

**HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH : JURNAL INTERNASIONAL**

Judul Karya Ilmiah : The Processing Technology of “Pundang Seluang”, Fisheries Typical Product from Banyuasin, South Sumatera

Jumlah Penulis : 3 Orang
Helmi Haris, Arif Irawan and Riya Liu Hartana

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THE PROCESSING TECHNOLOGY OF “PUNDANG SELUANG”, FISHERIES TYPICAL FROM BANYUASIN, SOUTH SUMATERA

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ABSTRACT

South Sumatera is famous for traditional fisheries-based food, one of which is Pundang. Although overall South Sumatra fishery products are more varied, both in type and form, but to compete at the national level, our products are still far behind in packaging techniques. Especially for Pundang products, until now there has not been a standardized standard regarding the quality and processing process, so the legislation produced by one processor with the other processors varies greatly. Because of the lack of quality standards and technological processing of standard, then this article aims to introduce Pundang as one of the flagship products of processed products fishery products typical of South Sumatra, with the hope of someday Pundang can really become a traditional product excellent fishery typical South Sumatra. This paper provides an overview of some of the research that has been conducted at the Faculty of Fishery University of PGRI Palembang, which contains: definition and terminalogi about Pundang, raw materials (Seluang fresh) and the equipment used, the technology processing, drying and packaging design Pundang who have fulfilled requirements both in terms of hygiene, quality and appearance, and with a longer shelf life.

Keywords : Nutrient content, Packaging design, Process technology. Pundang Seluang, and Standards Quality.

INTRODUCTION

South Sumatra is one of the provinces that has a fairly wide public waters, namely in the form of rivers, swamps, lakes, damp, and other lowlands that are flooded with water. So that the potential of biological resources of public waters is quite large. The fisheries sector is one of the biggest contributors to animal protein consumed by the people of South Sumatra.

Based on data from the Department of Marine and Fisheries of South Sumatra Province in 2014 in the Field of Cultivation, the area of public waters reached 2.5 million hectares. From these public waters there are various types of economically important fish, among them are Seluang fish (*Rasbora spp.*). In South Sumatra, the supply of Seluang fish generally comes from catches in the main river and on the Musi tributaries and swamps that are widely distributed in South Sumatra.

At present, Seluang has become an elite class of food, which is served in restaurants. Seluang can be processed to dry, so it is crispy when fried. This dry cell in the Musi Banyuasin area is better known as "Pundang". because it's feels is fresh, it can be processed into various interest products (1).

The quality of the legislation produced by the community is still diverse, because there is no standard treatment process. Between one processor and another processor, the quality is still diverse. Another disadvantage is that the packaging technique used is still weak and the shelf life is short, so not many people outside the area know the advantages and disadvantages of this law. In the future, there is a need for a standard processing technology, which has fulfilled the requirements both in terms of hygiene, quality and appearance, and with a longer shelf life.

Therefore this issue is important to think about so that there are standard standards in this statutory processing technique. A good packaging technique needs to be developed, so that the lawn can be packaged to be more hygienic, with a more attractive appearance and a longer shelf life. So that people can enjoy the law at any time, even if it's not in the middle of the season.

The discussion in this paper aims to: 1) Understand what Pundang products are, 2) Understand the raw material used in the Pundang Seluang Processing, 3) Explain of The Pundang Sekuang Processing, 4) Performance packaging design legislation so as to provide a more attractive appearance, hygienic, and practical

Benefits from this paper is: In order this product more familiar with what it Pundang, I understand are raw materials, Pundang step in the process, get to know pundang packaging design which can provide a more attractive appearance, hygienic, and practical, as well as promoting Pundang be one alternative culinary products souvenirs typical of South Sumatra .

RESEARCH METHODOLOGY

This research is a series of research activities on Pundang Seluang conducted in Sekayu City, Musi Banyuasi District , South Sumatra, and has been going on from 2013 until now, it continues.

