



The Effect of Traditional Drying on Salted Fish Quality

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Abstrak

Ikan merupakan sumber protein hewani yang banyak dikonsumsi oleh masyarakat. Kandungan protein yang tinggi, ikan cepat mengalami proses pembusukan pasca panen jika tidak langsung diolah menjadi makanan. Secara umum yang menyebabkan ikan cepat membusuk adalah faktor bakteri dan faktor kimiawi. Tujuan penelitian ini untuk mengetahui pengaruh pengeringan terhadap kualitas ikan. Adapun metode yang digunakan dalam penelitian ini adalah dengan pendekatan penelitian kualitatif. Hasil penelitian menunjukkan bahwa lama pengeringan ikan tergantung pada cuaca dan juga ukuran ikan. Pengeringan menggunakan sinar matahari banyak digunakan karena energi panas berlimpah serta peralatan yang digunakan tidak mengeluarkan biaya mahal. Selama proses pengeringan kebersihan harus diawasi. Penelitian ini juga bertujuan untuk mengetahui perbedaan pengeringan ikan dengan menggunakan garam dan tidak menggunakan garam. Parameter yang diamati adalah kualitas ikan mulai dari tekstur, warna, bau, serta kandungan yang terdapat pada ikan setelah melakukan pengeringan. Pengeringan ikan asin banyak terdapat di Indonesia, dalam skala nasional ikan asin merupakan salah satu produk perikanan yang mempunyai kedudukan yang penting. Teknik pengeringan ikan asin menggunakan sinar matahari merupakan teknik umum dilakukan di Indonesia dengan posisi ikan digantung kemudian diletakkan diluar ruangan atau dibawah sinar matahari.

Kata kunci: Pengeringan Tradisional, Ikan Asin, Sinar Matahari

Abstract

Fish is a source of animal protein that is widely consumed by the public. With a high protein content, fish quickly undergo a post-harvest decay process if it is not directly processed into food. In general, what causes fish to rot quickly are bacterial and chemical factors. as for the method used in this study is a qualitative research approach. The purpose of this study was to determine the effect of drying on the quality of fish. The results showed that the drying time of fish depends on the weather and also the size of the fish. Drying using sunlight is widely used because heat energy is abundant and the equipment used is inexpensive. during the drying process cleanliness must be monitored. This study also aims to determine the difference between drying fish using salt and not using salt. The parameters observed were the quality of the fish starting from the texture, color, smell, and content contained in the fish after drying. Drying salted fish is widely available in Indonesia, on a national scale salted fish is one of the fishery products that has an important position. The technique of drying salted fish using sunlight is a common technique carried out in Indonesia with the position of the fish being hung and then placed outside or under the sun.

Keywords: Traditional Drying, Salted Fish, Sunlight

1. INTRODUCTION

Indonesia is rich in biological sources, one of which is a warehouse of animal protein-producing sources specifically for fish. Indonesia is a country of waters rich in resources. Based on FAO data from 1994 to 1999, the total world fisheries have increased, and it is even predicted that there will be an increase in the number of fish needs in 2010. The fisheries sector, as one of the supporters of the economic sector, has a role in national economic development, namely providing added value and having strategic value, and can provide financial and economic benefits, especially in the provision of protein foodstuffs, foreign exchange earnings, and the provision of employment (Pomegranate et al., 2022; Kambey et al., 2001). Fish is a source of animal protein that is widely consumed by the community.

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With high protein content, fish quickly undergo post-harvest spoilage processes if they are not directly processed into food (Anwar et al., 2021; Bau et al., 2021). In general, what causes fish to rot quickly are bacterial factors and chemical factors (Pomegranate et al., 2022). Fish decay causes the quality of fish to decrease so that fish cannot be consumed by the community (Azizah et al., 2022). Therefore, the quality of fishery products is very dependent on the quality of the raw materials. Fisheries subsectors have an important role for the people of Indonesia. However, not all parts of Indonesia can meet the need for protein because the availability of fish per capita has not been evenly distributed.

