

REVIEW ARTICLE: UTILIZATION OF FISH HEAD FOR INDONESIAN LOCAL FOOD

JUNIANTO¹ and AZRIEL FATHAN NABHANI²

1) Lecturer of Fisheries Department _UNPAD

2) Student of Fisheries Department _ UNPAD

ABSTRACT

Fish heads are solid waste from the fillet processing industry. This article aims to examine the use of fish heads as a typical processed food in Indonesia. Based on the literature study, information was obtained that fish heads can be processed in typical food in Indonesia. The processed fish head foods are red snapper head curry, salmon soup, gangan sour dori head, catfish head mangut, salmon head soup and tuna fish head spicy sour.

Keywords: fillet industry, production, fishery, snapper.

INTRODUCTION

Indonesia is an archipelagic country that has enormous potential for fishery resources. These fishery products are not only marketed in fresh form, but are processed into products that have higher added value. In the production process, the fishery processing industry often produces a large amount of waste. Fishery waste consists of liquid waste and solid waste. Liquid waste is in the form of blood, mucus, and fat, while solid waste is in the form of fins, skin, bones, scales and head (Nurhayati & Warinangin, 2009).

The fish processing industry is known to always leave large amounts of waste. The waste is estimated to have a proportion of 37.9% of the total raw materials consisting of the head of around 12.0%; bone 11.7%; fins 3.4%; skin 4.0%; spines 2.0%; The stomach contents about 4.8% participate in the swim bladder, liver, and gonads (Nurhayati & Warinangin, 2009). Currently, this fishery waste is often used as fish meal which is used as the main raw material for making

animal feed. Whereas fishery waste, especially fish heads, has high nutritional value because there is meat or muscle in some of the heads. This article aims to examine the use of fish heads as a typical processed food in Indonesia.

Fishery Waste Overview

Waste is the residue from a business or activity that contains hazardous or toxic materials which, due to their nature, concentration, and quantity, can directly or indirectly harm the environment, health, survival of humans and other living creatures (Mahida, 1984).

Fisheries are all activities related to fish, including producing fish, either through catching (capture fisheries) or cultivation and or processing them to meet human needs for food as a source of protein and non-food (tourism, ornamental fish and others).

Thus, it can be assumed that fishery waste is the residue of a business or activity related to fish, whether it is from fishing, fish farming, or fish processing.

Indonesia has great fishery potential, both capture fisheries and aquaculture. Indonesia's capture fisheries production in 2006 was ranked fourth in the world after China, Peru and America, which amounted to 4.77 million tons. This fishery production has increased by 5.12% every year as seen from 2002 – 2006 through data obtained from FishStat FAO (Wahyuni & Poernomo, 2008).

The increase in fishery production was followed by the development of the fishery processing industry spread across Indonesia. For example, the fish canning industry. In 2005, there were 76 fish canning industries in Indonesia in medium and large scale. In addition, with the abundance of fish raw materials in several regions in Indonesia, the fish canning industry or the fillet industry is expected to grow.

It was reported that there are 11 regions in Indonesia that have the potential to establish a fish canning industry due to the availability of fish raw materials such as West Irian Jaya, North Sulawesi, Jambi, Central Java, East Nusa Tenggara, Papua, West Sulawesi, Central Sulawesi, Southeast Sulawesi, West Sumatra, South Sumatra (Anon, 2009).

The fish processing industry is known to always leave large amounts of waste. The waste is estimated to have a proportion of 37.9% of the total raw materials consisting of the head of around 12.0%; bone 11.7%; fins 3.4%; skin 4.0%; spines 2.0%; the stomach contents about 4.8% participate in it the swim bladder, liver, and gonads. The amount of fishery solid waste depends on the type of fish and the method of preparation. Tuna and skipjack are large pelagic fish species that leave a large amount of solid waste.