This study uses a field survey method and a series of experiments on the processing of the Pundang Seluang. There is an initial stage of the survey methods, starting from studying the technology of processing in the traditional processing level. After that the experimental method is carried out through modification at the stage of the treatment process , which includes improving the method of processing, drying, and packaging. So that we get the recommendation of Modified Processing Technology of Pundang Seluang (2).

RESULTS AND DISCUSSION

Defenition of Pundang Seluang

Based on the results of field survey conducted in the area Sekayu and its surroundings, it was found that the definition of the Pundang Seluang is drying small fish (including Seluang fish) with a **slight** addition of salt and sugar. While giving the salt with a **higher** concentration are called "Balur" (Salted Fish) (1 and 3).

The term Pundang is only used for the Musi Banyuasin and Banyuasin District only, for other regions in South Sumatra this term is not known. According (4 and 5), in the area of Central Kalimantan, the term Pundang is also known as with a different understanding,

because it is not only intended for drying fish. In this area is the understanding Pundang is saltingfish or meat that is dried in the sun to dry it evenly.

The form of the Pundang Seluang image produced by the community in the Musi Banyuasin area can be seen in Figure 1.



Figure 1 . Pundang Seluang
Source photos: (6)

The Technology Process of Pundang Seluang at Processing Performers Level

Processing of legislation at the (traditional), sanitation and hygiene level of processing is still not getting enough attention. The equipment used and the method of processing is not yet adequate. Giving salt in small amounts only, most **Performers** invite anyone to add sugar to add flavor of Pundang..

Drying is done by spreading fish on top waring on the ground, the court of bamboo or wood. Because the conditions are in the open air, it is very likely that it will be contaminated with garbage, animals, gravel, and of course it will be a location that is easily contaminated by flies. Therefore the drying results are not clean and hygienic. Product packaging has not been done specifically, only in the form of plastic bag packaging or plastic mica boxes in staples without labeling.

The dry cell display (Law) produced in traditional processing methods is not uniform, both in terms of shape, size, color, and the level of dryness of the product. This is due to the fact that the handling process of the processing has not been standardized , so that the resulting quality is very diverse (7).

In practice in the field, there is some variation between the lawyer if the one with the other Pundang processing, for example in fish weeding there is no split, there were cleaved partly butterfly shape. if there are adding about 3% salt and sugar to taste, partly did not do it. On drying there were dried for 2-3 days, some of which there are up to 3-4 days. Selection of packaging varies between a lawyer if the other Pundang processing. Because, the quality of the lawyer if Pundang traditional laws vary widely and there is no standardized quality standards.

A variety of treatments exist in the community, so the authors group them into 2 processing groups, namely: Method of Processing I (P1) and Method of Processing II. (P2),

Method of Processing I : Processing is carried out by the Fishermen's Family, the raw material comes from the catch of the fishermen directly from the river around the residential village. Furthermore, elephant with various sizes and types of weeded, washed and soaked in salt solution with a salt size of about 5-10 percent by weight of fish. Some also add enough sugar for flavor enhancers. The next step is drying by sunlight (approximately 2-3 days) on normal weather and the resulting P legislation ready for sale without any special packaging. The results of the processing of the processing method I, the color is rather dark, the size is not uniform, the water content is still quite high with the aroma of salted fish.

