

Processing of Soft Bone Milkfish

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ABSTRACT

Indonesia is a country rich in marine resources. One sector that plays a major role in Indonesia's economic growth is the fisheries sector. The economic development of countries with a maritime character is focused on fisheries. An example is milkfish which is a fish that is widely consumed in Indonesia. Milkfish is not only cheap, but also nutritious and delicious. One of the processed milkfish that is often found is pressed milkfish. In general, milkfish are traditionally smoked, preserved or smoked. This processing method only changes the composition, taste and texture of the fish meat and does not soften the milkfish bones. To overcome this bone disease, a special processing method called soft bone milkfish is used. Pressed milkfish/soft spines are processed water products containing fish ingredients which undergo the following process: Soft bone milkfish can be processed in two ways: traditional and modern. In traditional processing of soft bone milkfish, the tool used for cooking is usually a modified drum or large hump. The traditional processing of soft bone milkfish uses the principle of processing milkfish. Processing of softbone milkfish is traditionally done using the rotation principle.

INTRODUCTION

As a maritime country, Indonesia has great fishery potential, both freshwater, brackish and saltwater fisheries. According to Saparinto (2007), the potential for brackish water aquaculture with a pond system is estimated at 931,000 ha, with almost 100% of this potential being utilized, mostly for milkfish (*Chanos chanos* Forsk) and shrimp (*Pennaeus* sp.). breeding. One of the marine products consumed by the community is milkfish. Milkfish is a rich and flavorful seafood that is very popular in the region. Moreover, the price is also affordable for all people. Milkfish is classified as high protein and lowfat fish. In general, this milkfish is processed traditionally, among others, by smoking and salting. This processing method only changes the meat composition, taste, and texture of the fish, but does not soften the bones found in milkfish meat. To overcome this bone disorder, there is a special processing procedure called soft thorn milkfish. The study of thermal processes mainly focuses on the application of heat to kill or inactivate microorganisms and enzymes that cause food spoilage and are harmful to human health. Thermal processes also affect product quality, such as improving sensory quality, softening products so they are easy to consume, increasing protein and carbohydrate digestibility, and destroying unwanted components (Hariyadi and Kusnandar, 2000).

Soft bone milkfish is one of the diversions in the processing of marine products, especially as a twisting process, which has the advantage of bones and spines from the tail to the head being soft and can be eaten without disturbing the spines. The effort to overcome the problem of using milkfish utilization is the processing of soft bone milkfish, according to the company. The product of soft bone milkfish is gradually gaining popularity, although the production volume is still small compared to salted fish, the future of soft-bone milkfish processing is bright. In some places, milkfish has many names. For example, in Sumatra it is known as milkfish, in the Philippines, it is called Bangos, and in Taiwan, it is called Sabahi.

Milkfish can also be boiled or fried directly. Many people say that cooking is done to prepare raw materials for consumption (Bartono et al., 2006).

The National Standardization Body in 2009 stated that the criteria for good quality milkfish consisted of several parameters based on sensory assessment, namely appearance, smell, taste, texture, and mucus. Good quality presto milkfish has a slightly bright and clean appearance. Fresh milkfish have a fragrant and fresh aroma. Presto milkfish is delicious, tasty, and soft on the spines. The texture of milkfish is firm and dense when pressed, flexible, slimy, and odorless.

Soft bone MilkFish Press is a processed fish product made from fish ingredients that undergo the following processes: Receiving raw materials, sorting, weeding, washing, soaking, packaging, steaming, cooling, packaging, packaging, marking, and storing.

Soft bone milkfish can be processed in two ways: traditional and modern. In traditional processing of soft bone milkfish, the container used to cook milkfish is usually a modified drum or large cork.

Processing of soft bone milkfish is traditionally based on the principle of steaming. In this process, fish are preserved by steaming or cooking in a saltwater environment and under normal pressure to inhibit or kill the activity of spoilage bacteria and enzymes.

The tender ribbed milkfish is cooked in a modern way using an autoclave. The principle of using an autoclave when cooking soft bone milkfish is to use a high pressure of about 1 atm. With high pressure, the process of cooking soft bone milkfish with this tool will cook quickly within 2 hours.

This study aims to describe the raw materials used in the management of soft bone milkfish, namely fresh milkfish and various kinds of seasonings, among others onions, garlic, etc. In addition, the study will describe the tools used in the modern processing of soft bone milkfish using a pressure cooker (*Presto*) with high pressure which aims to soften the spines and traditionally by steaming until the spines are soft.

