

STUDY OF CUNANG FISH FILLETS (*Muraenesox cinerus*) FROZEN WITH THE IMPLEMENTATION OF GMP AND SSOP

Studi Fillet Ikan Cunang (*Muraenesox cinerus*) Beku Dengan Penerapan GMP dan SSOP

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ABSTRACT

Cunang fish (*Muraenesox cinerus*) are widespread in Indonesian waters, have a shape body elongated like eel. Mention Name Cunang fish (*Muraenesox cinerus*) different in each region, in the Pati area this fish is called "tonang" fish, while in areas of West Kalimantan, Riau, and the Natuna Islands, this fish is usually called fish "malong". Objective study This For know implementation *Good Manufacturing Practices* (GMP) And *Standard Sanitation Operations Procedure* (SSOP) on product fillets frozen Betta Fish. Can not it is undeniable that fishery products or others fish-based products are perishable products. Because of that need done effort enhancement security food sake guard And maintain product quality fillets frozen Cunang fish for security for para consumer. The research results showed that there was 1 finding serious, 4 major findings and 1 minor finding.

Key words: fillets, GMP, Fish Cang, SSOP.

ABSTRAK

Ikan cunang (*Muraenesox cinerus*) tersebar luas di perairan Indonesia, mempunyai bentuk tubuh memanjang seperti belut. Nama ikan cunang (*Muraenesox cinerus*) berbeda-beda di setiap daerah, di daerah Pati ikan ini disebut ikan "tonang", sedangkan di daerah Kalimantan Barat, Riau, dan Kepulauan Natuna ikan ini biasa disebut "malong". " ikan. Tujuan dari pengamatan ini adalah untuk mengetahui karakteristik produk fillet Cangfish beku yang diolah dengan menerapkan *Good Manufacturing Process* (GMP) dan *Standard Sanitation Operations Procedure* (SSOP). Tidak dapat dipungkiri bahwa produk perikanan atau yang berbahan dasar ikan merupakan pangan yang mudah rusak. Oleh karena itu, perlu dilakukan upaya peningkatan keamanan pangan guna menjaga dan mempertahankan mutu produk fillet ikan Cang beku demi keamanan konsumen. Hasil penelitian menunjukkan terdapat 1 temuan serius, 4 temuan mayor, dan 1 temuan minor.

Kata Kunci : Ikan Cunang, fillet, GMP, SSOP

INTRODUCTION

Fish is one of them material food that contains protein and amino acids that are easy for humans to digest. However, fish have easy nature rotten (highly perishable) this is caused because fish have high water content which is around 70-80% so it needs good handling after the fish is caught / harvested (Naiu *et al.*, 2018). Fish as an ingredient standard product processed will easy damaged if not handled directly, quickly and precisely in maintaining quality (Aripudin *et al.*, 2021) Consumption of caught fish in the Pati sea, Central Java in 2021 will reach 3970 tonnes. (Central Statistics Agency, 2021)

Cunang fish is one of the many fishery products found in the Pati area. This fish is used as an ingredient raw in the freezing process. Types of fish frozen at PT. Ani Mitra Jaya includes Frozen Demersal Fish, Pelagic Fish Frozen, Shrimp Frozen, Frozen Cephalopod and types other. Freezing done to maintain quality and freshness of fish by the way hinder activity enzymes and bacteria so that slow down setback quality of frozen products (Basri *et al.*, 2021)

In implementing method freezing is necessary good management for the management of fishery products so that cunang fillet products good quality by applying *Good Manufacturing Practices* (GMP). GMP is system processing food principal to get stable quality and safety food starting from material raw until ready to consume. To achieve security food then you have to implement it application *Good Manufacturing Practices* (GMP) that comply with standards (Sari, 2016).

Companies operating in the field freezing product One of the fisheries in Pati is PT. Ani Mitra Jaya. Products produced from This company is pelagic fish frozen, frozen demersal fish, shrimp frozen, and *cephalopods* (squid, cuttlefish, octopus) frozen. The choice of PT. Ani Mitra Jaya as a research site for this company has certificate security product food as well as own technology continuous freezing develop.

RESEARCH METHODS

Time and place

The research was conducted from September to December 2023, at PT. Ani Mitra Jaya which operates in the field freezing product fisheries, located on Jl. Juwana- Jakenan , Sleko , Dukuhmulyo, District. Jakenan, Pati Regency, Central Java 59182.

Tool

Knives, sharpeners, baskets, tables, pans, bench scales, digital scales, brushes small, spoon, *cold storage*, *contact plate freezer* (CPF), trolley, forklip. testing score sheet organoleptic material standard according to SNI 2729:2013.