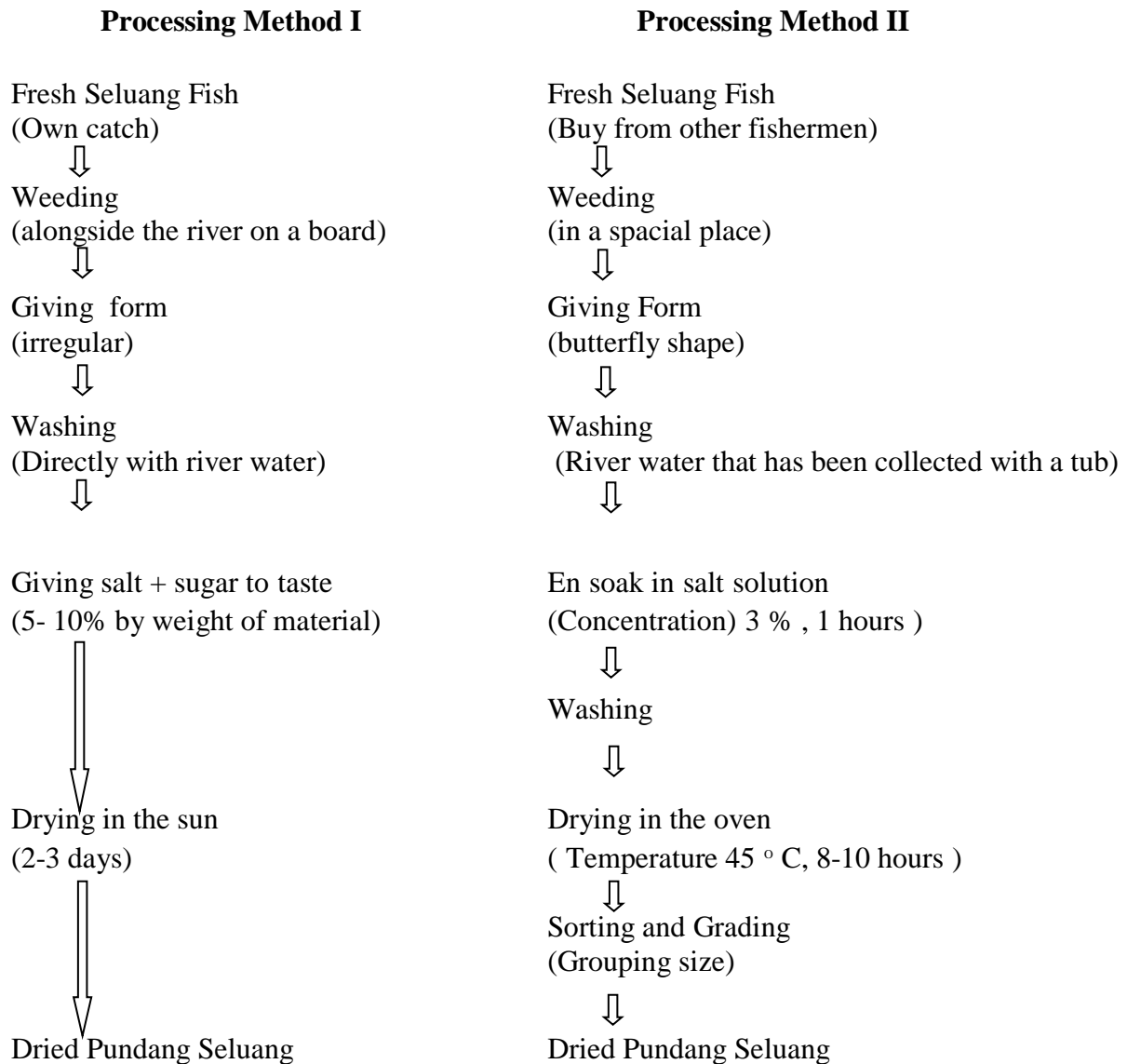
Processing Method II: Treatment by Entrepreneur Pundang, d ith raw material obtained by purchasing from fishermen mem surroundings. The next stage S eluang washed clean and do the sorting and grading by size more uniform. Seluang that have a uniform size of discarded entrails and split with a butterfly shape and then soaked in salt solution with a mild concentration (about 3%) . The nodules are dried in the sun . Drying takes between 3-4 days to produce a colorless transparent legislation P whitish, with a uniform size and droughts drier, and without any aroma of salted fish. In summary, the differences between the two ways of processing can be seen in Table 1 .

Table 1 Differences in Law processing processes at the business actor level

No.	Details	Processing Method I	Processing Method II
1	Sources of raw materials	Own catch	Buy results from surrounding fishermen
2	Equipment and processing methods	Simple	It's more advanced
3	Washing water source	Directly from river water	River water has been collected in a reservoir
4	Who process	The fisherman's family itself	Processors / Entrepreneurs
5	Marketing	Directly at the production site	In production sites, sales outlets or restaurants
6	Packaging	Crackle bags	K mica brain ber label
7	Invite View	Less dry, rather dark colors, the smell of salted fish, shapes and sizes vary	A bit dry, butterfly shape, bright colors, without the smell of salted fish, the shape and size are more uniform

Source: (8).