METHOD

In this survey a qualitative survey will be carried out using a documentation survey. A documentation survey is a method used to obtain data and information in document form according to Sugiyono (2018: 476). Data collection techniques through examining documents to obtain data or information related to the problem under study. This study aims to determine the stages of processing softbone milkfish.

RESULTS AND DISCUSSION

MATERIALS

Materials Used In the process of managing soft thorn milkfish and there are also several materials used in the management process, namely:

Milkfish

According to Ghufron (1994) fish can grow to a length of 1.8 meters, milkfish (*Chanos chanos* Forsk) which is called the common nener and is usually caught from the beach) has a length of about 1-3 cm. while the milkfish is in the size of the spindle 5-8 cm.

The fish used as raw material for soft milkfish must have a high quality, so that the quality of the soft milk product obtained is better. The quality obtained depends on the raw materials and processing carried out. The characteristics of high quality and low-quality fresh fish are as follows.

Herbs and spices

Spices play an important role, as they determine the taste of the final product. of The longevity tender fish can also be supported by the use of spices in its processing. There are 2 different spices used to make soft thorn milkfish, namely marinade and ointment. The term refers to the treatment method which is given spices, some are soaked in milkfish, and some are rubbed all over the body of milkfish. Some even cook milkfish in salted water. This last method is usually used in the traditional production of soft milk, which takes about 6-7 hours (Purnomowati, 2006).

The composition of the spices used to marinate milkfish based on the ingredients are as follows: The composition of the spices used to marinate milkfish for 1 kg of fish (size 5 fish/kg).

The following types of fish ingredients composition seasoning: Red onion 20 grams, garlic 10 grams, ginger 5 grams, turmeric 5 grams, galangal 5 grams, coriander 0.5 tablespoons, candlenut 1-2 pieces, of water 0.5 cups, kaffir lime leaves 1, bay leaf 2 table, 20 salt gr tamarind (without seeds), and seasonings pcs.

Acceptance of raw material

The milkfish in the ponds are placed in plastic baskets of 10 kg with intermittent ice to preserve the freshness of the fish. The ratio of the amount of curry ice to the fish used is 3:2, so that the fish is fresh. Milkfish are immediately picked and immediately processed to prevent spoilage. In addition, milkfish can also be stored in cold storage at -20°C to -30°C. If the milkfish is to be processed, it is taken out of the refrigerator and then left in an open space for about 5 hours until the milkfish is no longer hard but still cold (Aditya, 2008).

TOOLS USED

Traditional processing

The tools used in the traditional processing of soft thorn milkfish include: Boiling drums, knives, bread scales, plastic baskets, mortar, bamboo baskets, stoves, blung, small plastic buckets, banana leaves, stainless steel baskets, basins, plastic buckets

Modern processing

The tools used in the modern processing of softbone milkfish include: autoclaves, knives, scales electric, large basin, mortar, plastic container, iron rack, gas stove, blung, basin, small basin, fan, cooling room

THE PROCESSING OF SOFT BONE MILKFISH

Soft thorn milkfish Usually, is processed traditionally, for example by roasting. This processing method only changes the composition of the meat, taste and texture of the fish, but cannot soften the bones in meat milkfish There are various ways of special processing to overcome this bone disease, the product is called soft durian milkfish.

According to SNI No: 106.1-2009, milkfish presto/soft durian is fish that is processed from whole fish raw materials and undergoes the following processing: sorting, receiving raw materials, weeding, washing, soaking, packing, steaming, cooling, packing, wrapping, labeling and storage.

There are two ways of processing soft thorn milkfish, namely traditional and modern. Processing traditional the cooking container is usually a barrel or a large pot. The principle of milkfish processing is traditionally used in soft.

Milkfish with soft spines traditionally processed using the principle of pemindangan. In Pemindangan, fish are preserved in a salty environment and under normal pressure by steaming or boiling with the aim of inhibiting or killing spoilage bacteria and enzyme activity (Afrianto and Liviawaty, 1989).

