

CHAPTER II

LITERATURE REVIEW

2.1 Ingredients Review

2.1.1 Soybean Flour

Considering that soybeans are a rich source of protein (45%), contain the majority of the essential amino acids, vitamins, and minerals, and are another nutrient-dense plant source, they may be a crucial component of functional foods. Lysine and tryptophan, two of the necessary amino acids that are scarce in cereals, are likewise abundant in soybean. A, B, C, and D vitamins are abundant in soybean protein (Uzayr wasif, Usman Al-Shebab 2020).

Which is roughly four times as much as wheat and six times as much as rice grain. In addition, soybeans are a good source of healthful polyunsaturated fatty acids like linoleic acid (around 50% of the total fat content). Because of these exceptional qualities, soy is a great addition to supplemental foods like bread, biscuits, and health beverages. (Suman Mohajan *et al* ., 2018).

One of the most significant sources of protein in the human diet is soy, which is used in both traditional foods like tofu, soy milk, natto, and tempeh as well as newly developed foods like snack bars, gluten-free baked goods, and meat substitutes. Among the primary In terms of purity, soy protein is produced in a variety of forms, including soybean flour (40% protein), soy protein concentrate (70% protein), and soy protein isolate (> 90% protein). The production of soy protein concentrates and other products now mostly uses wet extraction techniques. isolates with yields of between 50% and 60% Defatted soy flakes are often the source of soy protein isolates and concentrates. Solvable sugars, soy whey proteins, and salts are first eliminated from soy protein concentrates using aqueous alcohol or hot acid leaching.

The pre-treated soy flakes are next dried and desolventized. For soy protein isolates, the defatted flakes' proteins are dissolved, and then the protein solution is centrifuged apart from the fiber portion. It is a protein. that may be measured, such as solubility, water/oil absorption, foaming, emulsification, and gelation capabilities. To create soybean flour that is protein-enriched, defatting and dry fractionation of soybean flour using a combination of impact milling and triboelectrostatic separation were examined (Qinhui Xing *et al.*.,2018)

2.1.2 Mocaf Flour

In general, biscuits and quick oats are complimentary foods available on the market. The main ingredients in biscuits are flour, sugar, and fat, and they have a long shelf life because of this. low levels of moisture. Although cassava flour and other substitute ingredients are used to manufacture biscuits because wheat flour is not produced in Indonesia, biscuits are still made with wheat flour because it is a common product. Among the many agricultural products produced in Indonesia, cassava output reached 19,053,748 tons in 2017. Substitute ingredients One of them is soybean, which has a high protein content and is essential for production in Indonesia. Indonesia produces a relatively small amount of soybean, producing 538,253 tons annually in 2017. Additionally, 40.94% of soybean flour is protein. Due to its impact on flowability, particle size is regarded as one of the most crucial physical characteristics of powders. More specifically, the cohesiveness of small particles is higher, indicating a larger surface area and stronger intermolecular interactions between the particles. Additionally, particle sizes and their distributions affect dough rheology, and variations in particle sizes can be used to offer food products, particularly bakery goods, a variety of properties. . A variety of supplementary diets based on wheat flour substituted with Dumbo catfish flour, soybean protein

isolates, soybean flour, arrowroot starch, and sweet potato flour have been the subject of prior investigations. Soybean flour, sweet potato flour, and arrowroot starch Other trials have used supplemental foods prepared from non-wheat flour. soybeans, corn, and moringa leaves corn, millet, and leaves of the moringa flour made from millet, sorghum, pumpkin, and amaranth seeds The features of mocaf-based biscuits where soybean flours with different particle sizes were used as substitutes at variable concentrations must be determined because mocaf is still infrequently employed as a raw material for producing complementary foods (Ratnawati *et al* .,2020).

2.2 Product Review

2.2.1 Cupcake

Cupcakes is one of American “Staple food” for a special occasion. It’s shaped like a cup depending on how the cup looks like, like a ordinary cakes we can in a cake shop. Cupcakes are similar to muffins, the main difference is muffin actually mostly found in a form of bread sometimes they also added such as berries, nuts or even fruits to makes taste better. While cupcakes are the traditional version of muffins they didn’t contain any of those. With the right combination of ingredients cupcakes can turn into a delicious snacks.

Researcher said that there’s 1% chance that a person can suffer celiac disease. This disease happen because there’s a abnormal immune system reaction to the protein gluten, based on the data US citizen mostly spend \$15.5 for gluten foods in 2019. Since “some” of them realize the clinical disease from gluten they decided to limit their gluten consumption because over gluten consumption can lead to some symptoms, such as gastrointestinal symptoms. Gastrointestinal have common examples such as bloating, GERD and diarrhea (Dr Niland *et al*, 2018).

2.3 Process Review

2.3.1 Baking

Baking are 1 of the most famous cooking technique. Mostly it's used for baking cakes, making dessert, drying certain food products. The goal by getting the perfect a baking is to determine the time under heat, volume expansion, moisture content and texture of the cake. Which makes different results on different temperature. The quality of cakes also determine by airflows inside the oven, the better quality oven is used the more better airflow will be distributed equally (Mazidah mior zakuan, 2019).