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" REVIEW ARTICLE "GREEN CLAM CRACKERS *(Mytilus viridis L.)* "

By

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Abstract

Green mussels are a turbidity that has been successfully cultivated in Indonesia. The increase in added value of this commodity is made shellfish crackers. This article aims to review the manufacture of shellfish crackers and their market opportunities in Indonesia. Based on the results of the literature study obtained information that the manufacture of shellfish crackers is generally the same as making other types of crackers such as fish or shrimp crackers. The stages of making scallop crackers consist of mixing raw materials, making dough, printing, steaming,ginandining, slicing, drying and frying. The market opportunity for shellfish crackers is very open because it is supported by the success of green shellfish cultivation in Indonesia.

Keywords : dough, steaming, printing, market, opportunity.

INTRODUCTION

Indonesia is a maritime country that has the potential to reducesil toshellfish is quite large and its production shows an increase every year. Kerang consumed by the people of Indonesia is the catch of the sea or cultivated. Some types of shellfish that have been successfully cultivated include green mussels (*Mytilus viridis* L.).

The largest component contained in green shellfish meat is water so it is easily overgrown by pathogenic microbes if the shellfish dies. Kerang who has died will experience quality deterioration if not handled properly immediately. Efforts that can The

way to keep the shellfish fresh is to be maintained andmaintained in a living state or quickly processed or stored at cold or frozen temperatures.

To increase the economic value of shellfish, shellfish are made into a variety of processed products, for example crackers. Crackers are a food that is favored by the wider community ranging from children to adults. Crackers are usually served as a companion when eating, or can also be served as a snack. Crackers are one type of dry food that contains high enough starch, made from the basic ingredients of tapioca flour. This article aims to review the manufacture of shellfish crackers and their market opportunities in Indonesia.

Raw Materials For The Manufacture of Shellfish Crackers

Green Mussels (Mytilus viridis L.)

Kerang green is one type of shellfish that belongs to the group of soft animals (mollusca), two-shelled (bivalva), with multi-layered gills (lamellibranchia), axe-legged (pellecypoda), and live in the sea. Green mussels can be classified as follows:

Figure 1. Green Clams *(Mytilus vividis L.)*

Sumber : https://phinemo.com/wp-content/uploads/2020/09/002681900_1571568272-Anda-Tidak-Disarankan-Makan-Kerang-Hijau-dari-Teluk-Jakarta-Kenapa-By-Praisaeng-Shutterstock_261628709-min.jpg

Phylum : Mollusca
Grade : Pelecypoda
Ordo : Filibranchia

Sub ordo : Anisomyaria
Family : Mytilidae
Genus : Mytilus
Species : Mytilus viridis L.

Mussels from the Mytilus clan have special living habits that are different from other types of shellfish. This clam likes to attach itself permanently to the hard objects around it. This organism remains attached to these hard objects, not dying even if it is not submerged during the receding sea water (Asikin, 1982). The shape of the two green clam shells is the same and hollow, oblong where the front is flat and the back is convex, as well as the taper top. The length of the shell is generally twice its width. The relationship between the two shells is carried out by hinge ties located on one side. This hinge bond serves as a shell opener (Watermann, 1964).

The outer shell is brown and dark green, the older the color on the edges of the shell. On the shell there are curved lines whose shape follows the periphery of the shell. These curved lines are called growth lines or age lines. While the inner shell is smooth and shiny white. The flesh of green mussels is very soft and juicy. Fresh meat is generally white or shiny orange. At the bottom there is a single tool such as fibers, which are used to attach themselves to hard objects. The fibers are called byssus (Asikin, 1982).

Like other shells, green mussels eat by filtering (filter feeder). Eating green mussels consists of renic bodies mainly vegetable plankton and organ particles and also animal plankton (Asikin, 1982). The spread of green mussels has not been evenly distributed in Indonesia. It is commonly found in waters with temperatures of 27-370 C, salinity 27-34 per mile, pH 6-8 with a depth of 10-21 meters (Davy and Graham, 1982). In surviving shells, the shell is in a tightly closed state or will be tightly closed when exposed to touch. While in shells that have died and are undergoing a process of decline in quality, the shell opens slightly or gaping and the fresh smell slowly changes to a foul smell (Waterman, 1964). The nutritional value of green mussels has been studied to contain 75.70% water, 20.10% protein, 1.18% fat, 0.18% carbohydrates and 2.84% ash (Naryana and Pallachi, 1972).

