



## **Smoke Catfish Product Review in Indonesia**

**By**

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### **Abstract**

Smoked catfish is a traditional product of fish processing that develops in Indonesia. This article review aims to review smoke catfish products in terms of the stages of the process and the quality it produces. Based on the results of riview literature obtained information that the method of fumigation of catfish produced in Indonesia is a method of heat smoking. The stages of the process consist of preparing catfish, soaking in a saline solution, giving hot smoke in the temperature range between 60°C - 100°C and packaging of smoked catfish products. The quality of the smoke catfish products produced has met the quality of the Indonesian National Standard.

Keywords: Indonesian National Standard, moisture content, fat content, histmin.

### **INTRODUCTION**

Generally fish and fishery products are perishable food because they contain high enough protein and water, therefore it is very important to do preservation and processing. One of the processing and preservation of fish that is often done by the people of Indonesia is smoking.

Fish fumigation is a traditional fish processing method that aims to increase the added value of fish and improve taste. Smoking is a way of processing or preservation by utilizing a combination of heating treatment and the administration of chemical compounds from the burning of natural fuels so as to inhibit enzyme activity and inhibit bacterial growth in fish (Kumolu Johnson et al., 2010).

The equipment used in the fumigation of this fish is simple and easy to get and the price is cheap. The stages of the process are also not too complicated. Flavor of smoked fish products is very popular by the people of Indonesia.

All types of fish can be processed into smoked fish. Freshwater fish that are generally processed into smoked fish and the product is very preferred by most Indonesians is catfish. This article aims to review smoke catfish products in terms of the stages of the process and the quality it produces.

### **Catfish (*Clarias sp.*)**

The superior products of freshwater fish in Indonesia, one of which is catfish. Catfish can be found in almost all fresh waters such as lakes, puddles and swamps. Catfish habitat in the river is more found in places where the flow of water is not too heavy (Susanto, 1988). According to Akbar et al (2010), catfish stay silent and take shelter in dark places during the day.

Catfish have nocturnal properties that are animals that are more active in activities and looking for food at night, so catfish like sheltered or dark places (Bachtiar, 2006). According to Mahyuddin (2008), catfish have a habit of eating at the bottom of the water or pond.

According to Santoso (1994), the taxonomic classification of catfish (*Clarias sp*) is as follows:

Phyllum	: Chordata
Class	: Pisces
Sub-class	: Teleostei
Order	: Ostariophysi
Suborder	: Siluroidea
Family	: Clariidae
Genus	: <i>Clarias</i>
Species	: <i>Clarias sp</i>

The morphology of catfish has an elongated body shape. The shape of the head is flat and not scaly. The mouth of the catfish (*Clarias sp.*) is located at the end of the muzzle and decorated by four pairs of grunts, namely 1 pair of nasal grunts, 1 pasang sungut maksilan (functioning as tentacles), and two pairs of mandibles. Catfish have 5 fins namely tail fin, dorsal fin, pectoral fin, and anal fin. On the pectoral fins the fingers harden which serve as patils. Gills are small, making it difficult to breathe. In addition to breathing with gills also have an additional breathing apparatus (arborencent) located in the upper gills. Arborencent is reddish and shaped like a lush tree title full of blood capillaries (Wibowo, 2011), a picture of catfish as found in Figure 1.



Figure 1. Catfish morphology  
(Source: Novriyanto,2010)

### **Smoked Catfish Processing Stage.**

The method of smoking smoked catfish that develops in Indonesia is heat fumigation. The stages of processing smoked catfish with the heat fumigation method are as follows:

- Catfish are halved without separating, but only up to the bottom of the head. Remove the contents of the stomach and wash using running water, then drain
- Prepare a saline solution with a content of 25 percent where for 8 kilos of catfish it takes 1 kilo of salt dissolved in 5 liters of water.

- Catfish that have been split and cleaned earlier are then soaked in a saline solution for 1 hour. Add a wooden ballast on top of a pile of catfish so that the fish does not float.
- Drain the catfish while aerated until the catfish skin does not look wet. Hang the fish on a stretch of wire where the tail is on top.
- Burn wood or coconut shells in the smoking machine to produce thick smoke and heat in the oven between 60 to 100 degrees Celsius.
- Arrange catfish on the shelf and then the smoking stage begins.
- The length of the fumigation process varies but the sign when the fish is ripe is a brownish yellow and shiny color.
- Remove the fish with the rack and let it cool.
- The last process is to pack in plastic packaging and then covered with a vacuum device so that it is free from bacteria and fungi that can cause decay.

#### **Quality of Smoked Catfish Products According to SNI Or Other Standards.**

Based on SNI 2725: 2013 (National Standardization Agency, 2013), the quality requirements of smoked fish sensory with heat fumigation are at least 7, for each parameter, namely appearance, smell, taste, texture, mold and mucus. Primary, et al. (2012) suggests that before the raw materials are smoked, drying is carried out so that the resulting smoked fish products are shiny. Apart from the fumigation process, the quality of raw materials also affects the sensory quality of smoked fish products.