Fish Head Waste

Fish head waste is fish head that is left over from fishery activities, either from catching, cultivating, or processing fish that are no longer utilized. In the fishery processing industry, such as the filet industry and tuna canning, fish body parts in the form of heads, fins, bones, and skin are by-products that are not used and are categorized as waste. This fish head waste can be obtained from the fish canning industry, fish fillets, etc. Fish heads along with other fishery waste, especially solid waste, are usually used as fish meal. But apart from that, it turns out that fish heads can become waste with higher value if some good and correct processing techniques are carried out. Such as being used as a source of collagen (Nurhayati & Warinangin, 2009), alternative sources of gelatin and bioactive peptide production (Atma, 2016), or fish head processed food products.

Types of fish that usually produce solid waste in the form of fish heads vary. But in general the types of fish are catfish (Nurilmala et al., 2018), anchovies (Ali et al., 2015), tuna (Cahyono, 2018), catfish (Widiyanto, 2018), red snapper (Rostini, 2013), and other fish such as tuna and skipjack tuna, which are large pelagic fish species that leave a large amount of solid waste.

Fish Nutrition Content

As is known that fish is an important source of protein for the human body. Fish contains 18% protein consisting of essential amino acids that are not damaged during cooking. The fat content of 1-20% is fat that is easily digested and can be used directly by body tissues. If we serve fish in our daily menu, then we make a high contribution to body tissues. Fish protein absorption is higher than beef,

chicken, and others, because fish meat has shorter protein fibers than beef or chicken protein fibers. The vitamins in fish also vary, namely vitamin A, vitamin D, thiamine, riboflavin, and niacin. Fish also contains minerals that are in milk, such as calcium, and phosphorus will be higher than milk (Andriani; Wirjatmadi, 2012). The following is data on the nutritional content of fish per 100 grams.

Table 1. Nutritional Content of Fish Per 100 Gram

Type of Fish	Nutritional Value			
	Energy (kkal)	Protein (gr)	Fat (gr)	Carbohydrate (gr)
Fresh Fish				
Belida	80	14.7	14	2.2
Bandeng	123	20	4.8	0
Bawal	91	19	1.7	0
Ekor Kuning	108	22.3	1.2	2.1
Kakap	92	20	0.7	0
Kembung	125	21.3	3.4	2.2
Layang	109	22	1.7	0
Lemuru	112	20	3	0
Mas	86	16	2	0
Selar	100	18.8	2.2	0
Teri	74	10.3	1.4	2.1
Patin	132	17	6.6	1.1

(Source: Indonesian Food Composition Table, 2017)

For the nutritional content of the fish head alone, no research has been found regarding this matter. However, it can be seen from the nutritional content of fish that are always used for the head, such as red snapper which has a yield of red snapper body parts that can be used such as meat, bones, offal, and scales. . The percentage of red snapper body parts is 39% meat, 45% bone, 12% offal, and 4% scales. Where based on research by Jacob (2015) said. Fresh red snapper has

79.31% water content, 1.92% ash, 16.30% protein, 0.05% fat, and 0.23% carbohydrate.

Fish Head Processed Products (Market Segment and Price)

There are many processed fish heads typical of the local archipelago or Indonesia. However, there are five of the most famous preparations according to idntimes.com, namely:

- **Red Snapper Head Curry**



Picture 1. Red snapper head curry
(Source : idntimes.com)

Snapper is one of the most sought after marine products in Indonesia. Besides being consumed by local residents, snapper is often a medium of economic turnover for export abroad. This type of fish has many types and the most popular is the red snapper.

As an abundant fish in the country, snapper is always easy to find, especially if we visit areas close to fishing activities or around the coast. Fish meat itself is often processed into dishes such as sweet and sour or pindang.

It is no secret that the whole of snapper is the favorite of most Indonesian people. In fact, not only the meat, the head of snapper is often hunted, especially in typical Sumatran restaurants.

The area is known for its food full of spices with a very thick flavor, so it's no wonder that the head of snapper is suitable to be served based on preparations from Sumatra, such as being made into curry.

With a cooking process like this, the famous fish head doesn't need to be a worry anymore. Because, curry tends to seep into the head of the fish so that the curry is still delicious to eat with rice without fear of smelling the fishy smell.