Material

Cunang fish, water and ice are fulfilling requirements in accordance with BKIPM Decree No. 63 of 2016, material packer plastic *polyethylene* as primary packaging.

Data Analysis Methods

Observation begins acceptance material raw material until loading. Testing organoleptic with 20 (twenty) repetitions. Data analysis descriptive with scoresheet material standards according to SNI 2729:2013 (BSN, 2013b) and products final SNI 2696:2013 (BSN, 2013a, for assessment basic feasibility of the processing unit done based on KP Ministerial Regulation Number 17/PERMEN-KP/2019 (KKP, 2019).

RESULTS

Table 1. Organoleptic Test Results

Repetition to-	Parameter					
	Eye	Gill	Mucus	Meat	Smell	Texture
1	8	8	8	8	9	8
2	9	8	8	8	8	9
3	9	8	8	9	9	8
4	9	8	8	8	8	8
5	9	8	8	8	9	8
6	8	8	8	8	8	8
7	8	8	8	9	8	8
8	8	9	9	8	8	8
9	8	9	8	8	9	8
10	8	8	8	9	8	8
11	8	8	8	8	8	8
12	8	8	8	8	8	8
13	9	8	8	8	9	8
14	8	9	8	8	8	8
15	8	8	8	8	8	8
16	9	9	8	8	8	9
17	9	8	8	8	8	8
18	9	8	9	8	8	9
19	9	8	8	8	8	9
20	9	8	9	8	8	8
Average	8.5	8.2	8.15	8.15	8.25	8.2

Table 2. Findings GMP & SSOP non-conformity

1. INCOMPATIBILITY	
a. Critical	0 findings
b. Are you serious	1 findings
c. Major	4 findings
d. Minor	1 finding
2. SKP RATING	1.A (Very good) 2.B (Good) ✓ 3.C (Fair)

DISCUSSION

Cetta Fish Fillet Production Process Frozen

1. Receiving Raw Materials

His height the water content in fish is one of them cause fish is easy experience damage (Sandasari *et al.*, 2018). At stage reception material standard, fish received are first organoleptically tested with a minimum standard value of 7. Test results organoleptic twenty repetitions in table 1.

Testing organoleptic material standard show value above 8, which means quality material standard fulfil conditions for acceptance and use as material standard processed. Reception place material standard made like window with a door *stainless* and has be equipped with plastic *curtains* so that prevent animal bully like flies came into the room. The raw materials received come from from the fish auction at the ports of Juwana, Pati, Rembang and

Jepara with the fish still fresh. The fish received are whole and intact fish good quality. Raw material stored in a cool box equipped with ice cubes the fish is still fresh awake. Newly arrived fish are immediately handled in a way sanitary in accordance with SNI 2729:2013 standards for fresh fish.

Purpose of selection material default by selecting material standard in accordance with the standard, namely, to obtain material quality and constant standards awake from the quality is up to par product end or to consumers (Abdullah *et al.*, 2022).

2. Weighing I

The fish that have been received are re-weighed per basket so that the data received from the supplier matches the number of fish that have arrived. Weighing carried out quickly and sanitarily, to avoid contamination of products (Siahaan *et al.*, 2022).

3. Weeding

First weighed fish are taken by trolley to the production room, the fish are weeded by separating them fill stomach and eggs if any. Weeding process done in a way Be careful so it doesn't tear fish meat. Weeding process done by split fill stomach from center of the fish up to the head of the fish with a sharp knife. The process is carried out to dispose dirt as well as makes the weeding process easier (Basri *et al.*, 2021). Before done cutting fish with the knife in good condition sterile, because if you don't pay attention will happen contamination cross between knife with fish (Widnyana & Suprpto, 2019).

4. Washing

Fish that have weeded Then washed use water with the addition of ice to remove still dirt sticks to the fish's body, and cleans remainder blood as well as dirt fill stomach attached to the fish after the weeding process. To use ensure material standard clean from dirt nor contaminants that can stick to the material standard at stage previously.

5. Sorting

Finished weed the fish then sort them according to size. Fish are separated starting from sizes 2-3 kg, 3-5 kg, 5-7 kg, 7 Up. Fish of poor quality are separated and returned to the fish supplier. The aim of this process is to standardize type of fish according to the size and quality of the fish(Naimah & Ningsih, 2014).

6. Weighing II

After sorting weighed again per basket according to the specified size such as 2-3 kg, 3-5 kg, 5-7 kg, 7 Up.

