The Tradition Of Frigate Mackerel (*Auxis Thazard*) Processing As Balinese Local Wisdom

I Gde Suranaya Pandit
{Suranaya.pandit@yahoo.com}

Post Graduate Program Universitas Warmadewa Denpasar Indonesia

Abstract. Bali is a small island that is a world tourist destination. Bali is surrounded by ocean. The ocean has an enormous potential in the fishery field. One of the fish potentials is frigate mackerel. This research aims to describe the handling process and the processing of frigate mackerel in the central of fish boiling, Kusamba village, Bali. This research is designed in an observational descriptive study. Observation conducted on the handling process and the processing of frigate mackerel from its catching located at Amed beach, take a three-hour drive to Kusamba, until the processing to be a boil frigate mackerel in the central of fish boiling Kusamba village. Quality test of frigate mackerel processed results at Kusamba Village consists of microbiological, chemical, and organoleptic quality conducted at the laboratory of fisheries and marine of Bali Province. Observation results will be elaborated qualitatively in the photos form and narratives, laboratory results are described in tables and analyzed using Indonesian national standards.,The results showed that the process of frigate mackerel handling in Bali is still using a simple method with traditional equipment. Although by using simple equipment, the quality of boil fish product of Kusamba village is proven has a good quality and meet the Indonesian national standards.

Keywords: *Frigate Mackerel, Boil Fish, Fishery Product Processing, Kusamba, Bali*

1. Introduction

Bali is a small island that has eight regencies and lies between Java and Lombok island. The area of the island is about 5.620 km2 which is surrounded by ocean, in the west is Bali Strait, South of Indonesian ocean and in the east is Lombok Strait [1].

Table 1. Fish Production in Bali

No	Year	Production (Ton)
1	2014	95.983,00
2	2015	101.926,00
3	2016	100.504,00
4	2017	104.927.00
5	2018	103.000,00

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Based on the table 1, it can be seen that fish catches in Bali according to the Bali Provincial Fisheries and Marine Service data, most of the fish production is utilized for fresh fish 48% [2], and some is used as processed forms that consist of boil fish 22%, freezing 8%, canning 8%, fish flour 5% [3]. The production of boiled fish as many as 22% that mostly 7,9 tons of frigate mackerel caught in south Bali and east Bali. The frigate mackerel that caught by traditional fishermen consist of 2,5 tons of fresh fish and 5,4 tons of boiled fish [4]. Furthermore, this study aims to find out the technology of frigate mackerel processing in Bali and the result quality of the boiled fish processing.

2. Methods

This research is designed in an observational descriptive study. Observation conducted on the handling process and the processing of frigate mackerel from its catching located at Amed beach, take a three-hour drive to Kusamba, until the processing to be a boiled frigate mackerel in the central of fish boiling Kusamba village. Quality test of frigate mackerel processed results at Kusamba Village consists of microbiological, chemical, and organoleptic quality conducted at the laboratory of fisheries and marine of Bali Province.

3. Result and Discussion

3.1 Process of Catching Fish

Bali strait, South Bali sea and East Bali sea are migratory areas of frigate mackerel from west to east. At the end of the year the migration will arrive at the eastern cape of Bali, which is in the Amed beach area of Karangasem Regency, Bali. During this migration season, traditional fishermen will catch mackerel fish with boats equipped with fishing equipment such as trolling and trawling nets. The process of catching frigate mackerel is done at night until morning when the sun rises. The migration of frigate mackerel throughout the year, although there are a several months no fishing catches, but in November, December, January, February, March, April, May, July and August is the climax season of frigate mackerel migration and fishermen catch fish along the migration path with various catching equipment either selective catching equipment or catching equipment that can catch lots of fish that is purse saine.The number of fishermen in Karangasem Regency is 3.000 fishermen along the Karangasem beach. It is the largest number of fishermen. By using a temple machine boat, fishermen catch fish in the middle of the night.

The catch of frigate mackerel by fishermen was landed on Amed beach at sunrise. The fishermen are already waiting on every beach where the fish landed to get the catch. The frigate mackerel catches are selected by using a bucket to be counted and collected the number of catches after weighing the catches of each fisherman first. The catching transaction is then done with a big trader with an agreement on the applicable price. Many big traders utilize the frigate mackerel catch season as much as possible to be store in the cold storage that the trader has. The arrival process of fishermen at the Amed Beach and the process of transaction between the fisherman to the big trader be an interesting phenomenon for both domestic and foreign tourists to become an attraction that they cannot miss.