For the selling price seen from large e-commerce sites such as Shopee, Tokopedia, Bukalapak, and Blibli.com, starting from Rp. 120,000 – 165,000



Picture 2. The sale of Red snapper head curry
(Source : shopee.co.id, tokopedia.com, bukalapak.com, blibli.com)

- **Mangut Manyung's Head**



Picture 3. Mangut manyung's head
(Source : idntimes.com)

Catfish is one of the aquatic animals that is usually often preserved by salting. The preservation results will produce salted fish known as jambal roti, which is one of the most expensive foreign fish in Indonesia.

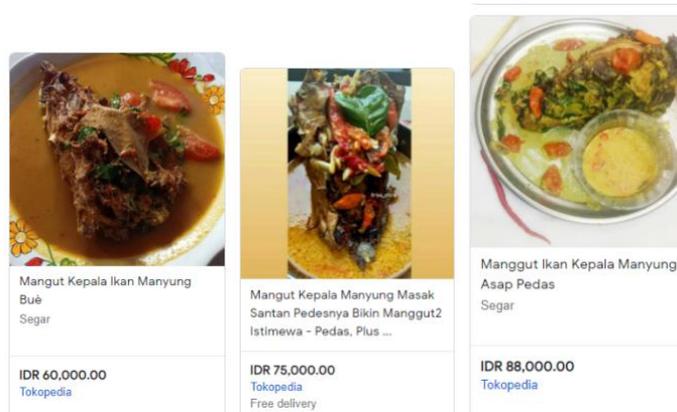
While the meat is salted, the head of the mayung fish will usually be set aside to be smoked so that it can then be processed into other dishes that are no less delicious, one of which is made as mangut.

Mangut itself is a typical Central Javanese cooking method that is similar to curry. However, mangut has a taste between spicy and very spicy as a characteristic of the sauce that covers the fish's head.

This dish is very suitable to be eaten by food lovers full of chili. The concentration of the gravy can be adjusted according to taste, it can be thick or it

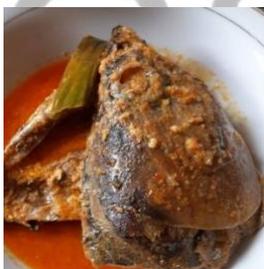
can be a bit runny. Likewise with the color of the gravy, the redder it is, the higher the level of spiciness of the sauce you eat.

For the selling price seen from large e-commerce sites such as Shopee, Tokopedia, Bukalapak, and Blibli.com, starting from Rp. 60,000 – 88.000



Picture 4. The sale of Manggut manyung's head
(Source : shopee.co.id, tokopedia.com, bukalapak.com, blibli.com)

- **Spicy and Sour Tuna Fish Head**



Picture 5. Spicy and sour tuna fish head
(Sumber : idntimes.com)

Tuna is one of the most famous fish in Indonesia. This seafood is usually sold fresh, salted, smoked, or roasted. Various processed tuna fish also always adorn family kitchens in the country, so it's no wonder that tuna is an easy-to-find economical food item.

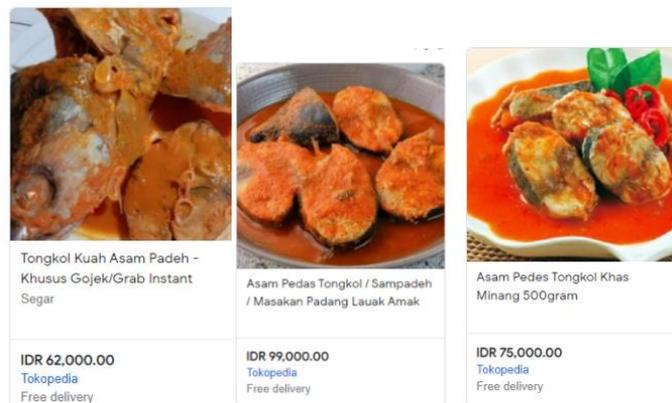
If so far we have only been introduced to its dense and soft meat, then in the culinary world, the head of tuna is also an important ingredient that can be processed into various Indonesian specialties.

Minangkabau is the birthplace of various down-to-earth cooking techniques in Indonesia, one of the most famous of which is Asam Spicy or Asam Padeh. Acid padeh cooking techniques usually only have a little sauce compared

to other cooking techniques. But even though it's a little, the sauce is still rich in taste.