7. Cutting Head , Tail and Fins

Finished weighing II enters the cutting process stage head, tail, and fins. The head, tail and fins of the fish will be collected and then will also be frozen together product end (Scriptura & Masithah, 2021).

8. Weighing III

Fish that have pass stage separation head, fins and tail will done weigh III before *filleting* the fish.

9. Millletting

Fish is filleted with standard equipment, such as sharp, rust -free knife so that the fillet is produced still awake the quality.

10. Weighing IV

IV weigh fish fillets of 10 kg according to their respective sizes ranging from sizes 2-3 kg, 3-5 kg, 5-7 kg, up to 7 Up. Weighing so that the fish arranged on the pan matches the specified size and weight determined so that it can prevent excess and excess scales. Another reason to adjust size master carton packaging to comply with existing regulations determined by the company namely 10 kg per product (Aqilla, *et al.*, 2023)

11. Arrangement in Pan

Fish fillets are arranged on a sized pan 74 cm long × 32 cm wide, filled with 10 kg/pan and coated with a layer of plastic to make it easier let go fish meat when will packed.

12. Freezing

The fish fillets arranged in the pan are fed into the machine freezing Contact Plate Freezer (CPF) by setting temperature of -18°C, with a freezing time of 24 hours.

13. Packaging And Labeling

Frozen fish fillets done packaging before distributed and exported. Fish fillets are packaged and labeled to provide information regarding the product being packaged and make things easier distribution. Ready to pack fish fillets issued from CPF machine and arranged in 2 blocks / packages with a weight of around 20 kg per package according to the specified size. Furthermore The product is put into packaging plastic as packaging secondary and tied manually. Then product repackaged for use sack with name product, size product and weight product.

14. Storage in *cold storage*

Product fish *fillets* that have been the packaged food is stored first in cold storage so that the fish remains frozen and preserved the quality during wait distribution and delivery.

15. Distribution

Distribution process done using transportation car tub closed and possessing system refrigeration for travel delivery temperature product still awake (Gusdi & Sipahutar, 2021) so that the temperature product still cold during distribution, so the product can be maintained from the decline process quality (Banin, *et al.*, 2021). Characteristics betta fish fillet frozen after testing organoleptic in circumstances frozen, the specification results are obtained icing with value 8, drying 8.3, change color 8.3, and in a state after melting to specifications appearance obtain value 8.3, smell 8.1, texture 8. In accordance with SNI 2696:2013 frozen fish fillets . For temperature reception material standards do not exceed -18°C. For temperature freezing -40°C in accordance with applicable GMP standards.

Implementation of Good Manufacturing Practice (GMP)

a. Location and Building

The company's location is strategic enough to acquire material standard and very easy accessible, because building This factory is about 8 km from the Fish Auction Place (TPI). Transportation routes in this area are also easy accessible, due to the location of the factory be near road kingdom so that facilitate the distribution and reception process material standard.

Location and condition of the building as well as the room has built based on agreed planning and has met the standards and is adequate in accordance with the requirements technique and hygiene will but still not everything is implemented in everyday life. Owned room including lobby, office space, meeting room, bathroom, lockers man and locker ladies, reception room material raw materials, production room, chilling room, warehouse sanitation, packing room, cold storage, anteroom, laundry room hand, warehouse packaging, apron space and shoe space as well as laboratory chemistry. Determine the location with consideration aspects, circumstances and environmental conditions that might become source pollution and need to consider various action precautions that may be taken to protect the food it produces if it occurs deviation (Zakiyah *et al.*, 2017). The processing unit building is designed and arranged so that has limits, such as each room and equipment area must be adequate, not crowded (narrow) so as not to disturb smooth handling and processing product (Yusra, 2016)

b. Door

The employee entrance and employee exit are separate. The employee entrance is equipped with a curtain plastic to prevent animal intruders enter the production room. Beside

employee entrance also has washing area provided hand so that makes it easier employees to look after sanitation and cleanliness self.

c. Floor

The slope of the floor in the production room is appropriate, easy cleaned the surface is flat but there is already a floor Lots damage and cracks that cause it happened puddles of water so that the floor falls into the minor category, meaning happen deviations that would otherwise be made action correct or leave in a way Keep going can continue to influence quality food according to the certificate supervision questionnaire appropriateness scale fish processing intermediate big. Condition of floor surface in reception area material raw materials, production room, packaging room and warehouse different from the condition of the floor surface in the lobby, employee room, laboratory chemistry, kitchens, bathrooms, hallways, meeting rooms and office rooms that use flooring ceramics.