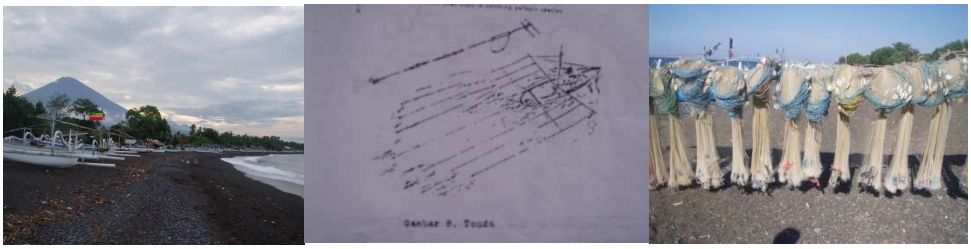

Fig.1 Boat, trolling dan purse saine

After arriving at the beach, the fish that is caught will be auctioned by the fishermen to the big traders who have been waiting.

Fig 2. Transactions Process and frigate mackerel pickup

After an agreed transaction, the frigate mackerel is carried by a pickup truck with 100 frigate mackerel in each bamboo baskets. The frigate mackerel is brought by fish traders at room temperature without preservatives while on the way for 3 hours. The frigate mackerel is brought to the boiling fish center in Kusamba Village, Klungkung Regency, Bali as far as 60 km (took a three-hour driver).

3.2 Process of Boiling Fish

After the transaction is agreed between the big trader and the boiled fish maker then various equipment is prepared for process of boiling fish. The equipment such as firewood and stove, large pots, bamboo baskets, while the other materials consist of fresh frigate mackerel, salt and water for boiling and washing. The fish boil center in Kusamba is a place for processing fish to be boiled whose workers are mostly women.

The process of boiling frigate mackerel as follows: women workers will wash the fish with clean water, fresh frigate mackerel will be arranged in a bamboo basket as many as 8-10 tails, after that they add salt for about 10%, then boil the fish in boiling water for 20 minutes until the fish eye let off or the flesh on tail is torned. After the boiling process is complete, chill the fish. The boiled frigate mackerel is ready to be marketed.

Fig 3. Process of salting, boiling, and frigate mackerel boiling

3.3 Quality of Boiled Fish

Products of boiled frigate mackerel brought to the laboratory of Bali Fisheries and Marine Service to be analyze the chemical composition, chemical, microbiological, and test using panelist. The nutritional composition test result shows the number of protein 27.00%, fat 3.00%, mineral 0.26%, vitamin 0.07%, water content 60.00%. The chemical test result shows as many as histamine 11.7 mgN%., salt 1.3%., total bases volatiles 68.0 mgN%. The microbiological test results test shows that the total of bacteria 1,400 Coloni/g, *E Coli* < 3, *Coliform* < 3, *Vibrio Cholera* is negative, Salmonella is negative, *Stapyloccous aureus* is negative. While Organoleptic score test shows that the appearance 8.7 smell 8.5 and taste 8.0

The technique of frigate mackerel fishing along the beach is done by traditional fishermen, using the outboard motorboat and traditional catching equipment such as trolling or purse saine. Fishermen do not bring preservatives such as ice or salt in. Fishing by using a boat with outboard motor is a custom and tradition of traditional people in Bali, as well as in Indonesia. The use of trolling in catching fish is a catching equipment commonly used by fishermen to catch the frigate mackerel that is grouped. To find out the technology of frigate mackerel processing in Bali [5] [6][7][8]. The process of buying and selling of cob fish caught by fishermen, is carried out at room temperature and the process of transporting cob fish by the big traders to the center of the handling in Kusamba without adding any preservatives of ice or salt. The fish handling, in order to keep the fish still fresh can be treated with a cold temperature of 5oC [9][10]. A recent study declared that one of the preservatives that can keep the fresh fish is with the addition of ice with a ratio of fish and ice that is 4:1 [11][12].

The process of boiling fish in Kusamba Village is done very simply by using firewood as a source of heating, and the addition of salt is a tradition that has long been carried out by boiled fish worker in Bali. The use of gas fuel is an effective heating source and does not pollute the air due to the smoke produced [13][14]. The addition of salt in the boiling process will affect the quality of boiling products that are produce such as the appearance of unclean frigate

mackerel. The salt used in the processing to produce a good quality product is refined salt or industrial salt with> 95% NaCl in order to occur a good salt penetration process and clean appearance [15][16].

Based on the results of quality tests conducted on boiled frigate mackerel in the boiling center in Kusamba Village which includes chemical composition, chemical testing, microbial analysis and organoleptic tests, furthermore all the quality of boil fish at Kusamba village is proven to have good quality and meet the Indonesian national standard [17].

4. Conclusion

Based on the result and discussion above, it can be concluded that fish Processing in Bali was based on traditional method. However, the quality of products was very satisfying.

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