Water content is one of the important characteristics of foodstuffs, because water can affect the appearance, texture, and taste of foodstuffs. The high water content in foodstuffs helps determine the durability of these foodstuffs, high water content results in the ease of bacteria, mold, and yeast to multiply, so that there will be changes in foodstuffs (Afrianto and Liviawaty 1989) in (Hadinoto, et al., 2016). SNI 2725: 2013, that the maximum water content of smoked fish with a maximum heat fumigation method is 60%.

Based on the results of research reported by Citra et al (2015), the water content of smoke catfish products marketed in Palembang ranges from 46.8% to 48.8%. Other research reported by Amir et al (2018), the water content of smoked catfish products produced by the people of Bulukumbu-South Sulawesi ranges from 45.43% to 54.53%.

Fat is part of the content of fish that has less value compared to protein. However, fat is a supporting factor in producing taste and aroma in smoked fish (Swastawati, et al., 2013). SNI 2725: 2013, that the maximum fat content of smoked fish with a maximum heat smoking method of 20%.

Based on the results of research reported by Citra et al (2015), the fat content of smoked catfish products marketed in Palembang ranges from 1.7% to 9.3%. Other research reported by Amir et al (2018), the fat content of smoked catfish products produced by the people of Bulukumbu-South Sulawesi ranges from 12.83% to 8.88%.

Histamine is a derivative compound of the amino acid histidine that is widely found in fish. SNI 2725: 2013, that the histamine content of smoked fish with a maximum heat fumigation method of 100mg / kg. Histamine levels are affected by the quality and handling process of raw materials that do not pay attention to hygienic sanitation.

The histamine content of smoked catfish produced by the people of Bulukumbu-South Sulawesi ranges from 29.23 mg / kg to 17.55 mg / kg (Amir et al, 2018). Other smoked fish products reported by Hadinoto, et al. (2016), smoked skipjack fish histamine levels 42.32 mg / kg. Radjawane, et al., (2016) also reported histamine levels of smoked skipjack fish in Ambon that are traditionally processed to contain histamine 7,657 – 19,751 mg / g. Sulistijowati and Mile (2014), informed that the average histamine levels of smoked skipjack fish taken from several smoked fish processing units in Gorontalo Regency ranged from 59.89mg / kg to 89.71 mg / kg.

The smoking of fish aims to extend the shelf life of fish. Hadinoto, et al., (2016). SNI 2725: 2013, which is the total plate number of smoked fish with a maximum heat fumigation method of  $5 \times 10^4$  colonies / g. The high number of total plates in the other

two smoked fish sample codes is influenced by the handling process and quality of raw materials.

*E. coli* is a bacteria indicator of water quality because its presence in the water indicates that the water is contaminated. SNI 2725: 2013, that the content of *E. coli* smoked fish with heat fumigation method < 3 APM / g. Although all smoked fish samples are still in accordance with the quality and safety requirements of smoked fish based on SNI, it should be noted that based on observations in the field, sanitation and hygiene problems are all still lacking. The places and containers used, water and other equipment still do not pay attention to sanitation and hygiene.

Lead (Pb) is one of the indicators of the quality and safety of smoked fish products processed using heat-fumigation methods. This value is still in accordance with the required SNI 2725: 2013, that the content of Lead (Pb) of smoked fish with a maximum heat smoking method of 0.3 mg / kg.

### **Marketing of Smoked Catfish Products in Indonesia.**

The selection of the right marketing strategy will make the company develop and become a profitable business (Suhendar, 2009). The selection of the right marketing strategy will make the company develop and become a profitable business (Suhendar, 2009).

In Raissa et al Research, 2018 Based on the results of calculations in the QSP matrix, the most appropriate strategy was implemented, namely utilizing information technology (IT) advances such as websites and the internet to inform the quality of a product. In addition, you can also use social media such as *Instagram*, *Facebook* and so on.

The opportunity for the marketing of Smoke Catfish Production is also to take advantage of the advancement of marketing technology that is growing, Government Support through GEMARIKAN policy, is also an opportunity to market this catfish smoke product. Therefore, the strategy to market lele asap products through the internet by utilizing social media such as *Instagram*, *Facebook*, and applications that are being widely used online buying and selling today is *Shopee and Tiktok Shop*.

## Conclusion

Based on the results of riview literature obtained information that the method of fumigation of catfish produced in Indonesia is a method of heat smoking. The stages of the process consist of preparing catfish, soaking in a saline solution, giving hot smoke in the temperature range between 60°C - 100°C and packaging of smoked catfish products. The quality of the smoke catfish products produced has met the quality of the Indonesian National Standard.

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