d. Wall

Production room wall made of from easy ingredients cleaned, surface smooth, colorful bright, tight regarding water, there is none gap so it cannot be entered insects, walls are not easy peeling. Production space is appropriate if the processing area food industry is broad enough to do activity and none dirt on the walls (Arjuna *et al.*, 2023).

e. Roof/ ceiling

Roof/ ceiling made of from easy ingredients cleaning, not easy peeling, colored bright, free from cracks and gaps as well as free from leak. The roof of the production room is also equipped with machines antidote insects (insect killer), to ward off insects that enter for quality The product can be maintained by rising during the production process.

f. Window

There is no production room window so it doesn't have circulation air from outside building so that the window falls into the major category, meaning happen deviations that would otherwise be made action correct have potency influence security food, according to the certificate supervision questionnaire appropriateness scale fish processing intermediate big.

g. Ventilation

There is no production room ventilation, which causes none circulation air. So that ventilation falls into the major category, meaning happen deviations that would otherwise be made action correct have potency influence security food, according to the certificate supervision questionnaire appropriateness scale fish processing intermediate big.

h. Lighting

The lighting in the production room is adequate and in accordance with applicable standards, the lights in the production process room are sufficient for lighting and the lights are protected with containers. Closing light so that minimize happen accident work if the light suddenly explode.

i. Channel Disposal

Channel disposal found on the floor of the production room which is equipped with a cover made from stainless steel to prevent animal intruders enter the production room. Apart from that, to minimize happen accident work that could be dangerous employee moment pass channel the disposal.

j. Installation Waste Water Treatment (IPAL)

Waste produced in civet fish production form waste solid and waste liquid. Waste the resulting solid form waste organic covers fish head, stuffed fish stomach, fins, tail, gills, spines. Waste congested form cardboard box used, used plastic layers, and so on collected Then will processed by the party third / collector. Waste The resulting liquid is stored in the pool shelter located on the side reception entrance material standard. Waste liquid will accommodated beforehand transported to the management site waste. Then every morning and evening waste

liquid will be transported into the water tower later will brought use car tub open to management waste nearby Juwana port.

Standard Sanitation Operating Procedure (SSOP)

1. Water And Ice Safety

a. water

The water used comes from from PDAM and well water. PDAM water is used for the production process while well water is used for sanitation equipment used after the production process finished. There are 2 water reservoirs to store PDAM water and 2 well water reservoirs. Before PDAM water is used, this is done sterilize first using an activated carbon filter and silica gel. PDAM water channels and well water differentiated therefore hose numbered so make it easier for employees to differentiate type of water when will be used. The water tank will cleaned every 2-3 weeks by officers so that the water is collected still clean and free from moss. The water used has been fulfil clean water standard requirements because have own certificate drinking water standard requirements.

b. ice

The ice used is shaped blocks obtained from ice block producers in Juwana, and Pati. Ice is made from existing PDAM water drinking water standard as well as handled according to sanitation and hygiene standards. The ice blocks to be used are crushed first using an ice flake tool shaped bulky and easy to use. Monitoring carried out company that is, by doing Observation of the appearance, smell and taste of ice.

2. Sanitation

The cleanliness of surfaces that come in direct contact with the product must always be monitored to minimize cross-contamination of the product. Sanitation of equipment used in the production process is carried out every day before and after the production process. Cleaning is carried out using food grade cleaning materials so it is safe to use. Sanitation of employee uniforms is carried out every afternoon when it is time to leave the office. However, there is still some equipment that is rusty which can cause cross contamination. This can be categorized as serious, where deviations occur which, if no corrective action is taken, can affect food safety, according to the supervision questionnaire for the certificate of suitability for medium-large scale fish processing. Tools that come into direct contact with raw materials must be cleaned regularly and effectively after each use, in order to remove residual raw materials that could be a source of microbial growth.

3. Cross Contamination

To prevent happen contamination across products, the layout of the Fish Processing Unit (UPI) has been designed so that the production process flow does not collide between processes. Raw materials and products end placed in a separate place. Material entrance Product standards and exits have also been designed separated. Employee entering the production room must use equipment clean and correct work in accordance with established rules set company (Lapene, 2021).

4. Sanitation Employee

To maintain cleanliness hand when entering the production room, there is a washing area available hand and locker to store goods. Employees must use appropriate PPE provided like closing head, shirt, trousers, sarong hands and socks. However, still lots employees who have not applied regular use of PPE complete. There are still those who don't use it closing head for men, and still is some don't use it sarong hands, and gloves Hands are only used for handling certain fish like a betta fish. There still is employees who wear nail polish and also watches when production ongoing and still there are also employees who use it make-up. However This can be avoided and minimized by: give directing employees to use complete PPE.

