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GOOD MANUFACTURING PRACTICES (GMP) IN SMALL ENTERPRISE OF MILKFISH SATAY

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ABSTRACT

Milkfish satay is indigenous food product from Banten Province. Quality assurance in the milkfish satay production need tobe improved, especially in the sanitation and food safety. Basic eligibility Program in the fish industry is needed to ensure food safety, namely sanitation standard operating procedures (Sanitation Standard Operating Procedures/SSOP) and the good food production (Good Manufacturing Practices / GMP). Good manufacturing practices (GMP) is a guideline for the food industry to produce food and beverages that are safe, have a high quality, and feasible for consumption. The purpose of this study was to examine the implementation of GMP on milkfish satay production. This study is conducted by doing interview with owner followed by observation and documentation of all activities related to the production process in order to examine the GMP applied. The result showed that the production activity of Milkfish Satay used traditional method. The small enterprise has to improve the GMP practices in the criteria of building and facilities, equipment, hygiene and sanitation facilities, activities, health and workers hygiene, label, process control, recording and documentation.

Keywords: Good Manufacturing Practices, Milkfish Satay, Banten

INTRODUCTION

Milkfish is one of Indonesia's export commodities. This fish is also a source of animal protein that is most favored compared to other types of animal protein. Banten Province is one of the centers for milkfish production with a yield of 3,553.59 tons in 2018 from the total production of cultivated fish in this province (DKP Provinsi Banten, 2019). Milkfish are generally sold directly to consumers in the fresh form to meet local consumption needs. The high production of milkfish is also due to the fact that Banten is the center for the production of milkfish satay which uses milkfish as raw material. Milkfish satay mostly produce by small enterprise in the Banten Province, especially in Serang City.

As an indigenous food product from Banten Province, the milkfish satay has a great opportunity to be developed and be appointed as a regional superior product. Therefore, it was still need to develop the product competitiveness especially in the aspects of quality and consumers safety. So that, the milkfish satay's enterprise is necessary to increase the awareness of the importance of hygienic food production process and responsible for consumer safety. The problem faced by milkfish satay's enterprise such as short of shelf life and food safety caused the product can only be

marketed locally. Meanwhile, milkfish satay intended to improve food safety by inhibiting the growth of microorganisms. Program eligibility base in the small enterprise is needed to ensure food safety, namely sanitation standard operating procedures (Sanitation Standard Operating Procedures / SSOP) and the good food production (Good Manufacturing Practices / GMP). Good Manufacturing Practices (GMP) are the basic requirements that should be met by an enterprise that wants to produce quality and safe food. These requirements based on Ministry Industry RI Rule No. 75/M-IND/PER171/2010 include the location, building, sanitation facilities, machine and equipment, materials, process control, product, laboratory facilities, employee, packaging, labelling, warehousing, sanitation program, transportation, documentation and training. The small enterprise that met the GMP requirement will get a certificate that valid for a period of 3 (three) years (National Food and Drug Agency, 2014).

The aim of this research was to mapping production process of Milkfish satay, to analyze the implementation of GMP in the milkfish production, and to give recommendation of the best practice of GMP in the small enterprise of milkfish satay. Several aspects of GMP are analyzed include industrial location, building, product, productions equipment, raw materials, personal hygiene, processing control, sanitation facilities, label dan packaging, storage, maintenance facilities, laboratory and transportation according to the Rule of Indonesia Ministry of Health and Rule of Indonesia Ministry of Industry. Through the application of proper sanitation procedures and GMP during the processing, small enterprise increases consumer confidence by ensuring quality and food safety.

METHODS

This research conducted in the production house of milkfish satay located in the Serang City, Banten Province. The research method used in this study is descriptive qualitative and quantitative. This research used survey methods in data collection through observation, interviews with the owner, and documentation of production processing. Location study was one of small enterprise in the Serang City, Banten Province. This enterprise still keeps traditional method to produce milkfish satay. This research also measured the quality of milkfish satay and water in the laboratory. The quality of milkfish was already analyzed for chemical hazard (Pb and Cd) and biological hazard (TPC, *E coli*, *Salmonella* sp, *Vibrio c.*, *Vibrio p.*) (Anggraeni et al. 2021). Quality of water was analyzed for *E. coli.*

RESULTS AND DISCUSSION

Processing of Milkfish Satay

The processing of milkfish satay in the small enterprise is sorting raw material. It followed by fish washing and scale cleaning. It continued by removing the gill and innards and separating fish meat from fish bone and fish skin/fish head. These three parts of fish was process differently. The fish skin and fish bone still used as skin milkfish satay, the fish meat mixed with coconut milk and seasoning, and the fish bone was thrown away. The batter that consists mixed of meat, coconut milk and seasoning then fill into the fish skin. This product was clamped using wooden clamp. The process followed by roasting clamped milkfish and packaging. The process flow diagram of milkfish processing can be seen in the Figure 1. Based on the Figure 1, every activity prone to cause cross contamination either from the environment or other foreign objects.

