

## **CHAPTER II**

### **LITERATURE REVIEW**

In this chapter the writer presents about the information about sweet potato, the nutrient of sweet potato, the definition of pizza, the history of pizza, the variety of pizza, the pizza dough composition, pizza dough making process.

#### **2.1 The Information about Sweet Potato**

According to Purwono and Purnamawati (2013:1), sweet potatoes are from the America, the botanist and agricultural expert estimate the origin of sweet potato plants are New Zealand, Polynesia, and Central America. Nikolai Ivanovich Vavilov, a Soviet botanist, ensuring local primary center of origin sweet potato plant is Central America and then sweet potatoes begin to spread throughout the world, especially tropical countries, in the 16th century, the Spaniards spread the sweet potato Asia, particularly the Philippines, Japan, and Indonesia. From explanation is it can concluded that the sweet potato can be planted or grown in tropical climates and can also grow well in the sub-tropical climate.

Generally sweet potatoes are divided into two groups, namely the bulbous hard sweet potato containing starch and soft bulbous sweet potato containing water. Tuber flesh hard (solid) is a type of sweet potato. It is usually white. Tuber flesh soft contains high water level and usually has yellow-orange color. (Anonymous, 2003:1)

Physical characteristics such as the size of the sweet potato, sweet potato shapes and colors need to be known, because it is closely related to its use (Aini, 2004:2). The size of the sweet potato is composed of three types, namely large, medium and small, while the shape of the sweet potato round to oval with flat surfaces to uneven. The color of the peel and flesh of sweet potato is not always the same. Sweet potato has a dirty white color, yellow, orange and purple. Sweet potato flesh color is white, beige, orange,

depending on the type and pigment content therein. Yellow fleshed sweet potato contains  $\beta$ -carotene pigment and purple sweet potato contains anthocyanin pigment. Total content of  $\beta$ -carotene and anthocyanin's in sweet potato depending on the color density of potato, the more intense the color of potato, the number pigment in the potatoes will be higher. Sweet potato can be used as a substitute for the staple food because it has an efficient source of calories. The sweet potato also contains essential components essential nutrients, such as protein, fat, carbohydrate and vitamin A ( $\beta$ -carotene).

According to Koswara (2013:11), in developing countries, the sweet potato has been processed into a variety of shapes more perfect food that can increase the price of sweet potato. In addition, the sweet potato is also used as various industrial raw materials. The example of processed sweet potato as household products, are as sweet potato crispy with cheese, sweet potato cupcake and oreo sweet potato pudding. The examples of processed potato as various industrial raw materials are fermentation industry, textiles, adhesives, cosmetics, pharmaceuticals and syrup.

## 2.2 The Nutrient Content of Sweet Potato

Sweet potatoes are also a good source of energy in the form of carbohydrates. Table 1 and table 2 show the nutrient content of every 100 gram steamed sweet potato.

**Table 1**  
**Nutrient Content of Sweet Potato**

No	The Nutrient	Content		
		White Sweet Potato	Yellow Sweet Potato	Purple Sweet Potato
1	Calories	123%	136%	123%
2	Carbs	28.79%	24.47%	12.64%
3	Sugar	0.32%	0.11%	0,30%

	reduction			
4	Fat	0.77%	0.68%	0.94%
5	Protein	0.89%	0.49%	0.77%
6	Water	62.24%	68.78%	70.46%
7	Ash	0.93%	0.99%	0.84%
8	Fiber	2.5%	2.79%	3%

*Sources: Suprpto (2003:1)*

**Table 2**  
**Antioxidant Content of Sweet Potato**

No	Antioxidant Per 100 grams	White Sweet Potato	Yellow Sweet Potato	Purple Sweet Potato
1	Beta Carotene	260 MGk (SI 869)	2900 MGk (SI 9675)	9900 MGk (SI 32967)
2	Vitamin C	28,68 mg/100 gr	29,22 mg/100gr	21,43 mg/100 gr
3	Anthocyanin's	0,06 mg/100gr	4,56 mg/100 gr	110,51 mg / 100 gr
4	Vitamin A	60.00 mg	-	7.700 mg

*Sources: Marsono (2002:1)*

Based on the tables above, it can be concluded that every 100 g steamed sweet potato contains only 123-136 calories. Dry matter content varies from 16 to 40% compared to the fresh sweet potatoes. Among the three types of sweet potato, the highest level of anthocyanin content is purple sweet potato.

### **2.3 The Definition of Pizza**

According to John in Yudhistira (2010:1) the word "pizza" is thought to have come from the Latin word "pinsa", meaning flatbread. Pizza is a flat, open-faced pie of Italian origin, consisting of a bread-like crust topped with seasoned tomato sauce and cheese, often garnished with savory meats and vegetables. This food comes from ingredients that are simple and easily obtained such as: wheat flour, oil, salt and yeast.