5. Prevention Mixing Toxic Materials

Food ingredients stored in warehouse storage Far from reception material standard. so don't worry mixed with ingredients standard. Likewise materials cleaner stored in different warehouses.

6. Storage And Labeling

Storage material chemistry dangerous stored in a distant warehouse from material standard and clearly labeled so makes it easier employees to differentiate them when will be used.

7. Employee Health

Lockers are available in front facility health like first aid kit so makes it easier employee treat the wound when injury or illness. Every sick employees are not allowed to come to work as a precaution happen contamination of the product.

8. Control of nuisance animals (Pest Control).

On each the door to the production process room has been provided with an insect killer device to prevent this insects enter and monitoring of the machine is also carried out cleaning routinely.

The following are the results of GMP & SSOP observations that are not suitable for use certificate supervision questionnaire appropriateness scale fish processing intermediate big. these results were obtained 1 finding was serious, 4 were major and 1 was minor. For serious findings contained in the clause Cleanliness of Rooms and Equipment Processing on the aspect of equipment condition where the equipment used is rusty and is still in use. So it can be categorized serious, that is happen deviations that would otherwise be made action corrections can affect security food, according to the certificate supervision questionnaire appropriateness scale fish processing intermediate big. The major findings are in the clause building on aspect windows and ventilation that the building does not have so there are not any exchange air. So that windows and ventilation fall into the major category, meaning happen deviations if no corrective action is taken have potency influence security food, according to the certificate supervision questionnaire appropriateness scale fish processing intermediate big. Major findings were also found in the clause Enhancement Abilities / Skills There are no employees yet training employee. So that Skills employees fall into the major category, meaning happen deviations if no corrective action is taken have potency influence security food, according to the certificate supervision questionnaire appropriateness scale fish processing intermediate big. And in the IPAL clause there is still no shelter available adequate waste. So the IPAL falls into the major category, meaning happen deviations that would otherwise be made action correct have potency influence security food, according to the certificate supervision questionnaire appropriateness scale fish processing intermediate big. And for minor findings, it is in the clause building aspects of the floor where the floor has hole However can still be overcome. Avoid processing food from animal bully including eradication and prevention so as not to cause pests around industry food. Like, put trap pest in door enter, guard cleanliness of storage space, as well warehouse (Meiyasa & Nurjannah, 2021).

Waste

Waste generated in the production process Cunang fish fillet form waste liquid and waste solid, including:

1. Waste liquid among other things produced from remaining washing water products, equipment washing water, and production room sanitation. Waste liquid will accommodated in the hole shelter simple with a capacity of approximately 2000 L/hole. Hole This waste water reservoir consists of: of 4 holes of the same capacity. two holes for collecting residual water production and two holes for sanitary water storage. Waste stored liquid will be disposed of accordingly sucked into 2 water reservoirs with a capacity of

- 1050 L tank and a day sent 6x, later will transported by car tub open and will deposited in landfill waste payment that has been provided residents at the port.
2. Waste congested generated from weeding fill fish maw, cutting head, tail and fins, bones, plastic layer, and packaging secondary. Head, gills fill stomach, tail and fins will be sent to PT. Bumi Indo Mojokerto, East Java, to be reprocessed into feed cattle. Fish bones and fish eggs are cleaned again and frozen together products for export to Taiwan. Plastic layer and packaging secondary will be transported by collectors / junk. Waste liquid will managed by the party third, every day waste liquid will transported into a water tank with a capacity of 2100 liters using car tub Open 6 times a day and sent to shelters in the area Juwana port, Pati, Central Java. (Wulansari, 2011)

CONCLUSION

Application Good Manufacturing Practice (GMP) Standard Sanitation Operating Procedure (SSOP) in the manufacturing process Cunang fish fillet (*Muraenesox cinerus*) frozen has not been implemented in a way maximum indicated by the presence of 1 finding serious, 4 major findings and 1 minor finding. For serious findings contained in the clause Cleanliness of Rooms and Equipment Processing on aspects of equipment condition. Major findings 1 and 2 are in the clause building on aspect windows and ventilation that the building does not have so there are not any exchange air. Major finding 3 was found in the clause Enhancement Abilities / Skills Employee because it doesn't exist yet training employee. Major finding 4 in the waste water treatment plant clause is due to the unavailability of shelters adequate waste. And for minor finding 1, it is in the clause building aspect of the existing floor hole. Cunang fish fillet products own mark organoleptic exceeds 8, and is in accordance with standards.

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