Method of Processing I (P1) and Method of Processing II. (P2), as shown in the flow chart of the processing process in Figure 2 .



Picture 2 . Flow chart of Pundang Seluang Processing (The first and Second Processing)
Source: (6).

In fact, in the field, how to handle raw materials, salting methods, and drying are still done in a minimum. This causes many dry fish that are not homogeneous, the quality is not good, and various deficiencies still need to be addressed (9).

3. Pundang Seluang **Quality standard**

Because of the limited information and literature on Pundang Seluang, then up to understand The Quality Standard of Pundang Seluang for the time being, the ulcer still refers to the Quality Standards of Dry Salted Fish . namely as follows:

Table 2. Quality Requirements for Dry Fish

Test type	Unit	Quality Requirements
a. Organoleptic - Value, min	Numbers (1-9)	7
b. Microbiology - Total Plate Numbers - E. coli - Salmonella * - Vibrio cholera * - Staphylococcus aureus *	colony / gr APM / gr per 25 gr per 25 gr colony / gr	Maximum 1×10^5 Maximum 3 Negative Negative Maximum 1×10^3
c. Chemistry* - Water content,% Weight / weight, max - Salt,% weight / weight, max - Ash does not dissolve in acid, % weight / weight, max	% of mass transactions % of mass transactions % of mass transactions	40 20 0.3

*) Recommendations if needed
Source: (10).

Based on the results of the legislative analysis conducted at the TPHP Workshop of the Faculty of Fisheries, University of Palembang PGRI and at the Bogor Agro Industry Center (BBIA), the quality of the Law produced from the first and second processing methods can be seen in Table 3.

Table 3 . The average results of the quality analysis at the level of business actor

Quality	Details	Way Processing I	Way Processing II
Chemistry	- Water content,%	23.16	19.81
	- Protein,%	62.43	69.13
	- Carbohydrates,%	3.46	3.95
	- Fat,%	2.41	2.35
	- Ash does not dissolve in acid,%	0.50	0.47
	- Salt,%	4.19	0, 5 9
Microbiology	- ALT, colony / gr	$2, 5 \times 10^4$	$2, 1 \times 10^3$
	- E. coli APM / gr	1.17	1
Organoleptic	- Invite Views (Appearance, Smell, Text stur and Pert. mold)	6.6	7.1

Sources: (6).

Judging from the average observations analyzed by the T test level of 5% and 1%, then between the two methods of processing, for the parameters of Water, Protein, Salt, Total Plate Number (ALT) and Sensory Test there are differences in the effect of the two treatment

methods , while for the parameters of carbohydrates, fats, acid insoluble ash and *Escherchia coli* , there was no difference in the effect of the two treatments.

Judging from the chemical quality, the moisture content of Treatment Method II (19.81%) was lower than the Processing Method I (23.16%). This is because in the Processing Method II the drying time ranges from 24-32 hours or 3-4 days of drying, while the Method of Processing I drying only lasts 16-24 hours or 2-3 days drying. Thus the water content in the Processing Method II is lower than the first method. This is in accordance with the opinion of (9), that adequate drying can reduce the water content of the material, so that the material lasts longer and has a longer shelf life.

Protein levels in Treatment Method II (69.13%) are higher than Processing Method I (62.43). This is thought to be related to differences in water content. P enurunan Moisture material will change the nature of the fish meat fresh form, but will increase the nutritional content (9). While the Salt Levels in the Processing Method II are lower, because indeed in the Processing Method II salt addition is only modest (a maximum of 3% of the weight of the material), so it tastes rather tasteless and this is preferred by consumers, because more choices for processing into various processed products others (11, 12, and 10).