Tapioca Flour

Tapioca flour is widely used as a raw material in the manufacture of various types of crackers. The reason for the use of tapioca flour as a raw material, in addition to its cheap price and easy to get tapioca flour also has high fish power and forms a strong structure (Widowati, 1987). Tapioca flour is flour obtained from sweet potatoes or fresh cassava after undergoing several processes such as wrinkle, flour deposition, and drying (Djumali et al., 1982).

Tapioca flour is one example of food ingredients that contain a lot of starch-type carbohydrates, according to Brauchkecht (1953), tapioca consists of starch granules that are white, shiny, odorless, have no taste. Gelatination is one of the important phenomena affecting the development of crackers, because gelatinization affects the development of the volume of starch granules forming elastic structures that can expand at the frying stage (Suarman, 2996).

Egg

Eggs are used for the manufacture of duck egg crackers or chicken eggs. The purpose of using this egg is to increase nutritional value and taste. In addition, eggs serve as emulsifiers and binders of the components of the dough. The yolk part is able to absorb and bind water, so that at the time of cooking the dough, the mixture formed will be more sturdy (Djumali et.al., 1982).

According to Duncan (1949), eggs are the main food or the perfect food because:

a. Contains vitamins A, B, D, and E
b. Useful as "Balanced Food"
c. Contains protein, fat, and minerals
d. It is easily digested and perfectly digested in the body when compared to other foods.
e. Can be used as a substitute for milk
f. Is a source of minerals, especially iron, also contains phosphorus, calcium, sulfur, and organic salts (sodium and potassium)
g. It has properties as "Protective Food"

Salt

The addition of salt aims to improve the taste. The salt used in the manufacture of crackers should be of good quality, including a small amount of dirt and a shiny white color Djumali *et.al.* , 1982). Salt can reduce the water content of food by osmosis. In addition, plasmolysis can occur that causes microorganisms to die due to lack of water, so that the amount in food is reduced (Buckle *et.al.,* 1985).

Artificial Flavoring

Mono Sodium Glutamate is an artificial flavor booster that is allowed to be used in food. The maximum limit of use of Mono Sodium Glutamate in food is sufficient. What is meant by the maximum limit of use "sufficiently" is the amount used on food does not exceed the reasonable amount required, in accordance with the purpose of its use.

Air

Water used in the food industry must have the conditions of colorless, odorless, clear, does not contain manganese and iron, and can be accepted bacteriologically, that is, it does not interfere with health and does not cause rot in processed foodstuffs. Turbidity can lead to deposition of products and tools used. The color of the water can affect the color of the resulting product. While changes in unwanted smell and taste can cause poor flavor (Djumali *et.al.* , 1982).

Making Scallop Crackers

The process of making crackers is basically the same as other crackers such as fish crackers and shrimp crackers. The difference lies only that the operation varies greatly depending on the type of crackers made. The stages of making crackers in outline include mixing raw materials, making dough, printing, steaming,cooking, cooking ginan, slicing, drying and frying (Setiawan, 1988).

The process of making scallop crackers is as follows:

1. Mixing raw materials

   The raw materials used are shellfish meat, eggs, tapioca flour, water, salt, and monosodium glutamate to taste to improve the taste.

2. Dough making

   Scallop meat that has been ground until smooth and given salt and juice flavor (MSG) to taste to add flavor. Furthermore, the mussel meat that has been smooth

is mixed with tapioca. In this case the egg is put into the dough to find out pengaruhnya terhadap the clam crackers. Previously stirred until evenly distributed and add enough water to form a dense and homogeneous dough. The homogeneity of the dough is the most important factor, since this property can affect the uniformity of the resulting final product. The mixture can be homogeneous when the auxiliary ingredients are mashed first and then dissolved in water before mixing in the dough. The water added to the cracker dough can be hot water or ordinary room temperature water. Ranula starch does not dissolve in cold water, but in hot water (60^0 C) it will expand rapidly.

3. Cracker dough printing

   The dough that has been flat was formed a long round roll with a size of 3 cm to 8 cm. both ends of the roll are compacted to a flat extent. The printing of cracker dough is intended to acquire a uniform shape and size. The uniformity of crackers is very important for the appearance and even penetration of heat so as to facilitate the frying process and produce fried crackers with uniform colors and sizes (Muchtadi *et.al.,* 1979).