When buying large tuna, usually the purchase is already packaged with the meat and fish head. Instead of wasting fish heads, it's better if you turn them into sweet and sour tuna fish heads which are suitable to be served with warm rice in the rainy season.

For the selling price seen from large e-commerce sites such as Shopee, Tokopedia, Bukalapak, and Blibli.com, starting from Rp. 62,000 – 99.000



Picture 6. The sale of Spicy and sour tuna fish head
(Source : shopee.co.id, tokopedia.com, bukalapak.com, blibli.com)

- **Salmon Head Soup**



Picture 7. Salmon head soup
(Source : idntimes.com)

Salmon is a fish that is born in fresh water before finally migrating to the sea and is one of the prey targets for fishermen. Salmon is known for the myriad of benefits that come with it, so it is not surprising that this fish is set at a fairly high price in the market.

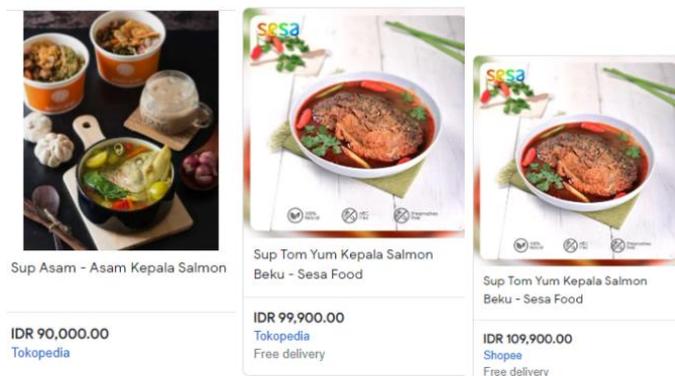
Salmon meat itself is widely used for Asian and European dishes, some of the most famous are sashimi, salmon steak lemon sauce, mentai, to grilled salmon.

However, there is an important part of this migratory fish that is usually circulated at a cheaper price than the meat itself, be it in fish markets or supermarkets, that part is the salmon head.

Salmon head soup that is popular in the country is salmon head soup, different from the three preparations previously mentioned, salmon head soup usually does not contain coconut milk so the sauce is clearer and watery.

In addition, most salmon head soups tend to be savory and fresh because they use a lot of sour-tasting ingredients such as lemon, lime, and tomato.

For the selling price seen from large e-commerce sites such as Shopee, Tokopedia, Bukalapak, and Blibli.com, starting from Rp. 90.000 – 109.900



Picture 8. The sale of Salmon head soup
(Source : shopee.co.id, tokopedia.com, bukalapak.com, blibli.com)

- **Gangan Sour Dori Head**



Picture 9. Gangan sour dori head
(Source : idntimes.com)

Catfish or dori is one of the most favored fish by most Indonesian people, especially for those who live in coastal areas. Patin itself has a soft and light texture of meat so it is suitable to be processed by soup.

In addition to fish meat, part of the head of catfish is also no less popular, especially among seafood lovers. This is shown from the famous processed catfish head, one of which still exists in the Kalimantan area.

Gangan tamarind head catfish, gangan tamarind is a typical Kalimantan cooking procession using various spices and water so that the raw ingredients are cooked into a gravy.

You could say, gangan tamarind itself is a typical tamarind vegetable from Kalimantan, especially the Banjar area. The taste served by the sour gangan itself tends to be savory, sour, and fresh, perfect for those of you who don't really like heavy gravy.

For the selling price seen from large e-commerce sites such as Shopee, Tokopedia, Bukalapak, and Blibli.com, starting from Rp. 32,500 – 60.000



Picture 10. The sale of gangan sour dori head
(Source : shopee.co.id, tokopedia.com, bukalapak.com, blibli.com)

Conclusion

Based on the literature study, information was obtained that fish heads can be processed in typical food in Indonesia. The processed fish head foods are red snapper head curry, salmon soup, gangan sour dori head, catfish head mangut, salmon head soup and tuna fish head spicy sour.

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