Judging from the quality of Microbiology, there were differences in the effect of the two methods on the parameters of the Total Plate Number (ALT) but for the *Escherchia coli* parameter , there was no difference in the effect of the two treatments. This is because in the Processing Method I, the handling is less hygienic. This contamination can occur because the raw material itself has been contaminated or polluted during the handling process. Besides that, the high water content of Pundang will also affect the water activity (Aw) of the material is also high, thus the ability of microorganisms to develop in food will also be faster (13 and 14).

Although it is still within the permissible limits, what needs to be considered in the processing process at the Business Actors level is the sanitation and hygiene process, because the discovery of *E. coli* in the final results. This can occur because of contamination from the initial raw material or contamination during the processing. As stated by (13), that the presence of *E. coli* in food is an indication of poor sanitation processes. Therefore washing factors, sanitation in weeding and drying need to be a concern.

The Organoleptic Test Results (Sensory Test) in the Law resulting from the second processing method are higher than the first processing method (Picture 2.) This shows that panelists prefer the appearance of the Law (appearance, smell, texture, and growth of molds) as a result of processing the second method. In the second processing method, it produces a drier Pundang, a butterfly shape, bright colors, without the smell of salted fish, and a more uniform size.

4. Improvement of Processing Technology

Based on the analysis of weaknesses Pundang Seluang processing traditionally, we conducted a series of studies to improve Pundang Treatment Process Technology for the rehabilitation of processing, drying / drying, packaging and shelf life determination Pundang Seluang. Based on the results of the previous research, recommendations were made for the flow chart of the processing process as follows Figure 5.:

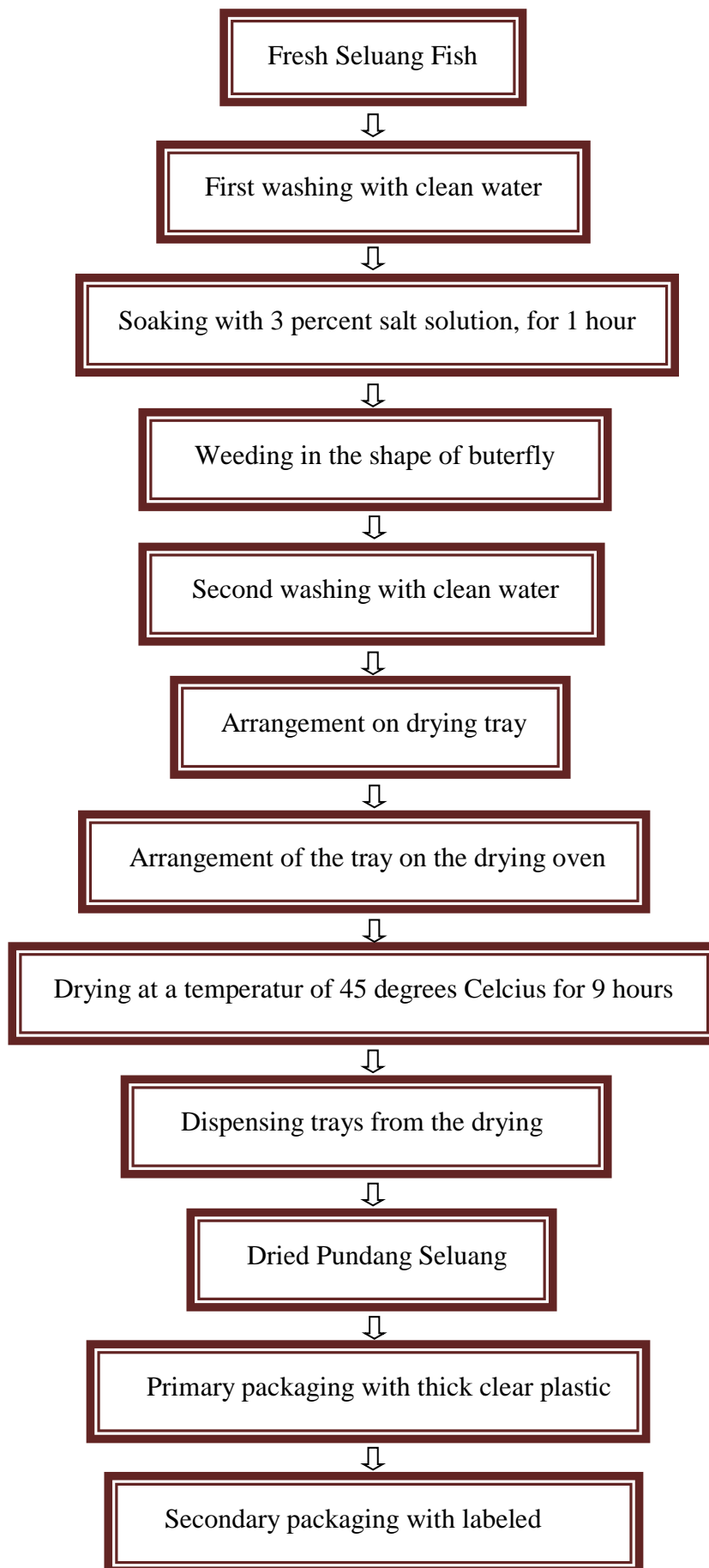


Figure 4 . Recommended Flow Chart of the Pundang Seluang Processing Process

The Pundang Seluang Processing

1. Raw Materials (Fresh Seluang Fish)

The raw material used is selected from Seluang fish which is still fresh from the catch. Because if it's not really fresh, because the size of the Seluang fish is small, then we will have difficulty in weeding.

2. Washing I with clean water

This Washing I aims to remove impurities from the raw material that will be used for making the Law.

3. Weeding with a knife

Weeding aims to remove all dirt and stomach contents from Seluang fish, so as not to become contaminated for the next process.

4 . Giving the shape of a Butterfly

Giving a butterfly shape is by dividing the abdomen to the chest with a sharp knife, so that when developed it will form like a butterfly (Butterfly).

5. Washing II with clean water

Washing stage II aims to clean fish from dirt and blood again which is still attached to a fish that has formed a butterfly.

6 . Soaking in a 3% salt solution, for 1 hour .

Soaking Seluang fish that has been weeded in 3 percent salt solution for 1 hour is so that the salt solution is absorbed evenly into the fish meat, which can add flavor to the Law that will be produced. The salt used as part of it is iodized salt, so besides adding flavor, it is also useful as a source of iodine minerals for consumers who consume it.

7. Arrangement on a drying tray

After being removed from the salt water bath, Seluang fish is arranged on a drying tray by developing the hemisphere of the butterfly, with the lower part of the stomach contents, so that when the dried Pundang is produced it really expands like a butterfly.

8. Preparation of trays in a drying oven

Seluang fish, which has been arranged on a tray, is put into a drying oven with a multilevel system.

9. Setting temperature and drying time (45⁰ C, 9 hours)

Then the drying temperature is set to 45⁰ C and the timer is set for 9 hours, and the oven door is closed. During drying, fish are turned back and forth every 3 hours, so that drying can be evenly distributed.

10. Remove the drying tray from the drying oven

After the Dry Law (about 9 hours temperature 45⁰ C), the Law can be lifted to air dry, so that when packaged it does not produce water money.

11. Primary packaging with vacuum plastic

Primary packaging is done by packing the law into clear thick polyethylene plastic packaging, so that it can inhibit the entry and exit of water vapor into the packaging, so that the packed packaging is not quickly damaged.

12. Secondary packaging with labeled carton box

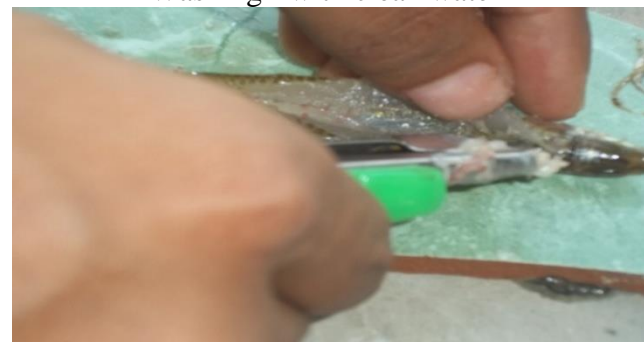
Furthermore, the legislation that has been packaged with primary packaging, to improve its appearance, is packaged with secondary packaging in the form of a labeled carton box, which contains information about the product name, manufacturer's address, net weight, nutrient content, method of manufacturing process and other information needed by consumers, such as expiration, halal labels, etc.



