

Barb Fish (*Barbodes balleroides*): Characteristics of Raw Materials And Processed Product

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ABSTRACT

Barb fish (Barbodes balleroides) has the potential to be developed as aquaculture fish so that it can be used as a source of raw materials for consumption fish. For consumption, Barb fish can be processed into various products including pindang presto, salted fish, and shredded fish. Pindang presto is a cooking process that uses high pressure hot steam to cause the bones and spines of the fish to become soft so that the presto barb fish can be consumed all over the body. Salted fish is a food ingredient made from fish that is preserved by drying and adding high amounts of salt. Shredded is one type of preserved food derived from beef, buffalo, chicken and sea fish, which are shredded in the form of fibers or separated from the fiber.

Keyword: Barb fish, Presto, Salted fish, Shredded, Fish processing

1. INTRODUCTION

Barb fish (*Barbodes balleroides*) is one type of fish that lives in public waters, including a specific local fish species in Indonesia. According to [1], barb fish in the Jatigede Reservoir is the most common commodity in these waters. Although it is not yet an endangered species, this fish needs attention because in some locations its presence has been greatly reduced [2].

Barb fish (*Barbodes balleroides*) have a fairly high reproductive potential and economic potential because they have good meat that is consumed by local residents. Barb which has quite a lot of thorns and thick meat can be innovated into various processed fishery products.

According to [3], people usually process barb fish by frying or peppering, but barb fish have many and fine spines and a sharp fishy smell, for this reason it is necessary to process barb fish in other ways that are in accordance with its characteristics as ingredients raw material. Actually, the weakness of barb fish which has fine spines in its flesh can be used as an advantage, because these spines contain calcium. Thus, if product diversification is carried out on barb fish, in addition to increasing protein consumption, it can also help in meeting the need for calcium.

Barb fish can be processed into various products including pindang presto, salted fish, and shredded fish. Pindang presto is the processing of pindang using the pressure cooker technique to soften the fine spines contained in the meat. According to [4], modern processing of soft thorn milkfish uses an autoclave for cooking. Salted fish and fish jerky are fish preservation techniques whose processing uses salt and sugar. Meanwhile, Shredded is the processing of fish meat by tearing the meat, seasoning it, frying it and removing the oil. These products are very popular with the public because they have a specific taste for each product, savory, delicious and attractive.

1. CHARACTERISTICS OF BARB FISH (*Barbodes balleroides*)

Barb fish has several regional names such as comedy, lalawak, red wader, lokas, hawu halap, salap and waderbang (Java) [5]. Barb fish are commonly found in Jatiluhur Reservoir, Lahor Reservoir, Gadjah Mungkur Reservoir and also in rivers such as the Cimanuk River in West Java and the Serayu River in Central Java [6].

Barb fish (*Barbodes balleroides*) has morphological characteristics, namely perfect lateral line, on the dorsal fin there are hard and jagged fingers, there are $6\frac{1}{2}$ scales between the beginning of the dorsal fin and the linea lateralis, there are 16 scales around the base of the tail, there are $3\frac{1}{2}$ scales between the beginning of the ventral fin and the linea lateralis, the caudal base width is 1.3-1.5 times less than the head length [1]. Having a flat shape, a short and blunt snout is the hallmark of barb fish. Barb fish has a fork-shaped caudal fin, the ventral fin does not reach the anal fin, all fins are red, the eyes are closer to the back, have 4 short barbels, linea lateralis 28-31, and the fin radius formula D.IV.8, A .iii.5, P.14-16, V.ii.8 [5].

The classification of barb fish according to [7], are:

Kingdom	: Animalia
Phylum	: Chordata
Sub Filum	: Vertebrata
Class	: Pisces
Sub Class	: Actinopterygii
Ordo	: Cypriniformes
Sub Ordo	: Cyprinidea
Family	: Cyprinidae
Genus	: Barbodes
Species	: <i>Barbodes balleroides</i>



Fig -1: Barb Fish (*Barbodes balleroides*) [8]

Efforts to cultivate barb fish are still very few [9]. Therefore, domestication efforts were made for the purposes of cultivation and stocking of fish back to nature. In this regard, the biological, genetic, disease and socio-economic characteristics of domesticated species must be known to support domestication [10]. [11] conducted research on the growth pattern of the first generation (G-1) domesticated to support the domestication process of barb fish.