Marriem (2015:1) says that pizza is a kind of round bread, baked in the oven and usually covered with tomato sauce and cheese with other selected additive food. It usually uses mozzarella cheese or "pizza cheese". Other types of material can also be placed on top of the pizza. The materials are usually meat, such as salami and pepperoni, ham, bacon, sauce such as tomato sauce, fruit such as pineapple and olives, chili and vegetables such as peppers, and onions, mushrooms and others. Pizza is a kind of ordinary but could be given extra flavor with butter, garlic, herbs, or sesame. Pizza is usually eaten while it is hot (usually for lunch and dinner), but some are served cold, usually eaten for breakfast or at a picnic.

### **2.4 The Variety of Pizza**

According to John in Yudhistira (2010:1), in the United States topping pizza made with variants such as pizza with peanut sauce, apples and bean sprouts. It is a modern favorite all over the world. Pizza makers have tried virtually every kind of topping on pizza including peanut butter & jelly. All over the world, toppings vary greatly to reflect regional preferences. In Japan, for instance, eel and squid are favorites; in Pakistan, curry is a big seller; in Russia, red herring is a topping of choice; Australians enjoy shrimp and pineapple on their pizzas; Costa Ricans favor coconut, but in the United States, pepperoni is the favorite pizza topping.

## **2.5 The Pizza Dough Composition**

Pizza dough consists of two composition, main and addition. The main composition consists of flour, yeast, salt, olive oil and warm water. According to Maria (2011:1), main composition of the pizza dough means each component is important in dough making process, and each cannot be substituted since it gives the essential function of the component in pizza dough making process. In other words the pizza dough cannot be made if one of the main component does not exist. The additional composition consists of mozzarella cheese. Other types of material can also be placed on top of the pizza, usually meat, mushroom, vegetable, fruit, etc.

### **2.5.1 Flour**

Flour is derived from wheat grain. According Syarbini (2013:15), flour is the result of milling. Flour is one of the grain crops commonly grown in countries such as America, Canada, Europe, and Australia. In general, flour is used for making various kinds foods such as cakes and breads.

Maria (2011:1) says that flour is the main ingredient in the making of bread dough. Proteins of flour have function to bind or to absorb water to form gluten. Gluten serves to hold the carbohydrates gas produced in the fermentation process. Carbohydrates of flour will absorb water into the dough together with gluten, which in the presence of heat in the oven to form gelatin. Gluten and gelatin is a framework and network on bread dough. Flour used to make bread dough, is high protein flour.

### **2.5.2 Yeast**

According to Yayath (2009:1), yeast is a blob type of fungus *Saccharomyces cerevisiae*. In liquid yeast cells there are a number of enzymes that play a role in the fermentation process. The main function of yeast in bread making is to develop the dough. The fermentation process produces carbohydrates gas, acid, and alcohol. Acid serves to soften the dough; it makes the dough easily formed after the second

fermentation. Alcohols are liquid and volatile gases and lost in the process because of the hot oven. The ideal fermentation process when there is a balance between factors, among others: the amount of yeast, sugar, salt, water, temperature and acidity of dough. The amount of yeast depends on the type of yeast. When using dry yeast or yeast and wet, then the ratio is 1 (yeast): 1.5 (dry yeast): 3 (wet yeast).

### **2.5.3 Olive oil**

Yayath (2009:1) says that olive oil is a fat obtained from the olive (the fruit of *Olea European*; family *Oleaceae*), a traditional tree crop of the Mediterranean Basin. The oil is produced by pressing whole olives and is commonly used in cooking. Olive oil is used throughout the world, People have been eating olive oil for thousands of years and it is now more popular than ever. It has benefit for healthy and culinary for example olive oil is usually used for cooking and as the ingredients in making bread dough.

According to Coner (2006:1), in making pizza dough, it usually uses cooking oil or olive oil. The original pizza made with olive oil. Expert pizza uses darker and greener olive oil. The fragrant pizza uses darker the green color and the oil. Since the aroma of olive oil, it can be replaced with margarine or butter so that the result is a richer flavor. Using olive oil will produce denser pizza than using butter or margarine.

### **2.5.4 Salt**

Salt is just simple table salt. It normally uses sea-salt since it is natural product. Salt is a white solid object shaped crystals in a collection of compounds with the largest part of sodium chloride 80% as well as other compounds, such as magnesium chloride, magnesium sulfate, and calcium chloride. Sources salts in nature are derived from sea water. Salty water lake, deposits in the soil, salt mines, the source of water in the soil (Burhanuddin, 2001:1).

### **2.5.5 Warm water**

Yayath (2009:1) says that water in the manufacture of bread serves as solvent all ingredients into a compact dough. Protein reacts with water to form gluten. Starchy carbohydrates react with water by heat around 64 degrees or more. Water turns into steam in the oven, causing the development of the bread into the pores of the crumb. Water requirements for bread is neutral pH, normal mineral content (hardness 150-300 ppm) and feasible for drinking water.

