

## CHAPTER II

### LITERATURE REVIEW

#### 2.1 Ingredients Review : Potato

Potato is a root vegetable that is native to the America , it is starchy tuber of the plant, *Solanum Tuberosum* is the scientific name for potatoes. In most of the developing countries, and more specifically in urban areas, increasing levels of income are driving a “nutrition transition” toward more energy rich foods and processed food products. That is one of the main reason demand for potato is rising. Potatoes are frequently served whole or mashed as a cooked vegetable and are also ground into potato flour, used in baking and as a thickener for sauces. The tubers are highly digestible and supply vitamin C, protein, thiamin, and niacin. The potato is one of some 150 tuber-bearing species of the genus *Solanum* (a tuber is the swollen end of an underground stem).

Potatoes contain a number of nutrients and nutritional components that may play a role in health promotion and reducing the risk of chronic disease. In fact, potatoes have a more favorable overall nutrient-to-price ratio than many other vegetables and are an important staple worldwide (Beals, 2018). Potatoes contribute key nutrients to the diet including vitamin C, potassium, and dietary fiber. Potato is classified as a “starchy vegetable”, highlighting its main macronutrient carbohydrate and predominant type of carbohydrate, starch. Potato starch consists of amylopectin (branched chain glucose polymer) and amylose (straight chain glucose polymer) in a ratio of 3:1. A small proportion of the starch found in potatoes is "resistant" to enzymatic degradation in the small intestine and, thus, reaches the large intestine essentially intact.

Potatoes contain a number of minerals and plant compounds that can help lower blood pressure. High potassium content is very important for healthy blood pressure. In addition, other substances in potatoes that can lower blood pressure include chlorogenic acid and also kukoamines (Halodoc, 2023). According to health data from the journal Eurasian Chemical Communication, potatoes are rich in antioxidants, ranging from flavonoids, carotenoids and phenolic acids. These compounds act as antioxidants in the body by neutralizing harmful molecules, namely free radicals. The anthocyanin and vitamin C content in this plant is also effective against free radicals and maintains a healthy body. Free radicals that accumulate increase the risk of chronic diseases such as heart disease, diabetes and cancer. The next-healthiest way to cook a potato is through steaming, which causes less nutrient loss than boiling. Cooking a peeled potato in this way results in significant nutrient loss, as the water-soluble nutrients leach out into the water (Gordon & Szalay, 2022).

In general, potato has more vitamin and nutrients than rice, but when you add toppings like butter, sour cream, sauce, bacon bits, and salt, the number of calories and grams of fat in potato increases significantly (Appleby, 2018). In the fat, calorie and protein categories, the potatoes and rice are both fat free with less than a gram of fat per serving. They are also similar in caloric content. A cup of plain white rice has 242 calories and brown rice contains 216 calories. A medium baked potato falls between them with 230 calories. Rice, with 5 grams of protein per cup, has slightly more protein than a potato, with 3 grams. To stay nutritious, limit these foods and choose lower-calorie, healthier condiments such as garlic or olive oil. Consider nutrient retention as well.

## **2.2 Product Review**

Spread made from vegetable-based ingredients, suitable to be eaten with toast, biscuits, crackers, and even other side dishes. With a consistency similar to vegetable puree but less dense, smooth and thick. Vegetables spreads can be made solely from vegetables and oil or they can contain added seeds, nuts and/or spices. It is almost the same function and use as plant based butter. Toast

or bread is usually eaten with dairy and meat products (e.g., cheese, dairy spreads, cold cuts). Some people will have a salad as a side but most do not use. As a result, these meals are very poor in vegetables. An easy way to bring more vegetables to the table is by preparing homemade vegetable spreads, which equal 1 of your 5 servings of fruit and vegetables for the day (Cookingwithelo, 2021).

Vegetable spreads are a great way to eat more vegetables. Based on Department of Health & Human Services, vegetables are the best sources for the body. Fiber is an important component for maintaining the health of the digestive tract and preventing constipation and other digestive disorders. Consuming foods high in fiber will also reduce the risk of colon cancer. These biologically active substances can help to protect you from some diseases. Spread some on their bread with or without another topping they like. Nonetheless to avoid or adapt the quantities of certain spices (Elo, 2021). They are however also a great addition for who tend to eat too little veggies every day.

Therefore creating potato spread as a substitute for vegetable-based foods and carbohydrate substitutes with better and healthier nutritional content overall. The main goal is the practical concept, which can be consumed directly. Since most Indonesians consume rice for breakfast, the main reason is that it is more filling and more practical because in Indonesia there are so many who sell packaged rice/boxed rice/etc (Nugroho, 2018). Along with the other main reasons are there is no time to prepare breakfast in the morning, and also they feel that buying ingredients to cook breakfast would be more of a waste of money.

For some reason, potato spread is very suitable for consumption by people who want to live healthy from an early age and also refuse to buy or cook breakfast. Discover four different ways to add potato spreads to any kind of meal while on an eating routine. First on bread or toast: whether there is a slice of bread/toast/sandwich for breakfast, lunch, or dinner, the ability to simply top it with a layer of vegetable spread. Eat it as is or pair it with some personal favorite toppings. Second, it simply serves as a dip with some crackers or raw vegetables. Third, as a salad topping, add 1 tablespoon of potato spread to the salad or dressing. Finally, for pasta sauce, simply thin potato spread with water and heat it to use it as a delicious pasta sauce that is loaded with vegetables. Making potato spreads usually consists of roasting potatoes in an oven or using steaming methods and then blending them. Therefore, it is fairly easy to create several spreads simultaneously. This allows more vegetable content to be chosen from the toppings. It is also possible to freeze individual portions and defrost them in the coming weeks to save time.

## **2.3 Process review**

### **2.3.1 Mash**

Using the mash method to make the texture and the structure of the mixture is more soft, dense and strong. Blending any mashed potato even with the precision of a hand blender can release a lot of starch, which can create a gooey texture (Vaculin, 2020). Spread made from vegetable-based ingredients, suitable to be eaten with toast, biscuits, crackers, and even other side dishes. With a consistency similar to vegetable puree but less dense, smooth and thick. After mashing and blending the potatoes, adding some butter and seasoning as well, like salt, pepper, garlic powder, onion flakes, and even roux to make the consistency perfect for a spread.

### **2.3.2 Preserve**

To make the potato spread long before consumption, it does need to use some preservative products, such as salt and sugar, for these common preservatives (Muinos, 2022). The table salt is hygroscopic and absorbs water. Therefore, salt causes microorganisms to die due to dehydration. Granulated sugar can be used as a preservative because it has hygroscopic properties or absorbs water so that bacterial cells dehydrate and eventually die. Sugaring refers to the use of sugar as a preservative. Its use can be sprinkled, mixed, and dissolved with food or drink ingredients that will be preserved. By using salt and sugar compared to chemicals on the grounds that the high concentration levels of salt and sugar can absorb the internal fluids of microorganisms to make them die. Automatically, foods that are given salt and sugar at certain levels can help protect food from bad microbial growth and reduce food quality (Hanson,2022).

Not only the ingredients but also the jar methods can be a good way to preserve the potato spread. Because it is safe for hot or cold culinary servings, it is suitable for use in food product packaging that is packaged under both hot and cold conditions. Additionally, this packaging is resistant to environmental conditions. Second, resistant to chemical reactions, packaging using glass bottles can prevent mixing of chemical elements because glass is an inert compound (does not react easily) so it is safe to package chemical products that have very high or very low pH (Dewi, 2022).