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ARTICLE REVIEW OF FISH JELLY PRODUCTS "FISH DRAGON'S FOOT"

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Abstract

The use of fish as food in Indonesia must be improved, one of which is by diversifying fish processing Fish dragon foot products are a processed form of diversification of fish processing. This article aims to review fish dragon foot products in terms of the ingredients used, the stages of manufacture and product quality. Based on the literature review, information was obtained that the ingredients used in making fish dragon's foot were fish, tapioca flour, wheat flour, maezena flour, garlic, onion, pepper, egg whites and salt. The stages of making fish dragon's foot include the manufacture of fish meat lumatan, mixing and dodging, molding, steaming, freezing and frying. The quality of fish dragon legs in Indonesia is regulated based on SNI number.01-26931992, namely ash content of 0.44 – 0.69%, protein content of 10.44 – 16.40%, fat 0.09 – 0.55%, maximum water content of 60%, and maximum carbohydrate content of 25%.

Keywords: excellence, quality, diversification, amino acids, aktymyosin.

Introduction

Fish as a food ingredient has many advantages over other food sources. According to Dotulong and Montolalu (2019) the advantages of fish as a food ingredient include: 1) Contains high protein, namely 18-20%, easy to obtain, easy to digest and halal for all groups in terms of health and in terms of religion. 2). Fish protein contains essential amino acids, which are amino acids that cannot be synthesized by the body and must be included from outside the body through eating intake. 3). Fish also contains many omega-3 unsaturated fatty acids such as EPA and DHA which are beneficial in increasing children's brain intelligence and preventing arteroclerosis heart disease for adults.

The use of fish as food in Indonesia must be improved, one of which is by diversifying fish processing. According to Yusuf et al (2018) diversification of fish processing is an activity of diversifying types of products made from raw fish and other fish resources by paying attention to nutritional quality and safety for consumption. Diversification aims to meet the growing and growing tastes of consumers and keep from saturation in consuming fish.

The diversified product of processing fishery products that is currently favored by the people of Indonesia is the dragon's foot. This article aims to review fish dragon foot products in terms of the ingredients used, the stages of manufacture and product quality.

Fish Dragon Legs

Fish dragon legs are a food product made from fish meat mixed with tapioca flour, garlic, salt, carrots and celery to form a dough. Dragon's feet can be used as a side dish and also as a snack. The characteristic of fish dragon legs is that they have a dry, crispy texture, and on the outer layer are crusty but soft and wet on the inside of the product, as are fried products

The legs of the fish dragon are somewhat different from the fish nuggets, that is, the chopsticks used in the processed dragon legs. In the process of making between nuggets and dragon's feet, it is almost the same. The fish dragon leg is a substitution product of the chicken dragon leg.

Figure 1. Fish dragon legs

(Source: https://shampankbie.blogspot.com/2012/09/membuat-kaki-naga.html)

Dragon's foot or often also known as drum stick because it looks more like a drumstick in shape. The characteristic of this dragon's foot product is that it has an elastic and chewy texture. The elastic properties of dragon legs are influenced by several factors, including the type of fish, the level of freshness of the fish, the pH and moisture content of the fish meat, the washing, the age of the fish, the temperature and heating time as well as the type and concentration of additives.

Dragon's feet are used as a supporting food or complementary to the staple food. Dragon's feet are practical and quick to serve and rich in nutrients causing dragon foot food to be popular.

Ingredients Used in the Manufacture of Fish Dragon's Foot

The ingredients used in the main dragon leg turning of the fish dragon are fish. Other ingredients are tapioca flour, wheat flour, garlic, onion, maezena flour, salt, pepper and egg white. These materials can be described as follows:

Fish

Fish that can be used for the manufacture of dragon's feet can come from freshwater fish or marine fish, as long as the fish has the ability to form gel (elasticity), good taste and appearance. Seawater fish is generally preferred as a raw material for dragon's feet. The kind of white-fleshed

fish and the type of demersal fish are generally good types of fish to use as raw materials for dragon's feet.

Demersal fish have meat with a high content of aktyosine protein so the ability to form gels is very good. The protein actinosine is composed of actin and myosin. When the fish meat is ground and added salt, the myosin will dissolve in the salt and the fish meat forms a very adhesive sole. The fish meat paste that forms the sole after heating will form a fish gel. The ability to form a gel is what influences the texture of the resulting product.

Fish commonly used as raw materials for dragon's foot are mackerel (*Spanish mackerels),* kurisi fish (*Nemipterus spp*), big eye snapper (*Priacanthus spp*), barracuda (*Sphypaeno spp*), croaker (*Pennahia, Johnius spp*), cunang-cunang (*Congresox talabon*), manyung fish (*Arius thalassinus*), banana-banana fish (*Caesio chrysozonus*), yellowtail fish (*Caesio spp*), gulamah fish (*Pseudociena amoyensis*), red tilapia (*Oreochromis sp*), snakehead fish (*Ophiocepholus sp*) and cucut fish (*Carcharinidae sp*). The fish used in the manufacture of dragon's feet must have a high freshness value because the gel properties are still excellent.

