



Review Article "SHRIMP CRACKERS"

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Abstract

A very popular snack food in Indonesia is shrimp crackers. This article aims to get information about the stages of making shrimp crackers and factors that affect the quality of shrimp crackers. Based on library studies that have been done, information is obtained that the manufacture of shrimp crackers in general consists of three important stages, namely dough making, printing dough and drying. Factors that affect the quality of shrimp crackers, among others, are water content, development volume, and packaging.

INTRODUCTION

Crackers are a snack that is quite popular among the people of Indonesia, because it can be consumed as a companion food or snack. Crackers are a type of dry food made from ingredients that contain high enough starch. Another understanding mentions that crackers are a type of small food that undergoes volume development to form a porous product and has a low density during the frying process. Crackers have a variety of types that are currently widely found in the market.

According to Wahyono (2002), crackers are made from raw materials and additives. Raw materials are materials that are used in large quantities and their functions cannot be replaced by other materials. Additional materials are materials needed to equip raw materials in the production process. The source of raw materials used to make crackers is food with a fairly high carbohydrate content, namely starch. Starch used as a raw material in the manufacture of crackers is referred to as *puffable material*. *Puffable material* is a material that plays a major role in the product expansion process.

Additional ingredients used are as flavoring ingredients, in the form of food ingredients that contain protein, fat, sweetness enhancer, savory taste and water to form cracker dough. Based on the flavoring ingredients used in its processing is known as shrimp crackers, if the additional ingredients come from shrimp meat. This article aims to get information about the stages of making udang crackers and factors that affect the quality of shrimp crackers.

Vanname shrimp as an additional ingredient



Figure 1. Vanamei Shrimp

Vannamei shrimp includes crustaceans, decapode orders as do other shrimps, lobsters and crabs. Decapodes are characterized as having 10 feet, a well-developed carapace covering the entire head. Paneid shrimp is different from other decapodes. The development of larvae begins from stadia naupliidan females storing eggs in their bodies (Genedocate, 2006).

Vaname shrimp (*Litopenaeus vannamei*) originates from the Pacific West Coast of Latin America, ranging from Peru in the South to Northern Mexico. Vaname shrimp began to enter Indonesia and was officially released in 2001 (Nababan et al., 2015). Vaname shrimp is one of the shrimp that has economic value and is an alternative type of shrimp that can be cultivated in Indonesia, in addition to windu shrimp (*Panaeus monodon*) and white shrimp (*Panaeus merguensis*).

Vaname shrimp is the main choice for the majority of shrimp farmers because it has several advantages, namely having high economic value, easy to cultivate, and resistant to disease (Dahlan, Hamzah, & Kurnia, 2017), and can grow quickly, high salinity range, low feed and protein conversion ratio, can be cultivated with high density (Syarifullah, 2018).

According to Haliman and Adijaya (2005), the classification of vannamei shrimp (*Litopenaeus vannamei*) includes:

Kingdom : Animalia
Sub kingdom : Metazoa
Phylum : Arthropods
Sub phylum : Crustaceans
Class : Malacostraca
Subclass : Eumalacostraca
Super order : Eucarida
Order : Decapoda
Suborder : Dendrobrachiata
Infra ordo : Penaeidea
Super family : Penaeioidea

Family : Penaeidae
Genus : Litopenaeus
Species : Litopenaeus vannamei

The body of the vannamei shrimp is transparent white so it is more commonly known as "white shrimp". However, there are also bluish colors due to the more dominant blue chromatophores. The length of the body can reach 23 cm. The body of the vannamei shrimp is divided into two parts, namely the head (thorax) and the abdomen (abdomen). The vannamei shrimp head consists of an antennula, antenna, mandible, and two pairs of maxillae. The vannamei shrimp head is also equipped with three pairs of maxilliped and five pairs of walking legs (periopods) or ten feet (decapodes). While on the abdomen (abdomen) vannamei shrimp consists of six segments and on the abdomen there are five pairs of swimming legs and a pair of uropods (like a tail) that form a fan together telson

Vanamei shrimp production on the island of Java is highest compared to other regions or provinces; Sumatra has shrimp production of 160,013 tons or 24% with vanamei production of 136,748 tons; Bali-Nusa Tenggara region has shrimp production of 120,910 or 18.1% with vanamei production of 120,721 tons; Sulawesi region has shrimp production of 112,392 tons or 16.9% with vanamei production of 67,681 tons; Other regions spread across several provinces in Kalimantan, Maluku and Papua have shrimp production of 50,679 tons (7.6%) and 4,984 tons (0.7%) and 1,504 tons (PDS, 2019) respectively.

Stages of Making Shrimp Crackers

Cracker making generally consists of three important stages, namely dough making, dough printing and drying. The first stage of fresh shrimp is cleaned by removing the skin and washed thoroughly. After that the shrimp is crushed with a grinding machine and mixed with tapioca flour and other spices and complementary ingredients. The dough that has been mixed, then stirred and kneaded until it becomes a smooth dough. In another way, the manufacture of cracker dough is done by mixing

1/4 part tapioca flour, water, salt, sugar, eggs, seasoning and shrimp meat that has been crushed with a meat milling tool, so that a mixture such as porridge is obtained. The mixture is then mixed back with the rest of the tapioca flour so that a homogeneous dough is formed. Mixing dough is stopped when the dough is not sticky on the hand or on the mixing tool. Making cracker dough in east Java can be done by heat or cold process. In the heat process, the additional ingredients are cooked first and then mixed with tapioca flour and stirred until the dough is evenly distributed. While with the cold process, all ingredients are directly mixed and stirred until the dough is evenly distributed.