Indonesia's population is still relatively low in consuming fish, especially residents on the island of Java. According to data from the Ministry of Marine Affairs and Fisheries, fish consumption in Java is still 32 kilograms per capita per year. While in Sumatra and Kalimantan, fish consumption is between 32 to 43 kilograms per year. Fish is a commodity that is easily subjected to a process of deterioration and decay after the catch. Pengolahan and preservatives fish is one of the important parts of the fishing industry. Fish that have 60-84% moisture content will easily decay. Several preservation methods such as drying, cooling, fumigation, and canning can avoid the occurrence of putrefaction processes. One type of good preservation without chemical ingredients is by drying. Traditional fish processing is very important because most fish produced in Indonesia are traditionally processed. Fish drying is one way of preserving fish by reducing the moisture content of fish so that microorganisms in fish can be reduced. Drying is a way to remove or remove some of the material from it by evaporating most of the water it contains using a heat amper (Ikhsan & Muhsin, 2018; Kurniawan et al., 2014). Drying with sunlight is the oldest drying type, and until now, it has been a popular drying method among farmers, especially in tropical areas (Hatta et al., 2019; Juwita & Rusli, 2018; Kurniawan et al., 2014). Drying fish is traditionally aimed at reducing the moisture content in the body of fish so as not to give bacteria a chance to multiply. Drying with sunlight has advantages and disadvantages (Odor et al., 2021). The striking gain is that heat energy is cheap and abundant, does not require expensive equipment, and labor does not need to have certain skills. While the losses depend on the weather, the amount of solar heat is not fixed, the temperature rise cannot be adjusted, so the drying time cannot be precisely determined, and cleanliness is difficult to supervise.

Although drying can extend the shelf life of fish meat, the drying process with high temperatures can also quantitatively reduce the quality of the nutritional value of fish (Bau et al., 2021; Hatta et al., 2019). In addition, the drying process can also have a discoloration effect on fish meat, which was originally white, pink, and black and will turn into a blackish brown color (Laitupa, 2019). Good treatment is needed during the drying process to get high-quality results, such as maintaining the cleanliness of the materials and tools used, fresh fish, and clean salt. One of the drying products that are widely found in Indonesia is salted fish. On a national scale, salted fish is one fishery product with an important position. It can be seen that 65% of fishery products are still processed and preserved by salting. According to the Marine Fisheries Service of West Java Province, even though it has undergone a salting and drying process, salted fish still has a high nutritional content, namely 193 kilocalories of energy, 42 grams of protein, 1.5 grams of fat, 200 milligrams of calcium, 300 milligrams of phosphorus, and 3 milligrams of iron. In addition, dried salted fish also contains vitamin B1 0.01 milligrams. The results were obtained from a study of 100 grams of dried salted fish with an edible amount of 70%. So to get a good salted fish product, a good drying process must be considered. The manufacture of dried foreign fish is the simplest thing.

Salted fish is a fish product that is quite easy to manufacture. Proses drying fish can be done by drying in the sun or oven (Sumarno et al., 2020). Drying fish using sunlight and salt will also affect the quality of fish (Hatta et al., 2019; Juwita & Rusli, 2018). The fish will easily absorb heat during the drying process, affecting the quality of the dried salted fish. In

general, the salt used in the drying process of fish is sodium chloride salt or table salt (Sari et al., 2020). Adding salt to the drying of fish affects the quality of the fish. Therefore, this study aims to analyze the impact of traditional drying on fish quality.