Tapioca Flour

Tapioca is rich in carbohydrates and energy. Tapioca flour does not contain gluten. Tapioca flour is different from cassava flour even though it is both derived from cassava. Tapioca is water-soluble, while cassava flour is insoluble. Tapioca is usually used as a thickener. This food is starch extracted with water from cassava tubers (tree kettles). After filtering, part of the liquid is separated with the pulp. Cassava flour is obtained by grinding cassava tubers that have been dried (gaplek) and then stirred until coarse grains of a certain size are obtained.

Figure 2. Tapioca flour

(Source: https://harga.web.id/harga-tepung-tapioka-per-karung-dan-1-kg.info)

Tapioca flour in the manufacture of dragon's foot is used as a filler. This is because tapioca flour can form a clear and odorless gel. Another function of tapioca flour is to make the appearance of the dragon's legs better, not easy to shrink, and anti-syneresis (anti-water).

Flour

Wheat flour is flour produced from grinding wheat seeds. The processing of wheat seeds produces 2 types of flour, namely white wheat flour and whole wheat flour (whole wheat). White wheat flour is produced from the endosperm of wheat seeds, while whole wheat flour is produced from whole wheat seeds containing all the substances, brownish in color and a slightly coarse texture.

Figure 3. Flour

(Source: https://sajiansedap.grid.id/read/10959177/sering-dilakukan-ini-deretan-kesalahan-menyimpan-tepung-terigu-yang-bikin-diserbu-kutu?page=all)

Wheat flour is the main ingredient in the manufacture of pastry and bakery products because of the gluten content contained in the flour. Gluten is an insoluble protein in water (unsoluble protein) which if added water will get physical pressure in the form of stirring and form a thin, elastic, and transparent dough so that it can withstand gases during the fermentation process.

The quality of gluten in wheat flour is what will greatly determine the quality of the Bakery and Pastry produced, in other words, the quality of wheat flour is determined by the quality of the protein contained in it. Wheat used as the main ingredient in making wheat flour also has a very large role in determining the quality of the flour produced. Wheat flour in the manufacture of fish dragon's foot serves as an ingredient to give density and suppleness because it contains gluten. Wheat flour also serves as a binder to maintain the shape of the fish dragon's legs.

Garlic

Garlic (Allium Sattivum) is a grass-shaped plant that is layered or shingles. The plant is believed to be native to Central Asia. Garlic is a common spice in Asian kitchens, giving a savory taste to dishes with a strong aroma. Almost all dishes use garlic as one of the components of their seasoning to improve their taste.in addition to garlic composed of several suings, it is also known as a single garlic called onion (lanang onion). This onion is used as a complement to seafood dishes. In consuming garlic is recommended in fresh form, but it is better to process it in advance either fried, boiled or baked (Murdijati, 2011).

Figure 4. Garlic

(Source: https://www.grid.id/read/042479387/bawang-putih-tidak-melulu-bawa-manfaat-loh-ada-9-bahaya-kalau-dikonsumsi-berlebihan-dalam-kondisi-mentah)

The use of garlic in the manufacture of dragon's foot aims to add a savory taste to cooking and add aroma to the dragon's foot, garlic has benefits in the field of health. The

plant contains anti-oxidant, anti-tumor, anti-thrombotic properties. The content of allisin and aliin can prevent coronary heart disease.

Shallot

Figure 5. Shallot

(Source: https://id.berita.yahoo.com/taruh-bawang-merah-di-kamar-121826685.html)

Shallot (Allium cepa L. var Aggregatum) is a type of plant that is a spice in various Southeast Asian and world cuisines. Javanese people know it as brambang. The most widely used part is the bulbs, although some culinary traditions also use the leaves as well as flower stalks as a seasoning for flavoring dishes. The plant is thought to be native to the regions of Central Asia and Southeast Asia.

Cornstarch

Figure 6. Cornstarch

(Source: https://www.kompas.com/food/read/2020/06/29/121200375/bedanya-tepung-jagung-dan-tepung-maizena-dari-tekstur-sampai-fungsi)

Cornstarch is a starch obtained from the endosperm of corn kernels. Cornstarch is a popular food ingredient commonly used as a thickening agent for soups or sauces, and is used to make corn syrup and other sweeteners. Cornstarch can form a dough when mixed with cold water. Cornmeal in the manufacture of fish dragon legs is used to improve oil absorption and crispness.

Salt

Figure 7. Salt

(Source: https://kitchenofindonesia.com/fungsi-garam-selain-memberi-rasa-asin/?share=email)

Table salt (NaCl) is a spice used in almost all dishes. Salt is also used in small meals or even drinks. Salt gives a savory effect to dishes that have a sweet taste (Murdijati, 2011). Salt has a function as a food preservative because putrefactive microbes, especially those that are proteolytic, are very sensitive to salt and increase taste. Salt serves as a flavor enhancer and protein solvent in fish dragon foot products. If there is no salt, then aktomiosin, which is the main component of muscle thread protein, will hydrate a little and expand. If there is very little salt (0.2 - 0.3 %) then hydration will decrease to a minimum level. Then with the further addition of salts, which improve hydration, allowing the dissolution of actinosins. So the role of salt in the gel formation process is as a solvent for myofibril proteins. At a concentration of 2 - 3 % will produce the best flexibility. At higher concentrations, myofibril will be dehydrated caused by the salting out effect of salting out of salt.

