Global Scientific JOURNALS

GSJ: Volume 10, Issue 6, June 2022, Online: ISSN 2320-9186
www.globalscientificjournal.com

Article Review Products Fish Brains

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Abstract

Fish brains belong to the group of products made from fish jelly. This product is served as an "appetizer" food in restaurants in Indonesia. This article aims to review otak-otak products in terms of their manufacture and quality. Based on the review literature obtained information that the manufacture of fish brains consists of making surimi, making seasonings, making dough, forming dough and steaming or burning. The quality of fish brains in Indonesia is regulated based on National Standard number 7757: 2013, namely a maximum water content of 60.0%, a maximum ash content of 2.0%, a protein content of at least 5.0% and a fat content of 16.0%.

Keywords: quality, dough, protein content, diversification, surimi.

Introduction

The level of fish consumption of Indonesians is still low compared to Japan and Malaysia. The level of fish consumption of the Indonesian people in 2020 according to the Indonesian Statistics Agency is 60 Kg / capita / year. The current level of fish consumption of the Japanese people is already at the level of 140 Kg / capita / year while Malaysia is around 70 kg / capita / year.

Facts in the field show that the level of fish consumption affects work ethic. People whose level of fish consumption is high have a high work ethic, an example is the society of Japan and South Korea. Japan and South Korea have always shown their innovations in various fields.

The effort made by the Indonesian government through the Ministry of Marine Affairs and Fisheries to increase fish consumption by the Indonesian people is to create a program to like to eat fish. Currently, the fish products that are most consumed by the Indonesian people are generally dominated by fresh fish products which reach 76%. The Indonesian government through the fish eating program targets that by 2024 the consumption of Indonesian people's fish can reach 62.5 kg / capita / year.

Efforts to increase fish consumption will provide a multiflier effect, in addition to increasing the level of health and intelligence of the community, it also further excites the fisheries sector which in turn can encourage increased employment, increase the value of income and welfare of a community and position the conditions of the fishermen profession, fish farmers, marine and fisheries processors and other related parties as favorite choices.

The fish eating program can be carried out 1) introducing the community that fish contains nutrients that are very beneficial for growth and body health, 2) increasing the variety of processed or diversifying processing made from raw fish and 3) facilitating and facilitating the issuance of processed fish production permits both on a household, small and medium business scale.

The diversification of processed fish products in Indonesia has now increased in line with open access to information from all over the world, including in the field of processed food. One of the products of diversification of processed fish is the otak-otak product. This product is very much loved by children. All kinds of thick-fleshed fish can be used as raw materials for making brains. This article aims to review otak-otak products in terms of their manufacture and quality.

Fish Brains

The brains are one of the modifications of processed products between meatballs and kamaboko, which are processed based on white fleshy fish. The manufacture of brains is not much different from the manufacture of foods made from surimi such as meatballs, nuggets, sausages, empek-empek and others (Karim, M. et al. 2013).

Fish brains include fish jelly-based products. Fish jelly is a processed fishery product whose quality is largely determined by the strength of the gel. Gels can form due to the presence of actin and myosin which are abundantly contained in fish meat. If the fish meat that is being crushed is added salt (NaCl) then actin and myosin will be extracted out in the form of an actomyosin that has a cross chain. Therefore it can be said that the formation of gel in fish paste can occur through the processes of squeaking, salting, forming and heating.

Raw materials used for processing fish jelly products can be in the form of surimi or mince (Nuridho and Basirun 2014). Fish jelly products with surimi raw materials are more appropriately applied to industrial-scale processing because surimi has experienced a longer shelf life. This is because surimi has undergone leaching aimed at removing blood, dirt and water-soluble proteins.

Fish brains are gel products from fish meat made from a mixture of lumat meat, tapioca and spices such as sugar, salt, thick coconut milk, garlic, onion, pepper wrapped in banana leaves and the roasting process is carried out. This product has a delicious taste but does not last long, has a shelf life of one day at room temperature. This product is widely marketed in restaurants as appetizers.

Fish brains in Indonesia are presented in two forms, namely fried and grilled as shown in Figure 1. The brains of the grilled fish are generally wrapped in banana leaves. The brains of this grilled fish have a distinctive taste with a fragrant aroma.

a. Fried brains * b. grilled/grilled fish brains**

*) Source : https://resepkoki.id/resep/resep-otak-otak-goreng/

**) Source : https://resepedia.id/resep/otak-otak-tenggiri

Figure 1. Presentation of fish brains

Each serving of fish brains both fried and grilled is complemented by a sauce. The use of this sauce is aimed at increasing the appetite of the brains of fish.