4. Steaming dough

   Steaming is one way of processing foodstuffs that use the heating process and is often interpreted as cooking done through a hot steam medium with a heating temperature of about 100^0 C (Skjoldebrand, 1984). Siahaan (1988) stated, that steaming is a critical process in making crackers. Steaming is carried out after the dough is formed. Steaming is carried out for 1.5 to 2 hours, that is, until the cooking dough is marked with all parts of the dough are clear and the texture is chewy. Steaming the dough aims to clot the components in the dough. Steaming is done for approximately 2 hours depending on the size of the dough.

5. Cooling and slicing

   The cooked dough is immediately removed and then cooled until the desired state is obtained to facilitate slicing. Slicing is carried out with a knife and cutting board or a slicing device 1-2 mm thick. The dough that has been cold sliced thinly is placed on top of the bamboo para-para.

6. Drying

Drying is a method of removing and removing most of the water from a food by using hot energy. Drying crackers has the purpose of providing materials with a certain moisture content where the presence of water will reduce the quality and capacity of crackers (development) crackers in the next frying process. In addition, the drying of crackers is preserving and maintaining quality. (Winarno *et.al.,* 1980). According to Wiriano (1984), fried products without frying will produce products that do not expand, hard, and uneven surfaces. In order to expand the cracker starch gel requires maximum steam pressure in the frying process, for that a certain level of water content is needed in raw crackers. According to Setiawan (1988), drying with the sun heat takes two days when the weather is clear and 4-5 days when the weather is less sunny. From this drying process produced raw crackers with a moisture content of about 14% or raw crackers that are easily broken. In addition to the heat of the sun, drying can also be done with the oven at a temperature of 55^0 C, which takes about 15-20 hours. However, its capacity is limited and operational costs are limited.

7. Frying pan

Frying is a process for cooking food using fat or food oil. There are two ways of frying, namely frying sangria (without oil) and deep fat frying (oil submerged ingredients). Frying using oil is a food processing technique by introducing food into hot oil and all parts of the surface of the material get the same heat treatment so that it is uniformly colored (Hallstrom, 1980). According to Winarno (1984), the oil used as a frying medium serves as a heat conductor, adding savory taste, adding nutritional value and calories in foodstuffs. During the frying process, there is evaporation of water contained in foodstuffs. The space where the water is expressed is then filled by air known as the development process (expansion). According to Robertson (1967), fried food can be divided into 3 parts, namely the outermost part (surface), the hard skin (crust) and the inside (core). The outermost part is the part that is yellowish-brown as a result of the browning reaction, which is influenced by the composition of the foodstuff, temperature, and length of frying pan. The water content lost in the crust will be filled with oil. The thinner the food, the crust will be larger than the inside (core) so that the more absorbing oil.

Figure 2. Kerupuk Kerang Hijau

(Sumber : http://cdn-2.tstatic.net/tribunnews/foto/bank/images/kerupuk-yang-dijual-roslen-dibeli-jokowi.jpg)

Prospects for Green Shellfish Development in Indonesia

In the development of marine cultivation (mariculture) in Indonesia, in addition to fish and shrimp commodities, there are still other commodities that have good prospects, namely various types of shellfish families. This type of turbidity is quite a lot that can be bred through maricultural techniques, namely oysters, green clams, blood mussels, pearl oysters, abalone, and snails. The shellfish family is a marine biological resource that is widely available in Indonesian waters. This biota can be cultivated and is environmentally friendly, among others because in the process of cultivation it does not require feed. Mariculture activities for shellfish are as follows: genetic manipulation, predator control, disease, seed collection, hatchery in hatcheri, nutritional needs/ requirements, location selection, harvesting, depuration, and cultivation equipment (Anon., 2006e).

Green mussels are one type of shellfish that are eligible to be cultivated in coastal waters. As plankton-eating animals, green mussels occupy a position at the bottom of the food chain, able to make economical use of primary production that exists in coastal waters. Judging from the cultivation process, shellfish will produce animal protein that is cheap compared to other types of aquatic biota. Green mussels contain protein enough height, average 67 g per 100 g of dry weight. This value is very favorable compared to other types of traditional foods, such as beef or chicken. How important, green shellfish as a cheap source of animal protein, especially for low-income people.

The market need for turbidity products is very open. Whatever amount is produced is always ready to be accepted to meet the domestic market. While the foreign market to date is relatively untouched. Though the need for developed countries such as America, Japan, and the European Union for shellfish animal protein is very high. The Korean market also began to glance at the green mussels from Cirebon. The requested green mussels are 7-8 cm in diameter or about 7 months old (Anon., 2009b).