According to [11] the first generation of domesticated barb fish shows a pattern of length-weight relationship with the equation $y = 3.187x - 12.15$ ($R^2 = 0.883$), or is positive allometric. The specific growth rates of weight and length during 90 days of rearing period were $1.60 \pm 0.103\%/day$ and $0.54 \pm 0.036\%/day$ with the average daily weight and length growth of 0.02 ± 0.001 g/day and 0.006 ± 0.0004 cm/day. The feed conversion ratio of domesticated barb fish showed a value of 1.59 ± 0.431 , while the survival rate of barb fish was $99.78 \pm 0.314\%$.

Barb fish has the potential to be developed as a source of raw materials for consumption fish. Barb fish (*Barbodes balleroides*) have a fairly high reproductive potential and economic potential because they have good meat that is consumed by local residents. Barb fish also has good nutritional content. Chemical characteristics of fresh barb fish are presented in Table 1.

Table -1: Chemical Characteristics of Barb Fish (*Barbodes balleroides*) [12]

Content	Total (%)
Water	67.5
Protein	19.3
Fat	6.54
Ash	4.36

2. PROCESSING OF BARB FISH (*Barbodes balleroides*)

3.1 Fish Pindang Presto

Presto comes from the name of the pot used, namely the pressure cooker (cooker / high pressure pot) [13]. Removing the thorns by cooking milkfish at high temperatures for a long period of time is a process of pressurized milkfish. The type of processed milkfish presto is one of the diversification of processing fishery products, especially as a modification of the shift. Milkfish presto is almost the same as Pindang Milkfish, but has the advantage that the bones and spines from the tail to the head are soft and can be eaten without disturbing the mouth. The spinning principle is the principle used in the traditional soft thorn milkfish processing. According to [14], the fish is preserved by steaming or boiling it in a salty environment and under normal pressure, with the aim of inhibiting activity or killing spoilage bacteria and enzyme activity.

Processing of soft thorn milkfish using an autoclave for cooking is a modern processing process. According to [15], the processing uses high temperatures (115°-121°C) with a pressure of one atmosphere. This high temperature and pressure is achieved by using a high-pressure steamer (autoclave) or on a household scale called a pressure cooker or commonly known as a pressure cooker. The cooking process that uses high-pressure hot steam causes the bones and spines of the fish to become soft.

[16] stated that presto fish with a 120-minute warm-up treatment produced the prestige of the barb fish which the panelists preferred. Weight criteria are as follows: for appearance 10%, aroma 17%, taste 56%, and textures 16%. Priority values of treatment were 60 minutes, 90 minutes, and 120 minutes respectively, namely 33%; 33%; and 34%. The proximate test results of presto barb fish with 120 minutes treatment are: for water content 35.56%, ash 4.78%, protein 29.68%, fat 12.66%, calcium 127.4 mg/100g, and carbohydrates 16.32%.

3.2 Salted Fish

Salted fish is a food ingredient made from fish that is preserved by drying and adding high amounts of salt. This preservation method aims for fish that usually rot in a short time can be stored at room temperature for a period of months, and usually must be tightly closed [17].

The quality of salted fish is largely determined by the level of freshness of the fish, the amount of added salt, the level of purity of the salt and the processing process [18]. Raw materials for salted fish must meet the requirements for freshness, cleanliness and health in accordance with SNI 01-2721-1992. Auxiliary and additive materials used must not damage or change the composition and characteristics of salted fish, the type and dosage must comply with the applicable requirements of the Ministry of Health of the Republic of Indonesia.

Salted fish processing is done by salting and drying. The salting process is carried out to draw water from the fish meat tissue so that the fish meat protein will coagulate and the fish meat cells will shrink, while the drying process will reduce the water content of the salted fish so that the fish is more durable [18].

According to [18], in the process of making salted fish, the raw material for fish must be fresh. The quality of salt also greatly determines the quality of the salted fish produced. Meanwhile, the addition of spices will increase consumer acceptance and fish durability. The ingredients used in the processing of salted fish are as follows:

1) Fresh fish

Fresh fish will produce good quality salted fish. We recommend that the contents of the stomach and gills should be removed. Large fish need to be divided and sliced into sheets to accelerate the absorption of salt in the fish flesh. For medium-sized fish do not need to be split, salted directly but the entrails and gills must be removed. Small fish such as anchovies can be salted directly without the need to remove the contents of the stomach.