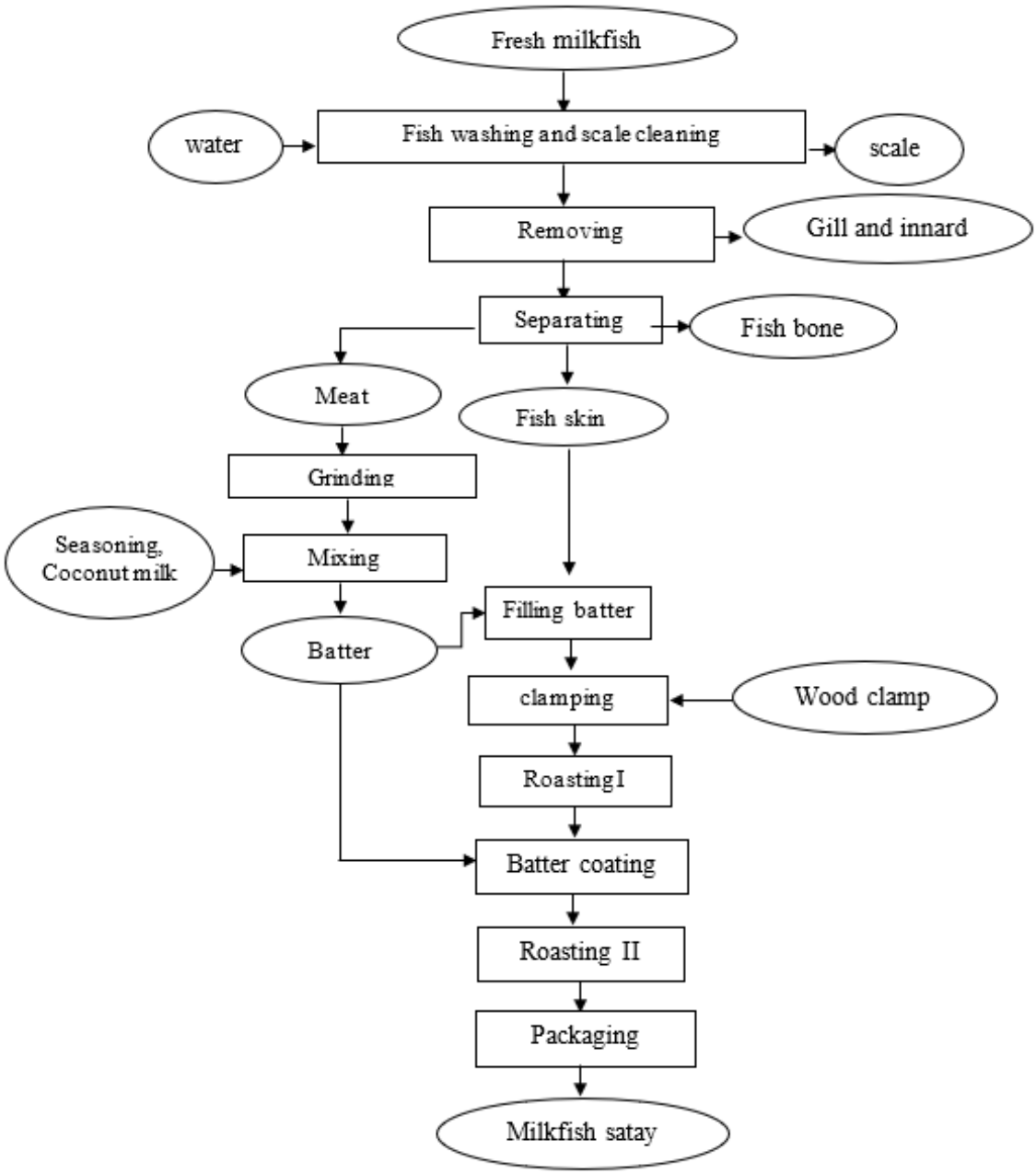

Figure 1. Process Flow Diagram of Milkfish

Evaluation of GMP Implementation in the Milkfish Satay Enterprise

Food safety is one basic requirement that must be fulfilled by every food producer in order to protect consumers. Efforts to increase food safety can be carried out by implementing a basic eligibility program. Basic eligibility program are Good Manufacturing Practice (GMP) and Sanitation Standard Operating Procedures (SSOP). This status of GMP application was assessed based on Permenperin RI No.75 /M-Ind / Per / 7/2010.

a. Production location

Based on the survey, location enterprise is far from polluted environment,

landfill area, and waste area, flooded area. It is located in densely populated residential area, but the outside of the building, such as the street, parking lot and yard are well managed so that buyer easily access the location.

Figure 2. Documentation of Production

b. Building and facilities

Yusra (2016) state that the unit building and its surroundings should be designed and arranged and have clear boundaries. It means that the area of each roomand equipment space must be sufficient, not crammed and sorted according to the activities. Based on the survey, the requirement of building and facilities was not implemented improperly such as:

• Design and construction

Design and construction of building must allow workers to clean the surface of the floor, ceiling, and wall easily. There are 4 rooms in the small enterprise that are washing and cleaning, mixing, roasting and storaging. In fact, the dirt and grime in the wall and floor are difficult to clean, beside the wall is in the shape of a dead corner so it allows microbial growth. The floor of cleaning room is already coated with ceramics, but the wall still uncoated ceramics. Layout of the production house are not in accordance with GMP and it may cross contamination because no proper separation for clean and dirty of material flow. Doors and windows are made of not from stainless, and non waterproof material. Mixing and filling room doesn't have enough lighting and the wall in this room isn't painted with light colour. The roasting process was done in the open area so that the product can contaminate with dust. Based on survey, it is still found water spills (muddy) in the mixing and filling room even tough this room must be dry.

• Facilities

