



Article Review Cakalang Fufu (Smoked Skipjack Tuna) from Sulawesi Utara, Indonesia

By

Junianto¹, Altieus Muhammad Fachrezy² dan Rio Fito Pardamean²

- 1) Lecturer staff of the Department of Fisheries_ Univeristas Padjadjaran, Indonesia
- 2) Fisheries Study Program Students – Univeristas Padjadjaran, Indonesia

Abstract

The famous processed smoked fish product in North Sulawesi, Indonesia is skipjack fufu. This article aims to review skipjack fufu products in terms of the manufacturing process and the quality of the products produced. Based on the literature review, information was obtained that the procedure for making Cakalang Fufu (smoked skipjack tuna) includes, the preparation stage, the washing stage, the skipjack tuna meat is weeded and then washed thoroughly, the meat distribution stage, the smoking and cooling stage. The quality of fufu products is strongly influenced by the source of smoke used in the fumigation process. Mangrove wood is preferred compared to coconut husk and coconut shell as a source of smoke to produce skipjack fufu.

Keyword : Mangroove, Traditional, Washing, Quality, Liquid

INTRODUCTION

Skipjack fufu is a smoked skipjack tuna, a processed product of smoked fish typical of North Sulawesi which is now widely loved by the people of Sulawesi, especially North Sulawesi. Skipjack fufu is a preservation product obtained from a combination of preservation methods, namely fumigation, salting and drying (Sulistijowati, 2011).

Skipjack tuna (*Katsuwonus pelamis* L.) is an important pelagic fishery resource and is one of the non-oil and gas export commodities. Skipjack tuna is found in almost all Indonesian waters, especially in the Eastern Part of Indonesia (Socrates et al.2016). The center of skipjack tuna fishing activities in North Sulawesi is centered in the waters of Belang, Bitung and surrounding areas.

The main fish catch production in North Sulawesi Province is Skipjack Tuna, then Kite Fish and Tuna Fish. The catch of skipjack tuna is marketed in fresh and frozen form, the rest is processed into products.

The famous processed skipjack tuna product that has become an icon of typical products of the North Sulawesi region is Cakalang Fufu. This article aims to review skipjack fufu products in terms of the manufacturing process and the quality of the products produced.

Skipjack Tuna (*Katsuwonus pelamis* L.)

Skipjack tuna is a pelagic fish of special economic value in the North Sulawesi area and generally in Indonesia. The main target of fishing in the waters of North Sulawesi is skipjack tuna because its price is quite high and its presence is abundant.

Skipjack tuna is often called skipjack tuna with the local name skipjack tuna. Skipjack belongs to the tuna species in the family Scombridae, species *Katsuwonus pelamis*. The taxonomy of skipjack tuna according to Saanin (1983) in Deafness (2018) is as follows. Phylum: Chordata Class: Actinopterygii Order: Perciformes Family: Scombridae Genus: *Katsuwonus* Species: *Katsuwonus pelamis*.



Picture 1. Skipjack Tuna (*Katsuwonus pelamis* L.)

(Sumber : <https://www.google.com/search?q=cakalang.jpg...>)

The morphology of skipjack is a fusiform, elongated and slightly rounded body, but gill rakes number 53-63 in the first strand. On the back of the skipjack there are two separate fins. The first serip close to the head has 14- 16 hard fingers and the fins of the second have weak fingers of about 4 – 6 fingers. The pectoral fins are short, there are two flops between the pelvic fins. Anal fin followed by 7-8 finlets. The body is not scaly except on the body barut (corselets) and lateral lines there are small dots.

The back of the skipjack fish is blue-black on the top while the bottom is slightly dark. On the abdomen is silvery, with 4-6 pieces of black stripes that extend on the sides of the body.

The swimming nature of Skipjack fish includes fast swimmers. Skipjack tuna belongs to voracious fish. In addition, it is clustered and happy to go against the current. This fish used to flock in pelagic waters to a depth of 200 m and forage based on vision so that it was greedy for its prey.

The spread of skipjack tuna can be divided into two parts, namely horizontal and vertical spread. The vertical spread of skipjack (strata of depth) starts from the surface to a depth of 260 m during the day, while at night it tends to the surface. Skipjack rarely comes to the surface of the waters when the waters are turbid, since their visibility is greatly reduced at the time of turbid water. Skipjack tuna can dive to a depth of 40 meters in the tropics, due to the high level of transparency of seawater and not too large temperature changes (Simbolon, 2011).

The distribution of Skipjack Tuna is determined by internal factors and external factors of the aquatic environment. Internal factors include the size, type, behavior and age of the fish. These type or genetic differences cause differences in morphology, physiological response and adaptability to the environment. External factors include temperature, salinity, depth and current.