Cooking modern to process softbone milkfish. The working principle of the autoclave for cooking soft milkfish is high pressure, around 1 atmosphere. Under high pressure, soft milkfish cooks faster in the autoclave and takes about 2 hours, and the fish bones become soft almost immediately than in the vat. According to Arifudin (1983), the processing of soft bones is one of the diversification activities. Processing using high temperatures (115 - 121 °C) with a pressure of one atmosphere. pressure and temperature are achieved at home with high pressure evaporator (autoclave) or ladder pressure cooker

The process of processing soft thorn milkfish with high pressure hot water vapor softens the bones and spines. In addition, this high-pressure hot water vapor also functions to stop the activity of microorganisms that decompose fish, the hardness of fish bones can result in the presence of substances in the bones. Inorganic materials contain elements of calcium, phosphorus, magnesium, chlorine and fluorine, while organic materials are in the form of collagen fibers. Bones become brittle and easily destroyed when the organic matter in them dissolves (Soesetiadi, 1977).

Washing

Picked fish are washed immediately with clean water (sedated PAM water or well water) flowing 4-5 times until the dirt attached to the fish body is removed. Cleanly washed fish are placed in a bucket to prepare for the seasoning. The purpose of washing milkfish is to remove dirt, blood and mucus stuck to the surface of the fish's body. According to Irawan (1997), the purpose of washing is also to remove the fish from harmful bacteria. Herbed fish must be thoroughly washed, as mud or other impurities left on the fish can accelerate decomposition.

Coating of seasonings

In the modern processing of soft bone milkfish, the seasoning is carried out in a coating process. The seasoning is done when the fish is washed clean. The spices used in milkfish are almost the same, namely garlic, ginger, turmeric and salt. The rest of the salt is used to make a seasoning that is rubbed on the outside of the fish's body. You can add food to enhance the color and appearance of the tender chard.

Spices are crushed with a blender. When processing soft bone milkfish by adding spices, it wants to accentuate its taste and aroma, and if turmeric is not added to the seasoning, the color of soft thistle looks pale and less attractive. Turmeric is a natural dye because it contains curcumin which gives it a yellow color.

At the same time, the ginger and lemon grass used to make soft bone milkfish are soaked in water at the bottom of the autoclave.

In the traditional processing of tender milkfish, no seasoning is done, but the milkfish is placed directly in barrels.

Preparation of fish

Cooking can be done in cooking barrels (traditional) or autoclave (modern way). The tambura (traditional) cooking process uses seasoned fish placed in a rectangular stainless steel basket wrapped around banana leaves. This is so that the fish does not come into direct contact with the stainless steel basket, so that the milkfish does not stick when it is removed. In addition, the smell after cooking is better.

In addition to preparing the fish in turn, salt is added to each layer of fish until the fish is covered with a thick layer of salt, 0.5 cm per layer. Once the fish are properly arranged, cover each basket with newspaper. The addition of salt to each layer of fish is to allow the fish to soak in the salt water while cooking. This is because the salt draws water from the fish's body.

The processing in the autoclave (modern way) is as follows: before placing the fish in the autoclave, 1-2 liters of clean water are placed in the autoclave. Seasoned fish is individually wrapped in banana leaves and then autoclaved. The fish are placed in layers. The layers of fish preparation consist of 4-5 layers. If the bottom layer of the fish head position is on one side, the layer above it must be on the opposite side and so until the pot is full and solid. The purpose of such treatment is to keep the fish clean to accommodate more fish in the autoclave and to reduce physical damage to the fish.

The capacity of the autoclave used can vary according to the needs, including 5 kg, 10 kg, 15 kg, etc. The autoclave used must be clean and dry. The most important part of the autoclave is the strength of the locking device and the flexibility of the handle to withstand the pressure inside the tool, so it must be checked before use to prevent interference during processing. In the cover equipped with rubber, its tightness must be checked. The position of the rubber should be circular and indistinguishable from other closing components. The rubber must be healthy and hard, but flexible (elastic). The locking part must be securely closed. Similarly, the stick must be upright and strong, must not move (not sway).

Cooking

Soft bone milkfish is also different in a drum or an autoclave. Drum cooking (usually) can be done by first checking the drum you are using to make sure it is still working properly and has no damaged parts. After that, clean water in the drum is enough. The water is heated for half an hour until the water boils or until the temperature is 100°C, after which a stainless steel basket is pushed into the drum with a pulley. Each stainless-steel basket is weighted to keep the stainless baskets submerged. The drum is then closed and the fish is boiled for 10 hours.

During boiling, the temperature is maintained so that it does not fall below 100°C, keeping the flame too high or too low to cook the soft thorn well.