Green mussels as a source of animal protein, have a fairly prospective potential as an export commodity. For this reason, some things need to be considered is that the cultivation of green mussels must be environmentally friendly, the location of the cultivation development area must be free from pollution of heavy metal waste such as copper (Cu) mercury (Hg), zinc (Zn), cadmium (Cd) and free from household waste pollution such as critical dissolved oxygen and containing many Salmonella bacteria, Echericia coli, Clostridium, and Shigella. In addition, it is also necessary to pay attention to depuration, sanitation, and hygienic techniques for post-harvest handling and processing. Thus it is expected that the number of exports of green shellfish abroad will increase and for the international community green shellfish from Indonesia is safe to consume and does not endanger the health of people who consume it.

Conclusion

Based on the results of the library study above obtained information that the manufacture of shellfish crackers is generally the same as making other types of crackers such as fish crackers or shrimp. The stages of making scallop crackers consist of mixing raw materials, making dough, printing, steaming,ginandining, slicing, drying and frying. The market opportunity for shellfish crackers is very open because it is supported by the success of green clam cultivation in Indonesia..

DAFTAR PUSTAKA

Alfid, Muhammad. 2014. Makalah Kerang. *https://id.scribd.com/doc/195400127/makalah-kerang* diakses pada tanggal 22 Maret 2022

Aminatus, Yuni dan Dwi Kristiastuti. 2014. Pengaruh Jumlah Kerang Hijau Dan Cairan Terhadap Tingkat Kesukan Kerupuk. *E-journal Boga* 3 (3) : 196 - 204

Anonim. 2006b. Nelayan beralih ke kerang hijau. *www. ppk.lipi.go.id*. Diakses pada tanggal 16 September 2009.

Anonim. 2006e. Budidaya kerang ramah lingkungan. *www.Balipost.co.id*. Diakses pada tanggal 26 Oktober 2009.

ASEAN Secretariat, 2004, Assessment of Agro-Based and Fishery Product Sector in The Area of Standards and Conformance, Jakarta

Asikin. 1982. Kerang Hijau. Penebar Swadaya Jakarta. Baensch J, Gaier W, Khoo HGN, Lai HL, Lim BG. 1996. *The production of seasoning. European Patent Specification*. EP 0 824 873 B1.

Badan Standardisasi Nasional, 2004, *Senarai Nasional Indonesia*, Jakarta.

Galuh, Zahwa. 2022. Penanganan Kerang Hijau. *https://id.scribd.com/document/556339875/PENANGANAN-KERANG-HIJAU* diakses pada tanggal 19 Maret 2022.

Kastoro W. 1982. Beberapa aspek biologi kerang hijau (Mytilus viridis) dari Perairan Binaria Ancol Teluk Jakarta. *Tesis*. Jakarta. Universitas Nasional.

Khoirunnisa dkk. 2019. Inovasi Pengolahan Kerupuk Kerang Hijau. *Jurnal Pengabdian Masyarakat*. Universitas 17 Agustus 1945. Jakarta.

Kristiningrum Ellia. 2006. Kajian Kualitas SNI Bidang Perikanan Perlu di Kembangkan Dalam Rangka Integrasi Ekonomi ASEAN. *Pusat Data Industri, 2004, Data Industri dan*

Perdagangan Bulan Januari-Juni Tahun 2004, *Departemen Perindustrian dan Perdagangan*, Jakarta.

Nisa, Fadilatun dkk. 2021. Pemanfaatan Limbah Cangkang Kerang Hijau Sebagai Kerupuk Kamplang Dalam Upaya Peningkatan Kesejahteraan Masyarakat Desa Domas Kecamatan Pontang Provinsi Banten. *Jurnal Abdimas Indonesia*. Universitas Sultan Ageng Tirtayasa. Serang.

Sanusi, H.S, Hutagalung, H., dan Razak, H. 1964. Hubungan antara umur, kadar air,raksa (Hg) dan cadmium (Cd) yang terakumulasi oleh kerang hijau (Mytilus viridis L) yang dibudidayakan di perairan Teluk Jakarta. *Laporan Penelitian*. Bogor. Jurusan Manajemen Sumberdaya Perairan, Fakultas Perikanan, IPB.

Sumber Referensi

https://www.kompasiana.com/mochamadrifaldiyanuar6628/61910a38c26b776eb906d632/kerupuk-kerang.

https://www.academia.edu/34970472/_PRODUK_PERIKANAN_KERUPUK_KUPANG_KERANG_HIJAU_Diajukan_untuk_memenuhi_tugas_mata_kuliah_Hasil_Laut_Komersil.