.) or known as Miana leaves. Miana leaves are thought to be effective in treating wounds, inflammation, diarrhea, coughs, hemorrhoids, sore eyes, and skin diseases (Ayu et al., 2018). Miana is red purplish single-leaf plant (see Figure 2.2). The presence of anthocyanin pigments is indicated by the purple color of mania leaves. Due to its abundant availability in nature, anthocyanin harvesting on miana leaves can be done at any time and is not season-dependent. Anthocyanin from miana leaves can be used as a natural pigment for various staining purposes, particularly in the food industry (Puspita et al., 2018). Miana leaves contains 43.5 mg /100 gr anthocyanin (Ayu et al., 2018).



Figure 2.2 Miana Leaves

Miana leaves have a lot of benefits. Traditionally, miana leaves are used for relieve sore throat, blood booster, and reducing fever (Yuszda, 2021). Miana leaf can be potential for being antibacterial because the growth of the bacteria *Staphylococcus aureus*, *Staphylococcus epidermidis*, and *Klebsiella pneumonia* can be inhibited and killed by

miana leaf extract (Pakadang, 2018). People who work in the medical field use the leaves to make remedies for ophthalmia, dyspepsia, headaches, asthma, coughing, enhancing appetite, accelerating the maturation of boils, diarrhea, and worm medicine, as well as concoctions to reduce swelling in wounds (inflammation) (Yanto et al., 2020).

2.1.3 Tapioca Starch

A carbohydrate or polysaccharide called starch is made up of numerous glucose units that are joined together by glycosidic bonds (Obadi & Xu, 2021). Since starches are affordable, biodegradable, renewable, nontoxic, and readily available, they are frequently used in food and nonfood applications (Javadian et al., 2021). The enormous interest in gluten-free foods has led to a rise in interest in starch noodles (Punia et al., 2022). One of the starch that easily found is tapioca starch. Tapioca starch made from cassava roots. The production of starch noodles and the development of the final noodle quality depend greatly on starch (Obadi & Xu, 2021). Many noodles or gluten free noodles use tapioca starch (Punia et al., 2022; Pokharel et al., 2023; Xin et al., 2018).

2.2 Product Review

Many people around the world eat noodles, but Asians tend to enjoy them the most. Noodle has become Indonesian's favourite food,. Noodles are simpler for consumers to consume because they can easily be consumed during picnics or on trips (Al-Baari et al., 2022). People today, especially, prefer practical and filling food. Noodle is usually made from wheat flour (Al-Baari et al., 2019). However, gluten, the main protein in wheat flour, is linked to three conditions: gluten intolerance, which is also known as celiac disease, gluten allergy, and non-celiac gluten sensitivity (Raungrusmee, 2020). Over the past ten years, consumer interest in nutraceutical products has increased, this indicates that as consumer health awareness rises, so will the demand for gluten-free food products (Daliu et al., 2018). Besides for the

gluten free, people have become more conscious of sustainable living and the dangers of food additives, some choose more natural options, including instant noodles (Toiba et al., 2023). Many consumers have recently shown a willingness to spend money on guaranteed-to-be-safe food products (Chen et al., 2020).

2.3 Process Review

Drying method is a method to remove all the moisture. Drying is undoubtedly the oldest and is still widely used today among the many techniques for food preservation. Water is removed from the food through vaporization or sublimation, reducing the amount of water available for microbial, enzymatic, or chemical reactions that can lead to food degradation. (Guiné & Dets, 2018). Bacterial growth in food is a result of moisture during storage. A high percentage of bound and unbound water is present in all fresh agricultural products, including fruits, vegetables, and leaves, in addition to the active ingredient (Babu et al., 2018). There are several types of drying methods. Drying involves removing the water vapor from the food's surface as well as using heat to vaporize the water that is already present in the food (Guiné & Dets, 2018).

Drying method can be divided into two broad categories, traditional and industrial. Traditional methods take a long time; for example, when drying in the sun, the product's outer layer is initially dry and forms a layer that conducts heat poorly, slowing the drying process. The possibility of an increased microbial load in food is also very high. Due to their lengthy drying times, generally poor quality, and high energy consumption, these methods raise serious concerns (Talebzadeh et al., 2022). On the other hand, industrial drying not only reduces drying time but also preserves acceptable food quality. For the dehydration of vegetal products, numerous drying techniques have been created and used. The most popular methods for drying vegetal products are microwave drying, cabinet drying, spray drying, freezing, and osmotic dehydration (Talebzadeh et al., 2022). Even though drying methods

have a very beneficial, however, during the drying process, food structures will inevitably deform and nutrients will be lost (Yayuan et al., 2020). Another study also mentioned that although drying can help extend food's shelf life and make storage and transportation easier by eliminating the need for pricey cooling systems, it is a fact that the quality of dehydrated food is typically much lower compared to the quality of the original foodstuff (Guiné & Dets, 2018).