According to the GMP Guidelines 75 / M-IND / PER / 7/2010 several aspects of sanitation facilities include water supply facilities, toilet facilities, waste disposal facilities and worker's hygiene. Facilities in the production house already meets GMP requirements such as the bathroom is located far from production house, the sewerage and drainage of liquid are sufficient so that the liquid waste flow smoothly, and equipment cleaning is done everyday. The water used is available in sufficient quality and quantities for production activities. The water was taken from groundwater. The water in the SME was analyzed for E coli and the result showed < 3 APM/g of E coli. It showed that water quality meets the requirement for food industry. Based on previous study, water used in this enterprise meets the requirement for sanitation hygiene standard in the Permenkes No. 32 Tahun 2017. But it is still found that the production house doens't equipped with a sink, hand soap, and dryers for workers to keep clean. These facilities must be available in the entrance and exit of the production room. Besides, there must be tube water in the entrance door of production room. There are facilities equipment made of wood and plastic which is prone of contamination.

c. Equipment

Equipment for production milkfish satay are baskets, knifes, trays, pans. These equipment are made from plastics, wood or stainlessteel. Before and aft using the equipment, an employee will wash them with soap and then dry them. Such actions may reduce contamination into the product. But, its better to replace the woods equipment with stainlessteel equipment, because wooden equipment prove of contamination.

d. Hygiene and Sanitation Facilities and Activities

In this enterprise, the cleanliness and sanitation programs are not applied. The practice of worker hygiene, clothing and hand washing is in bad condition.

e. Health and Workers Hygiene

Worker's hygiene and health will guarantee that workers who have direct or indirect contact with the food processed will not contaminate the product (Ministry of Industrial, 2010). Requirements of workers higiene and health are competence in food safety processing, health, wear working uniform, wash their hand before doing work and not to eat, drink, smoke, spit, or perform other actions which can contaminate didn't applied worker's hygiene and health standard. Workers don't wear production uniform, so that they worked without uniform, a head top, boots and without using gloves. We also found some male workers smoke during production. There must be PIC of checking the worker's health and hygiene periodically and of monitoring food safety process.