Fish Otak-Otak Making Procedure

The procedure for making fish brains goes through several stages. The first stage is to make a fish surimi. The process of making surimi consists of four stages, including washing fish meat, grinding, packaging, and the last is freezing. Washing the meat itself is carried out three to five times using low temperatures or ice water ranging from 5-10 °C. This treatment aims to maintain the texture of fish meat, preventing protein denaturation and fat degradation. According to the

Directorate General of Fisheries (1990) *in* Moniharapon (2014), in the washing process in making surimi, 0.2-0.3% NaCl salt is added to facilitate the removal of water from crushed fish meat. After crushing, 2.5-3% sugar and 0.2% *polyphosphate* are added to maintain *water holding capacity*. Mixing can be done with a *grinder, mixer* or *silent cutter* (BBP2HP 2006).

After the surimi is ready for use, then the next step is the manufacture of the brains. First, the making of supporting seasonings and mixing surimi which has previously been made into a dough is carried out. Pack the dough using banana leaves and pierce each end using a toothpick. This packaging is carried out to obtain a certain shape, so the process is carried out optionally according to the wishes and needs. The otak-otak has already reached the semi-finished stage. Henceforth, it can be packaged immediately or it can also be done steaming or frying.

Product Quality Standards Fish brains

The Indonesian government in ensuring the safety and comfort of its people in consuming fish brains has set quality standards for rice. The standard is regulated based on the Indonesian National Standard (SNI) number 7757: 2013. Based on these national standards, the brains of fish marketed must have a maximum water content of 60.0%, a maximum ash content of 2.0%, a protein content of at least 5.0% and a fat content of 16.0%.

The quality of fish brains organoleptically refers to the quality standards of fish balls as contained in SNI 01-7264.3-2006. The description of good fish brains based on the SNI is as follows:

Shape: elliptical specific fish brains, uniform in size, clean and brilliant, not dull.

Color: even white without any other foreign colors.

Taste: delicious, delicious, dominant fish taste according to the type of fish used

Aroma: the characteristic smell of boiled fresh fish is dominant according to the type of fish used and the smell of spices is quite sharp.

Texture: compact, elastic, no clay or foaming, no flesh fibers, no spines or bones, no mushy, no wet water, and no brittleness.

Various research results in Indonesia on fish brains

Indonesia is known as a country rich in fish resources, both seawater fish and freshwater fish. Thick fleshy fish, both seawater and freshwater fish, are found in Indonesia. Seawater fish that are thick fleshy and widely caught in Indonesia are skipjack tuna, mackerel, tuna, kurisi and

others. Freshwater fish that are widely cultivated in Indonesia are catfish, catfish, tilapia and others.

The various types of fish mentioned above are made as raw materials for making fish brains on a research scale. The results of his research have been published as follows.

Putra et al (2015) informed that the addition of carrageenan flour with different concentrations had a significant effect on the fat levels of the brains of kurisi fish. The concentration of carrageenan flour addition of 1.5% of the fish meat used resulted in the best emulsion stability value in the brains of kurisi fish. Its quality criteria: emulsion stability: 88.80%; Aw: 0.86; gel strength: 873.99 g.cm; moisture content: 56.57%; ash content: 1.98%; Fat content: 2.26% and protein content: 12.95%.

Other information was also reported by Srihidayati and Firdamayanti (2021) related to their research to determine the formulation of making the *brains of Skipjack Katsuwonus pelamis* by giving a combination of sago flour and cornmeal and determining the best formulation based on organoleptic tests. The results of such show that the preferred formulation in terms of taste, aroma, chewiness, color and overall appearance is in the formulation of 50% skipjack tuna meat + 10% coconut milk + 20% sago flour + 20% cornstarch.

The above research uses seawater fish as raw material. Studies using freshwater fish such as catfish reported that the addition of carrageenan had a significant effect ($P<0.05$) on gel strength, moisture content, protein content and ash content. The brains of dumbo catfish with an additional concentration of 1% are the best products with quality criteria: gel strength 8155 g.cm; moisture content 54.38%; protein content 14.33%; ash content 2.12%; and fat content of 3.59% (Saputro et al., 2018).

Conclusion

Based on the review literature obtained information that the manufacture of fish brains consists of making surimi, making seasonings, making dough, forming dough and steaming or burning. The quality of fish brains in Indonesia is regulated based on National Standard number 7757: 2013, namely a maximum water content of 60.0%, a maximum ash content of 2.0%, a protein content of at least 5.0% and a fat content of 16.0%.

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