2) Salt

The function of salt in addition to attracting water from fish meat tissue, salt that enters fish meat can also function as an antimicrobial. The quality of salt is determined by the level of fineness of the salt, the purity of the salt, and the concentration of the salt. Dry salting process, the salt used is 20-30% of the weight of the fish after cleaning. Wet salting process, the salt solution used is a 20% salt solution or a saturated salt solution. The size of the fish determines the amount of salt used and the length of time required for salting. Thick and large fish meat requires a higher salt concentration and a longer salting time to maximize the penetration of salt into the fish flesh.

3) Spices

Seasonings such as garlic, turmeric, galangal, and coriander can be added to the salting process. These spices give salted fish a more attractive aroma and taste. In addition, these spices can also act as preservatives. These spices are ground and then added to the salt solution in the wet salting process.

The stages of the process of making salted fish include:

1. Weeding fish
2. Washing and draining
3. Salting
4. Ripening 10 hours to 1 day
5. Drain
6. Drying and drying

To maximize the quality and quality of the dried fish, a fish dryer is made. Some types of fish drying equipment that are often used are Greenhouse Effect (ERK) dryers, mechanical dryers, tub-type dryers, rack-type dryers, freeze dryers, vacuum dryers, tunnel dryers and infrared ray drying. The advantage of these dryers is that they are able to produce hygienic processed products with better quality [19].

3.3 Fish Shredded

Shredded is one type of preserved food derived from beef, buffalo, chicken and sea fish, which are shredded in the form of fibers or separated from the fiber. Processing of food ingredients into serving products is carried out to anticipate the abundance of production or for product diversification. Based on SNI 01-3707-1995, shredded is the result of processing in the form of drying raw materials to which spices have been added to improve taste and extend shelf life. Although pressing is carried out to remove the oil content, not all of it can be removed [20].

Shredded as one of the food industry products that have quality standards is a reference that a product has good quality and is safe for consumers. Shredded processing business actors are encouraged to process shredded products by meeting the Indonesian Industrial Standard (SII).

The process of making shredded tilapia is carried out through several processes including the process of weeding fish, washing fish, steaming fish, shredding fish meat, making spices, sautéing spices and fish meat, frying and packing [14]. An explanation of the processes carried out in the manufacture of shredded, namely:

a. Fish Weeding Process

Fish raw materials used are grouped into several types, sizes and levels of freshness. The fish are weeded by cleaning the scales, removing the head, entrails and fish fins so as not to affect the quality of the resulting shredded

fish. Furthermore, the fish are washed using clean running water to remove the remnants of blood, mucus and dirt that is still attached to the fish.

b. Fish Steaming Process

The fish is then steamed for 20 - 40 minutes so that the fish meat becomes soft and easy to shred. After steaming, the fish is drained so that the water and steam during the steaming of the fish quickly dissipate.

c. Slicing Process

Bones, skin and scales must be removed before the meat is separated. The fish meat is shredded and kneaded by hand to form fine and uniformly sized meat fibers.

d. Seasoning Making Process

Shredded seasoning can be adjusted according to individual tastes, but as a rule of thumb there is a seasoning composition as follows from 1 kg of fish meat: mix and mash 50 g shallots, 80 g garlic, 10 g coriander, 50 g salt, 10 g tamarind, 200 g sugar, 20 g lime leaves, 10 g galangal, 20 g bay leaves, 20 g mashed lemongrass stalks and 250 ml liquid coconut milk.

e. The Process of Sautéing Seasonings and Fish Meat

Seasonings and fish meat that has been prepared, then through the process of sauteing. Heated 50 ml of cooking oil, sauteed the spices until fragrant and put in the fish meat and stirred evenly. Add 350 ml of liquid coconut milk and mix well again. The spices and fish meat are sauteed until the spices are completely absorbed.

f. Frying Process

In the frying process, heated 400 ml of cooking oil over medium heat. Next, the shredded dough is added little by little while continuing to stir until blended. After the shredded color becomes golden brown, the shredded frying process is considered complete and when the shredded meat is dry, when you hold it, you will feel a slightly rough rustling texture.

g. Packing Process

The process that is carried out after frying is to leave the shredded for a while in an open and windy place until it is cold before the packing process is carried out. After cooling, the shredded meat is placed in a plastic bag and aluminum foil with a dose according to need. Shredded is ready to be marketed and consumed by itself.

3. CONCLUSION

Barb fish (*Barbodes balleroides*) is one type of fish that lives in public waters, including a specific local fish species in Indonesia. It is necessary to process barb fish in other ways according to its characteristics. Barb fish can be processed into various products including pindang presto, salted fish, and shredded fish.

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