Lada

Figure 8. Pepper

(Source: https://yoursay.suara.com/news/2019/11/25/133418/lada-rempah-primadona-dunia)

Pepper (Piper nigrum L) is a versatile plant where the fruit can be used as a spice in various dishes. The purpose of adding pepper to the manufacture of fish dragon's feet is to give a pleasant aroma, add deliciousness, and prolong the durability of food.

Egg Whites

Eggs are food produced by poultry, eggs have three main parts, namely the shell part, a clear colored liquid or often called egg white, and a yellow part which is often called an egg yolk. Eggs have a complete nutritional content and are easily digested, eggs are a source of animal protein.

Figure 9. Egg white

(Source: https://www.alodokter.com/beragam-khasiat-putih-telur-yang-bisa-didapatkan-tubuh)

Egg white is a good food for health because egg white is free of fat compared to egg yolk, so egg white is safe for consumption and good as an adhesive material. Egg white in the manufacture of fish dragon legs serves to glue a sprinkle of bread flour so that it does not separate from the dough when fried.

Fish Dragon Foot Processing Process

The processing process of fish dragon legs is as follows:

1. Material Preparation: Preparation includes the necessary equipment and means in the manufacture of dragon legs. The ingredients and spices used must be in a fresh and good state. In choosing good ingredients, you should use ingredients that have good quality and are still fresh, for those made from seafood used must be fresh, such as choosing fresh shrimp with the characteristics of fresh shrimp that are clear in color and not black-spotted.

2. Material Weighing: Weighing ingredients is an important stage in the manufacture of a food product because if the scales are not suitable, the resulting product is not as desired. The use of digital scales is recommended in order to get accurate scale results.

3. Mixing: Mixing mashed chicken together with complementary ingredients such as wheat flour, cornstarch, tapioca flour, garlic, shallots, sugar, salt, pepper and eggs is ground with a food processor until all the ingredients are smoothly evenly distributed.

4. Printing: Print the smoothly shaped dragon foot dough round slightly like a dragon's foot in general, the weight of the dragon's foot cut is weighed the same, which is 15 grams, then the molded dough is pierced using bamboo chopsticks and the printed dough is told that has been formed.

5. Steaming : Steaming is carried out for the maturation of the dragon's foot in the early stages so that at the time of freezing the shape of the dragon's foot does not change. The steaming technique carried out in making dragon legs using a steamer tool and the thing that needs to be considered in the dragon foot steaming process is that the steamer cover must be coated with a cloth so that the dew contained on the steamer lid does not fall on the dragon's foot dough.

6. Freezing: After printing the dough, the last technique of making this dragon leg is freezing of the dragon's foot is to use a freezer and the intention of using the technique so that the resulting product can be stored for a long time. The duration of freezing is about 1 day or 24 hours.

7. Cooked Middle Cooking: Half-cooked cooking is a frying process carried out on

dragon legs by frying half-cooked dragon legs with the aim that when packaging the outside of the dragon legs is not destroyed, the half-cooked cooking process is carried out before packaging and packing.

8. Frying pan: The frying that is done on the dragon's foot is a frying pan that uses a lot of oil or deep frying with the aim that the surface on the dragon's foot is cooked as a whole and the results obtained from cooking that uses a lot of oil have a good brownish yellow color.

Dragon's Foot Quality

Based on SNI No.01-26931992, the dragon's foot is a diversification of kamaboko, which has elasticity quality standards ranging from 26.73% –65.66%, ash content of 0.44 – 0.69%, protein content of 10.44 – 16.40%, fat 0.09 – 0.55%, maximum water content of 60%, and maximum carbohydrate content of 25%. The good quality of processed dragon's feet is the chewy texture, savory and crispy taste due to the process of melting bread flour that gives the product crispness. The aroma shows the distinctiveness of the fish as well as the color of the dragon's legs after being fried brownish.

The characteristic of this dragon's foot product is that it has an elastic and chewy texture. The elastic properties of dragon legs are influenced by several factors, including the type of fish, the level of freshness of the fish, the pH and moisture content of the fish meat, the washing, the age of the fish, the temperature and heating time as well as the type and concentration of additives.

Conclusion

Based on the literature review, information was obtained that the ingredients used in making fish dragon's foot were fish, tapioca flour, wheat flour, maezena flour, garlic, onion, pepper, egg whites and salt. The stages of making fish dragon's foot include the manufacture of fish meat lumatan, mixing and dodging, molding, steaming, freezing and frying. The quality of fish dragon legs in Indonesia is regulated based on SNI number.01-26931992, namely ash content of 0.44 – 0.69%, protein content of 10.44 – 16.40%, fat 0.09 – 0.55%, maximum water content of 60%, and maximum carbohydrate content of 25%.

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