2. METHODS

The experimental research method with a qualitative approach was chosen in this study to answer the questions. In data collection, researchers used statements about the types of fish that used salt and did not use salt in traditional drying to find the quality of fish. The research was carried out on Jalan Ponegoro, Rambah District, Rokan Hulu Regency, Riau Province, for 7 days. The raw materials used in this study were catfish, parrot fish, kite fish, and salt. Equipment used basins or containers, knives, and fish grill wire for drying. In this study, 2 experiments were carried out, namely by using salt and not. Drying these fish using sunlight or still traditionally. As for the working procedure, first, use salt, and choose the type of fish to be used for drying. The researcher used parrot fish, catfish, and kite fish. Wash the fish thoroughly using clean, running water. Put the fish in the basin and give salt to taste, smearing the fish with salt evenly. After being salted, let stand a few minutes. The researcher uses fish grill wire for the drying process. Next, dry the fish sprinkled with salt in the sun. For drying catfish for 2 days, kite fish lasts 3 days, and parrot fish lasts 4 days. If the fish is dry, remove it, and the fish can be processed into cooking ingredients. Second, do not use salt. Choose the type of fish that will be used for the drying process, and there were using cat fish, kite fish, and parrot fish. Wash the fish using clean and running water. After cleaning, place the fish on the fish grill wire or zinc and then dry under the sun. For catfish, drying lasts for 1 day, kite fish for 1 day, and parrot fish for 2 days. If it is dry, remove the fish, and the fish can be cooked.

3. RESULTS AND DISCUSSION

Result

Fishenergy can remove or remove some of the water from the material by evaporating the water in the material using thermal energy. The technique of drying salted fish using solar heat is a common technique carried out in Indonesia. The mechanics that were usually done in the material to be dried were faced with air that flowed continuously where water vapour evaporated when heat was transferred to the material, which will involve mass transfer through diffusion then heat transfer in the mechanism is also the same principle in drying salted fish. In Indonesia, salted fish is very popular, but the community's knowledge of salted fish that was safe and good for consumption is still lacking. The evidence was that salted fish containing formalin was still widely circulated and consumed, even though the impact was very detrimental to health. The quality of fish that go through the drying process using salt is presented in Table 1 and fish that go through the saltless drying process is presented in Table 2.

Table 1. Drying Fish Using Salt

No	Type of Fish	Drying Time	Fish Quality		
			Texture	Color	Aroma
1	Catfish	2 Days	Dry and Hard	Pale	Odorless
2	Kitefish	3 Days	Easily broken and fragile	A bit pale	Odorless
3	Parrot Fish	4 Days	Smooth, easily broken and dry	Pale	Odorless

Table 2. Fish Drying without Salt

No	Type of Fish	Drying Time	Fish Quality		
			Texture	Warna	Aroma
1	Catfish	1 Days	Quite moist and wet	Slightly brownish	Smelly
2	Kitefish	1 Days	Delicate and rather moist	Slightly brownish	Odorless
3	Parrot fish	2 Days	Sluggish	Slightly brownish	Odorless

Discussion

The development of science in tandem with increasingly sophisticated technology so that business actors were not careless in drying salted fish to produce quality products. Fish drying is one of the ways of fish preservation by reducing fish levels so that the activity of microorganisms can be reduced (Azizah et al., 2022; Hatta et al., 2019). Preservation by drying was aimed at extending the shelf life of fish. This way of managing drying has long been done for various types of fish. The drying of fish with sunlight was carried out by drying the fish for 3 days of sunny weather. The processes of drying fish consist of the heat transfer process and the mass transfer process. The heat transfer process was a process that occurs due to temperature differences, and the heat flowed will increase the temperature of the dried material, causing the pressure of water vapor in the dried material to be higher than the pressure of water vapor in the air. While the mass transfer process occurred because the drying air's relative humidity was lower than the material's relative humidity, the heat flowing above the material's surface will increase the pressure of the material's moisture.