According to Maria (2011:1), in making pizza dough, it needs warm water. The temperature is medium. It is not too cold and not too hot. It is between 100 - 110 degrees. Cold water would not revive the yeast. Hot water would kill the yeast and as the result the dough won't rise.

### **2.5.6 Additives**

John in Yudhistira (2010:1) says that additives are mozzarella cheese or "pizza cheese" or tomato sauce. Other types of material can also be placed on top of the pizza, are meat, such as bacon, smoke beef, chicken, and sausage, sauce such as tomato sauce, white sauce (béchamel) and chili sauce, fruit such as pineapple and apple, vegetables such as peppers, onions, sweet corn, tomato and others. The function of additives is making to a new taste for the dough or the color of the dough.

## **2.6 Pizza Dough Making Process**

According to Maria (2011:1), basically there are six steps of pizza dough making process. The process can be followed whether pizza dough is processed manually or by using machine such as mixer. Bread machine will be easier for the making process of pizza dough.

The pizza dough making process based on to Maria (2011:1) is as the following:

First of all, weighing the ingredients, each ingredient should be weighed exactly based on recipe's needs. The quality of the pizza dough is determined by the ingredients. The amount of each ingredient has correlation to others. It means one has influence to another. If one ingredient is decreased other should also be decreased.

The second, mixing and kneading dough in a small bowl, sprinkle the yeast on the warm water and stir to dissolve it. Set aside until the yeast starts forming bubbles in about 5 minutes. And then sift the flour; pour the flour into a large bowl or on a work surface. Mold the flour in a mound shape with a hole in the center. Pour the yeast mix in the center, then the olive oil and a pinch of salt (Using a spatula, draw the ingredients together). Then mix by using hands to form dough. Sprinkle some flour on the work surface. Place the pizza dough on the floured surface. Knead the pizza dough briefly with hands pushing and folding. Knead just long enough for the dough to take in a little more flour, and until it no longer sticks to hands. Sift the flour. Pour the flour into a large bowl or on a work surface. Mold the flour in a mound shape with a hole in the center.

The third, proofing the dough with the hand, spread a little olive oil inside a bowl. Transfer the dough into the bowl. On the top of the pizza dough, make two incisions that cross, and spread with a very small amount of olive oil. Maria (2011:1) said that this last step will prevent the surface of the dough from breaking too much while rising. Cover the bowl with a kitchen cloth, and set the bowl aside for approximately 1½ – 2 hours until the dough doubles in volume. The time required for rising will depend on the strength of the yeast and the temperature of the room.

Fourth, dividing the dough when the dough is about double its original size, punch it down to eliminate the air bubbles. On a lightly floured work surface, cut the dough into three equal pieces and then on the work surface, using a rolling pin and hands, and then shape one piece of dough into a thin



round layer. Make a pizza about 12 inches in diameter and transfer it to the pan. Using the fingertips, push from the center to the sides to cover the entire surface of the pan with a thin layer of pasta and repeat this step with the other 2 dough pieces to make 3 pizzas.

The fifth, spreading the toppings. At this point, the pizza is ready to receive its toppings. Add onto the pizza the preferred toppings. Can be sprinkle with a pinch of salt and pepper.

Finally is baking. Bake the pizza in a regular oven at 500 degrees or 200 degrees for about 15–20 minutes. The cheese should be added 5 – 10 minutes before removing the pizza from the oven. To check for readiness, lift one side of the pizza. The pizza is cooked when the bottom surface is light brown.

## **2.7 The Information of Taste, Texture, Aroma and the Appearance.**

Ameren in Puspita (2012:1) says that processed bread is determined by the stimuli that arise through the senses of smell, tasting, and sight. Therefore, it is important to have an assessment of flavor, aroma, texture and the appearance of the bread. If presented may look attractive, spread a pleasant aroma and gives a delicious flavor. It can be said the bread as delicious. Millard in Puspita (2012:1) says that the sense of aroma is used to assess the bread. Aroma is very subjective and difficult to measure, because someone has a different difficulty, The characteristics of aroma that is rancid aroma, very strong aroma and become one of the characteristics of the product, is a weak scent smells not emit distinctive aroma, and average is an aroma that is not issues rancid odor and not too strong aroma also issued.

Laurie in Puspita (2012:1) says that the taste are usually evoked by the bread that is savory, salty, sweet, sour, bitter, spicy, strong, and tasteless, texture characteristics are crunchy, soft, smooth, supple, and oily. Among bakery products can be seen how the appearance of the bakery products, whether the appearance is beautiful, exciting, delicious, or it could be seen disgusting, horrible and unattractive.