Fresh Seluang Fish



Washing I with clean water



Weeding with a knife



Giving the shape of a Butterfly



Washing II with clean water



Soaking in a 3% salt solution, for 1 hour



Arrangement on a drying tray



Preparation of trays in a drying oven



Temperature and drying time (45⁰ C, 9 hours)



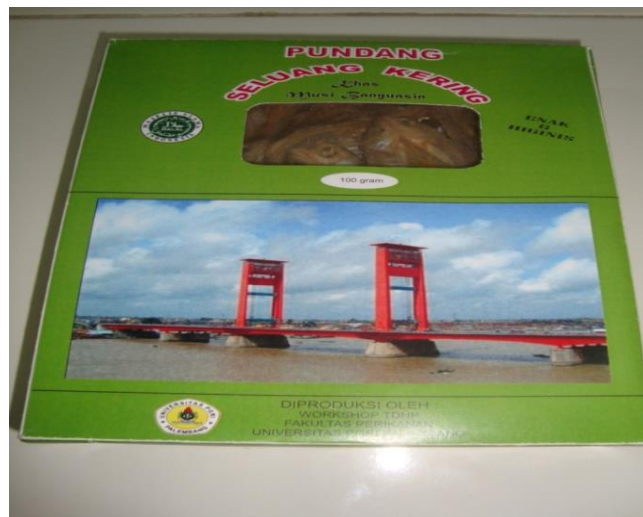
Remove the drying tray from the drying oven



Dried Pundang Seluang



Primary packaging with thick clear plastic



Secondary packaging with labeled carton box

Figure 5 . Flow chart of Pundang Seluang processing
Source: (7)



Figure 6 . Various forms of packaging legislation that are ready to be marketed
Source: (7)

Varian of the package that has been developed at the University of Fishery Products Processing Workshop PGRI Palembang is not only a combination of primary packaging PP transparent plastic with cardboard boxes labeled secondary packaging, but there is also a plastic primary packaging labeled Plastic thick, with a variety of hangers and standing pouch (as shown in Figure 6) above. Variations of various packaging for Pundang Seluang are favored by consumers because their appearance is more attractive, practical, and more hygienic. So that it can be used as a souvenir (souvenir) typical of South Sumatra (19).

CONCLUSION

Pundang Seluang is one of the processed fisheries products typical of South Sumatra, which is the result of drying of Seluang fish (*Rasbora sp. P.*). There are various types of Seluang Fish which are widespread in public waters in South Sumatra, but the types of Seluang that are widely used are the types of Seluang Batang (*Rasbora argyrotaenia*) and Seluang Putih or people in the Sekayu area calling them Seluang Lambak (*Rasbora dorsioevellata*). The Process Processing Technology of Seluang has been introduced which consists of stages: Preparation of raw materials in the form of Fresh Seluang Fish, Washing with clean water, weeding with butterfly shape, Washing II with clean water, Immersion with 3 percent salt solution for 1 hour, Arrangement on a tray dryer, Preparation of drying tray in drying oven, setting drying temperature 45 °C for 9 hours, Expending drying tray from oven which produces dry Pundang Seluang, Primary packaging with clear PP plastic, Secondary packaging with total labeled. Workshop on Fishery Product Processing University of Palembang PGRI has also developed a variation of Pundang Seluang packaging in the form of a thick P P plastic primer labeled, with a variety of hangers and standing pouch. Pundang Seluang has now begun to become a trade mark to be used as souvenirs or gifts for guests visiting South Sumatra or sent as souvenirs to relatives, business partners, and handicrafts as a distinctive feature of processed products from South Sumatra.

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