The distribution of Skipjack tuna includes the Maluku sea, the Banda sea, the Seram sea, and the Sulawesi sea. Such waters belong to the migratory areas of fish groups in the southern Pacific ocean. Skipjack fishing locations (Katsuwonus pelamis) are determined by different seasons for each water. Skipjack fishing (Katsuwonus pelamis) in general can be carried out throughout the year.

Cakalang Fufu

Processed fish products that are famous in North Sulawesi, especially the city of Manado, are smoked skipjack tuna products or with a local name, namely skipjack fufu. Skipjack fufu is currently a product that is increasingly popular and in demand by consumers both locally and internationally. Skipjack fufu is used as a culinary tourism attraction or as a typical souvenir of North Sulawesi. Marketing of skipjack fufu products in North Sulawesi is found in traditional markets and some have also been sold in supermarkets.

The processing of skipjack tuna into skipjack fufu products in North Sulawesi is generally still carried out traditionally or processing is carried out for generations. Skipjack fufu becomes durable due to the reduction in water content due to the heating process and the presence of chemical compounds in the smoke such as the phenol group which can inhibit the growth of microorganisms and act as antioxidants, however, fish fumigation is currently carried out with the aim of providing a distinctive color, texture and flavor (Martinez et al. 2007).



Gambar 2. Cakalang Fufu

(Sumber : <https://tribunmanadotravel.tribunnews.com/2020/09/10/cakalang-fufu-kuliner-khas-minahasa-yang-bisa-jadi-buah-tangan>)

Quality smoked skipjack can be stored for a relatively long time, it can last up to 1 week. Usually smoked Skipjack fish have a medium size; has a length of about 30 ± 50 cm. The fuel for fumigation is coconut husk which was chosen because the smoke is thick, so the fumigation process is relatively faster. Fumigation is stopped if the fish is reddish in color, the texture is tender, dry, (Anonymous, 2013). As the final product, smoked fish obtained an elongated hemisphere of reddish-brown, shiny, a distinctive smell of grilled fish, the outer meat is rather hard, and has a durability of 2 ± 3 days, this is because the storage temperature is carried out at room temperature, which is $25-32^{\circ}\text{C}$ and the durability is not long because it has decayed and overgrown with mold, (Dundu, 1986).

Procedure of Making Cakalang Fufu

The procedure for making Skipjack Fufu (smoked skipjack tuna) includes, the preparation stage, the washing stage, skipjack tuna meat (*Katsuwonus pelamis*) is weeded then washed thoroughly, the stage of squeezing the meat by standing aims to reduce water, the smoking stage is separated according to the type of fish size, the process of smoking fish with a hot temperature then the smoked fish is turned over applied with coconut oil and then the fish is re-smoked until cooked. In detail, the stages are as follows:

First of all, fresh skipjack tuna is weeded, that is, the contents of the stomach, gills and fins are removed and then cleaned with running water. The second stage, the skipjack tuna that has been cleaned is halved like a butterfly shape. The third stage, all surfaces of the fish are greased with salt. The fourth stage, skipjack tuna is put into the smoking furnace, the source of the smoke is the fibers and shells of coconut. The fumigation method used is heat fumigation. The fumigation process lasts about 4 hours. During the fumigation process, the fish are flipped to obtain an even degree of maturity. The fumigation process is declared complete if the color of the skipjack tuna changes to reddish-brown. In the fifth stage, skipjack fufu is cooled after it is packaged and ready to be marketed.

Research Results on Cakalang Fufu in Indonesia

Research on the quality of skipjack fufu has been carried out in Indonesia. Hadinoto et al (2016) have published the results of their research on the quality of skipjack fufu processed by the liquid smoke method. The result of his research is that the fufu skipjack tuna is processed in accordance with the standards that have been set based on SNI 2725.1: 2009. The product has a moisture content value of 59.00%, salt content of 0.08% and histamine of 42.32 mg/kg. Its organoleptic test results for appearance specifications 7.4; odor specification 7.6; taste specifications 8.4; texture specification of 7.9; mucus indicating that the product is preferred. The total number of bacteria is less than 1.0×10^1 colonies/g.

Another research was also reported by Husen (2018) which aims to get the best source of smoke in the smoking process so that skipjack fufu is produced which gives the most preferred taste and aroma. The results showed that skipjack fufu obtained from mangrove wood smoke sources was preferred compared to sources of coconut husk smoke and coconut shells.

Conclusion

Based on the literature review, information was obtained that the procedure for making Skipjack Fufu (smoked skipjack tuna) includes, the preparation stage, the washing stage, the skipjack tuna meat is weeded and then washed thoroughly, the meat distribution stage, the smoking and cooling stage. The quality of fufu products is strongly influenced by the source of smoke used in the fumigation process. Mangrove wood is preferred compared to coconut husk and coconut shell as a source of smoke to produce Cakalang fufu

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