The next stage is the process of printing dough, the process of printing cracker dough is intended to obtain a uniform shape and size. Uniformity of size is important to obtain the appearance and penetration of heat evenly so as to facilitate the frying process and produce fried crackers with a uniform color. After the printing process, followed by the steaming process with a time of one to two hours, after the dough is cooked, the cooling process is carried out. The next process is the cutting carried out using a knife.

The last stage is the process of drying or drying. The drying process of raw crackers aims to produce materials with a certain moisture content. The moisture content contained in raw crackers will affect the quality and development capacity of crackers in the next frying process. A certain degree of dryness is needed raw crackers to produce maximum steam pressure in the frying process so that the cracker starch gel can expand. Drying crackers also aims at preservation, reduction of transportation costs and maintaining quality. The drying process can be done by drying in the sun or with an oven that is commonly done for laboratory scales. The advantage of drying with the oven is that the temperature and heating time can be adjusted. However, the capacity is limited and the operational costs are quite expensive. Drying using solar heat in addition to the cost is cheap, also has a large capacity of 12. But this method is very dependent on the weather and unruly drying (Dian, 2013).



Figure 1. Shrimp Crackers

60% of entrepreneurs buy raw materials from pond fishermen, and the remaining 40% of entrepreneurs get their raw materials from direct catches from the sea. In the agroindustry of shrimp crackers, the availability of the main raw materials becomes the determinant of the price of shrimp crackers. High raw material prices will increase the price of shrimp crackers in the market, and vice versa, if the price of raw materials falls, then the price of shrimp crackers will fall as well. The auxiliary ingredients used in shrimp cracker business are flour, sugar, salt, eggs, and vetsin. (Hastinawati and Mokh. Rum, 2012)

Factors affecting the quality of shrimp crackers

Factors that affect the quality of shrimp crackers, among others, are water content, development volume, and packaging.

According to Koswara (2009), crackers have a moisture content between 9.91 – 14%, with starch levels varying from 32.82 – 52.73% and protein levels 0.97 – 11.04%. Protein levels of shrimp crackers, fish crackers, kedele crackers and egg crackers have a fairly high protein content. This is because additional ingredients such as shrimp, fish, kedele and eggs are ingredients that have a high protein content.

Similarly, if the percentage of flour content is more than the shrimp, then the power of crackers will be reduced. Conversely, if the comparison of flour with shrimp is balanced, the power of crackers will be greater (Wahyono and Marzuki, 1996).

Control of the moisture content of crackers is carried out per lot, which is every three trains that are put in the oven together. This control is done to find out the true moisture content of shrimp crackers and be more thorough because the oven used does not channel the air evenly. So that the moisture content of each train and each ram is different. According to Muliawan (1991), one of the quality parameters of fried crackers is the volume of development. While the volume of development is affected by the moisture content of raw crackers and the temperature of the frying pan. The more addition of non-starch ingredients, the smaller the development of crackers at the time of frying, and the development determines their crispness (Haryadi et al., 1989).

Table of Shrimp Cracker Quality Standards According to SNI

Paramater Test	Unit	Requirement			
a Sensory		Min 7,0*			
b Chemistry		Grade I	Grade II	Grade III	
- Moisture content	%mass fraction	Max 12.0			
- Non-sea ash levels in acids	%mass fraction	Max 0.2			
- Protein levels	%mass fraction	Min 12** Min 8***	Min 8** Min 5***	Min 5** Min 2***	
c Microbial contamination		N	c	m	M
- Alt (3 sampling classes) - Escherichia coli (3 sampling classes)	Colony/g APM/g	5 5	2 1	<3	3,6

NOTE

* For each sensory parameter

** Fish

Shrimp and mollusks

n number of test samples

c 2 sampling class: the maximum number of samples allowed exceeds the maximum requirements limit listed on m

3 sampling classes: the maximum number of samples whose requirements are between m and M and not one sample exceeds the maximum requirement limit listed on M and other samples must be less than the value of m

m (2 sampling classes): maximum requirement limit

M (3 sampling classes): maximum requirement limit

To get products that are in accordance with SNI, of course, these products both during processing and packaging must follow established standards. Such as maintaining the sanitation of these products in the handling, processing, distribution, and marketing of shrimp crackers is carried out using containers, methods, and tools in accordance with the technical requirements of sanitation and hygiene in the fishery products processing unit. As for achieving the SNI product (shrimp crackers), there are chemical factors that must be considered, namely water content. In the table of food quality and safety requirements, the moisture content contained in shrimp crackers should not be more than 12% or the maximum limit is 12%. High low moisture content accordingly can be obtained from the drying process of shrimp crackers. Drying or drying shrimp crackers can be done by utilizing sunlight (dried) or it can also be by using an oven. Drying time with the oven at a temperature of 60 – 70 ° C will be achieved about 7 – 8 hours. While if using the oven at a temperature of 55 ° C takes 15-20 hours. Drying with the heat of the sun takes two days, when the weather is clear and about 4-5 days when the weather is less sunny. From this drying process, raw crackers with a moisture content of about 14% or raw crackers are easily broken. Then the drying process can be easier to do using the oven, so that we can monitor and adjust the time and temperature according to needs.

Conclusion

Based on library studies that have been done, information is obtained that the manufacture of shrimp crackers in general consists of three important stages, namely dough making, printing dough and drying. Factors that affect the quality of shrimp crackers, among others, are water content, development volume, and packaging.

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