f. Product Label

The label print to the package. The label must show of product name, materials, net weight, name and address of company and expiration date according to PP 69/1999 about food label and advertisement. Based on the survey, the label product was written the product name, P-IRT number, name and address of the enterprise. However, the label has not included, materials, expiration date, and net weight. Author opinion, these items and nutritional facts must be included in the label to assure food safety product and increase competitiveness of product.

g. Process Control

Every industry should have controled their process so that the quality of food products met the final requirement. Process control aims to produce quality food products and provide benefits for consumers (Latif et al., 2017). Minimal monitoring was done in the small enterprise such as formulation of raw material standard, product composition, and processing. The monitoring control was done by feeling by PIC. However, it wasn't written in the document (SOP). This enterprise is supposed to document the operationalization of the eligibility base program and their activity such as SOP rejection product, SOP raw material acceptance, SOP process production, and SOP sanitation process, etc.

h. Storage

The small enterprise didn't store the raw material because when it purchased, it would be processed immediately. Storaging wasn't done toward product also because it sold. Shelf life of milkfish satay is about 3-4 day. The small enterprise provides storaging room with the clean condition. The packaging is stored separately from the final product, in a clean room.

i. Product withdrawal

A company can withdraw its product from selling if there is found any problem with the product. One reason for the withdrawal of food products is safety problem such as perhaps the product will cause illness or poisoned to consumers if they consume the product (Latif et al., 2017). This small enterprise has no withdraw procedure.

j. Recording and Documentation

This activity is very helpful to owners to record what problem faced with regard to

product quality. It also important to record production process, materials used, expiration date, and distribution system (Latif et al., 2017). Documentation activity was still minimal. Documentations in the small enterprise were the amount and date of production, the amount of raw material and product, financial book. The recording and documentation are done by owner.

Table 1. Recommendation for the next stage to GMP implementation

No	Parameter	Recommendation
1	Building and facilities	- Walls in the 4 rooms should be covered with a waterproff material that makes it easy to clean with a height of at least 2 m. - Provide lighting facilities and repaint the walls to make them lighter. Lighting condition was suggested in 220 lux for working area, 540 lux for inspection area, 110 lux for other rooms (Winarno, 2011). - close the roasting room so that dust contamination can be prohibited - provide tube water, sink, hand soap, and dryers for workers to keep clean. Minimun number of sinks 1 to 10 workers (Winarno 2011). - change the door, windows, ventilation using stainlessstell, waterproff and easy to clean materials. - manage program sanitation procedure regularly
2	Equipment	- replace wooden equipment with stainless steel equipment - using machine for process to minimize contamination and get high quality.
3	Hygiene and Sanitation Facilities and Activities	- arrange sanitation program example periodic cleaning - provide production uniforms that comply with GMP guideline - pest control by cleaning production room, closing the sewerage, using insect killer, using mouse trap, preventing pest get in from the from vents / windows / doors. The pest control activity could follow Kurniasih *et al* (2020).
4	Health and Workers Hygiene	- Create SOP for the production process which includes activities during production in order to avoid contamination
5	Product label	- The label included product name, materials, net weight, name and address of company and expiration date.
6	Process Control	- Control of raw material, additional material, and product must be done and documented. It must meet the quality and free from hazard (phisics, chemicals, microbiology). - Arrange SOP of production process
7	Recording and documentation	- Appoint a PIC whose task of recording and documentation which includes raw material, product quality, product code, sanitation facilities and equipment, and toilet cleaning (The record was reported to the head of QC/owner and was documented (Bimantara AP & Triastuti, 2018)

GMP RECOMMENDATION

This study of the recommendation of GMP implementation in processing milkfish

satay is very important in order to produce good quality of satay products, guaranteed safety and fulfilled consumer expectations. Based on the survey, it can be seen that milkfish enterprise was not implemented GMP properly and correctly. Table 1 shown that recommendations for improving the application of GMP in order to avoid contamination of the product.

CONCLUSION

Milkfish satay is an indigenous food product from Serang, Banten Province. The processing of milkfish satay in the small enterprise is sorting raw material, removing the gill and innards, separating fish meat from fish bone and fish skin/fish head, mixing fish meat with coconut milk and seasoning, filling the batter into fish skin, clamping, and roasting. The implementation of GMP is carried out by assessing several aspects including production location, building and facilities, equipment, hygiene and sanitation facilities and activities, health and workers hygiene, product label, process control, storage, product withdrawal, and recording and documentation. Some recommendation has been made for small enterprise to take corrective action to improve safety product.

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