The process of cooking in an autoclave (the modern way) after the fish are properly arranged, the autoclave is tightly sealed. The way to close the autoclave is to turn the lock clockwise with pliers and at the same time turn the lock in the opposite direction until it feels heavy or can no longer be turned, then the support bar is fixed with the lock bar and locked by pressing. until it clicks. This is based on Djarajah's (1995) opinion that a key and a stick work when used simultaneously. The rod acts as a support for the bolt, while the lock acts as a shock absorber. In this way, the tightness of the body and cover of the autoclave (pressure chain) is strengthened during assembly.

To speed up the boiling of soft milk, you can do this to increase the pressure at a high temperature. To maximize the heat produced by a gas furnace, several gas channels are added to spray a larger flame so that the pressure can build up as desired in a short period of time. When the pressure reached 1.5 atm, the auxiliary gas tube is turned off to keep the pressure stable.

During cooking, the fire of the gas stove must be constantly controlled, so that the fire does not become small or large. The flame used is medium, not considered too big but not too small, if the flame is too big, the possibility of water evaporation is too fast, so the water will run out prematurely while the fish is still soft

Cooling

When baking with a barrel (traditionally), it can be cooled by turning off the gas oven and opening the lid of the drum. Hot steam comes out. The stainless steel basket is then removed with a pulley and emptied.

Fish is cooled by aeration at room temperature. After a little cooling, the stainless steel basket is closed with a clean lid, so that the soft milk does not come into contact with dust or other impurities. Refrigeration in a room where cleanliness is not guaranteed will lead to contamination, so protective equipment is essential.

If the cooling in the autoclave (modern) cooking process is autoclave, let it stand for half an hour until there is no hissing, so that all the steam in the pot escapes and the pressure in the pot decreases. This is done to prevent damage to the heat relief rubber.

After cooling, the fish are carefully taken out one by one and placed in a row on an iron rack to air at room temperature.

Packaging

The shelf life of milkfish depends on the packaging process of soft bone milkfish. There are processors that use only plastic, there are also those that use plastic and cardboard. In fact, to extend the shelf life of the fish, the fish packaging is done with a vacuum cleaner. Soft spikes packed without vacuum can last 2 days at room temperature and up to 5 days in the cold. However, tender milkfish can last up to 1 month when stored in a vacuum. Used plastic bag is a type of polyethylene plastic bag. Cardboard of different sizes is used as paper, depending on the unit of the packaged product.

The packaging of soft bone milkfish must indicate the composition of the spice, the address of the processing plant, the number of the Ministry of Health and the commercial name of the product. In addition to consumer information, packaging can also attract consumers. Using polyethylene plastic is correct because polyethylene is heat resistant, good waterproof and also cheap.

Products whose quality is stable and stable must be handled in a reasonable and standardized manner. Rationalization and standardization should be carried out from raw materials, excipients, processing to the process environment. To choose the right processing process, the physical and bacterial conditions, the chemical composition and freshness of the raw materials and auxiliary substances (Food Additives-BTM) must be known. The use of additional ingredients in the form of preservatives or antibiotics presents a serious risk for the health and safety of consumers, because the control of the types and doses used is still difficult, especially with traditional processing methods. With standardization, consumers get products that match what they should. This condition also opens opportunities for the development of marketing of traditional processed products, including abroad (Heruwati, 2002).

CONCLUSION

Based on the description above, there is a wealth of information on how to handle pressure cooker soft nails both traditional and modern. In addition to breeding methods, we also know the materials and tools needed for traditional and modern cultivation of soft bone milkfish. It turns out that the tools and handling methods are also slightly different, and the management of soft bone milkfish uses a drum in the traditional way and

autoclave in the modern way. Pressure cooking is a method of diversification (development) of fishery product processing, especially as a modification of the shift. Products from presto are cooked using high temperature and pressure. Pressure cooker products produce a softer back and can be consumed directly with the Spike. Products are more hygienic. With this pressure cooker, you can make quick seafood (time-saving process).

So the essence of the conclusion above that makes bones or spines milkfish soft, namely high temperature and pressure is achieved by using a high-pressure steamer (autoclave) or on a household scale with a pressure cooker. The process of processing soft bone milkfish with high pressure hot steam causes the bones and spines to become soft.

This is a freshwater fish that can be eaten in a variety of ways, not only because of its soft spines. But in this discussion, we will discuss about soft bone milkfish which is efficacious and even useful. In other words, it supports brain growth, prevents premature aging, moisturizes the skin, maintains heart health, stabilizes blood pressure, strengthens teeth and bones, maintains eye health, and increases stamina. health. In addition, milkfish presto is often found by everyone for souvenirs typical of Central Java.

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