Before making salted fish, it's good for us to know the difference between rotten fish and fresh fish. It was necessary to produce good quality salted fish. As for the signs of rotten fish, the overall colour was gloomy and smelled foul, and the abdominal wall was flabby, with grey-coloured gills with thick lenders, gloomy scales and easily loose and gloomy and sinking eyes. At the same time, the signs of fresh fish are chewy meat, bulging clear eyes, strong and shiny scales, strong fins, overall colour including brilliant skin, red-coloured gills, strong abdominal wall, and the smell of fresh fish. The selection of fish should be observed to get quality foreign fish. Salted fish was said to be of high quality if it meets the requirements of Indonesian Industrial Standards, namely having a smell, taste, normal colour, good shape, water grade of at most 25, salt content between 10%-20%, and does not contain fungal metals, nor does bacterial milking occur. The quality of dried fish was tested by SNI 01-2721-1992 with the parameters of moisture, ash, protein, fat, carbohydrate, aroma, taste, and color.

Water content was one of the chemical properties of materials showing the amount of water in foodstuffs. Water content and water activities in food play a large role, especially in shaping the texture of food ingredients. Therefore, if the time used was less than minimum, the water content was still high so that the texture of the fish was less dry. On the other hand, if the time used was too long, the water content in the fish decreases, resulting in the fish becoming very hard, so it took the right time to dry the fish. Water was the most common component found in fish meat. The higher the temperature and the length of the drying time given exert a very large influence on the speed of water transfer. The higher the drying temperature, the faster the evaporation occurs, so the water content in the material is lower (Hatta et al., 2019; Kambey et al., 2001). The diversity analysis results showed that the difference in drying temperature and the difference in drying time had a noticeable effect on the moisture content level of salted fish. Protein content, fish protein is the largest component in its amount after water and is a very useful part for humans (Rahayu et al., 2018). Protein levels were greatly influenced by the drying time length, which explained that the longer the

fish is dried, the better the quality of the salted fish produced. The increase in protein levels in each treatment was caused by low water content so protein levels increased.

Fat content, fat as an ingredient or source of energy formation in the body. The availability of fat in the body has many benefits, one of which was as a protein saver. In this case, energy has been fulfilled by fat and carbohydrates, so the use of protein for energy generation can be reduced or not needed. Fat content is affected by the length of time of drying. The longer the drying time, the fat content in fish increases (Ayundra Putri et al., 2022). This increase in the value of fat content continues to take place with the increasing length of time used during the drying process. The length of the drying time and the high temperature used in the drying process will cause the fat content in fish also to increase and the water content to decrease (Oktarina, 2016; Rahayu et al., 2018). High-fat content can result from fat damage caused by a relatively high drying temperature.

Taste, aroma and color were influenced by the drying process's duration and salt's application. The taste created in salted fish was produced from the salt contained in the meat. The harmful color of salted fish was usually white, bright, and tends to be clean white. Not a few consumers choose salted fish with white and clean color. Salted fish that are safe for consumption were usually a slightly pale color. The difference in salt concentration and drying time has a noticeable effect on the aroma produced. The texture was one of the parameters that play a very important role in producing good salted fish quality. The texture was anything related to mechanics, taste, touch, and vision, including wetness, dryness, hardness, smoothness, roughness, and oily. The texture of salted fish that is safe for consumption was usually easily broken, broken, and fragile. The texture was influenced by the temperature used when drying as well as the material. Using salt during making salted fish will cause changes in texture after drying (Bau et al., 2021; Hatta et al., 2019). Good handling and the presence of additives can also affect the texture.

4. CONCLUSION

Fish is one of the sources of animal protein that is widely consumed by the public, easy to get, and cheap. However, fish quickly undergo a process of deterioration and decay, which happens after the fish is caught. One of the ways to preserve fish is by drying means for the manufacture of salted fish, by carrying out salting to inhibit rotting. In Indonesia, salted fish still occupies the most important position as one of the basic ingredients for people's living needs. Drying with sunlight can affect the quality of fish, starting from the texture, smell, and content found in salted fish. Based on the results of quality research for fish that use salt, the drying process is longer, and the texture that uses salt is smoother, drier, and more durable. Fish that do not use salt dry faster and rot easily; the texture is also moist. Fish spoil if they do not use salt. The process of its drying depends on the weather. Changes in temperature or weather are determined by the temperature of the environment outside, in this case, the influence of sunlight penetrating the solar dryer used.

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