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The Effect of Fish Thickness on Dryness Level and Time for Drying Fish

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Abstrak

Pengeringan ikan merupakan salah satu cara pengawetan ikan dengan mengurangi kadar air sehingga aktivitas mikroorganisme dapat dikurangi. Pengawetan dengan cara pengeringan dimaksudkan untuk memperpanjang umur simpan ikan. Metode yang dilakukan dalam penelitian ini adalah menggunakan metode eksperimen. Data yang digunakan dalam penelitian ini meliputi data mengenai proses, bahan apa-apa saja yang akan dilakukan dalam penelitian ini. Didalam penelitian ini terdapat beberapa permasalahan dalam waktu pengeringan ikan, dalam penelitian ini tekhnik pengumpulan data berupa pelaksanaan eksperimen dan dokumentasi. Simpulan dari penelitian ini adalah sinar matahari, ketebalan ikan dan waktu pengeringan sangat berpengaruh pada tingkat pengeringan ikan. Ikan yang mendapat sinar matahari yang cukup dan memiliki bentuk yang kecil dan tipis akan lebih cepat kering dibanding dengan ikan yang memiliki daging yang tebal seperti patin dan lele. Ikan yang dijemur tanpa garam dan mendapat sinar matahari yang cukup, biasanya akan lebih cepat kering dibandingkan dengan ikan yang diberi garam. Kecuali ikan yang memiliki daging yang tebal dan berminyak biasa lebih lama kering. Lama pengeringan ikan berbeda-beda tergantung ketebelan ikan dan sinar matahari yang didapat.

Keywords: *Ketebalan Ikan, Kekeringan Ikan, Waktu Pengeringan*

Abstract

Drying fish is one way of preserving fish by reducing the water content so that the activity of microorganisms can be reduced. Preservation by drying is intended to extend the shelf life of fish. The method used in this research is using the experimental method. The data used in this study include data regarding the process, what materials will be carried out in this research. In this study, there were several problems in the drying time of fish. The data collection technique was the implementation of experiments and documentation. The conclusion of this research is sunlight, fish thickness, and drying time affect the drying rate of fish. Fish that get enough sunlight and have a small and thin shape will dry faster than fish with thick meat, such as catfish and catfish. Fish dried without salt and get enough sunlight will usually dry faster than fish given salt. Except for fish that have thick and oily meat usually dry longer. The drying time of fish varies depending on the thickness of the fish and the sunlight it gets.

Keywords: Fish Thickness, Fish Drought, Drying Time

1. INTRODUCTION

Fish is one of the sources of high-quality animal protein and is easy to obtain because it is readily available in nature and widely sold in the market. The price is relatively affordable because it is not too expensive (Nurilmala, Safithri, Pradita, & Pertiwi, 2020; Patang & Yunarti, 2014; Sari, Jamaluddin, & Widodo, 2019). Fish also contain lots of minerals that are good for health (Okereke & Onunkwo, 2014). But behind the many benefits, fish meat has the disadvantage that it is more easily damaged and rotten. Decay occurs because the water content in fish reaches 80% (Djamalu, 2016), protein, and fat so that spoilage microbes can grow and reproduce properly. If the availability of abundant fresh fish is left without proper processing, it will result in a decline in quality and a decrease in product prices (Sa'adah, 2021). Therefore, people must be smart in processing and storing fish. The solution that can be done is fish preservation. Fish preservation processes

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commonly carried out are salting, drying, curing, smoking, and cooling (Djamalu, 2016; Tjahyaningsih, Alamsjah, & Abdillah, 2013).

Fish processing and preservation are an important part of the fishery industry chain. Preservation of fish using drying techniques intends to reduce the water content in fish so that it does not allow bacteria to breed (Yuliati et al., 2020; Yuwana, Zulliansyah, Susanti, & Efendi, 2019). Thus enhancing the durability and shelf life of fish so that the quality of fish can be maintained in good condition (Wongkar, Pinontoan, & Boky, 2018). Drying is a method of removing or removing most of the water present in the fish's body through heat energy (Hanafi, Siregar, & Nurba, 2017; Husna, Asmawati, & Surwajana, 2014). Drying can be done using sunlight and using special machines or tools driven by electricity (Puspitasari, Siti Aisyah, Wilianti, & Albarah, 2021; Riansyah, Supriadi, & Nopianti, 2013). It is necessary to handle and pay attention to things that must be considered, among others; the type of fish, the thickness of the fish, the sunlight, and the length of time the fish will dry later to get high-quality drying results.

The fresh fish body contains 56%-80% water. Dried fresh fish must be reduced in water content by 25% to stop bacterial growth and reduce autolysis activity that causes rancidity. To prevent fungal growth, the water content must be reduced to about 40%. Factors that can cause the product to lose weight, in this case, is a reduction in water content during the drying process. The drying process is based on water evaporation (water suction by air) due to the difference in water vapor content between the air and the product being dried (Yuliati et al., 2020; Yuwana et al., 2019). The air's water vapor content is lower or has a relatively low relative humidity so that evaporation occurs quickly. When the sun is quite hot, there is a lot of wind. The greater the difference or, the lower the relative humidity, the more water content of the dried product can evaporate because the greater the ability of the air to accommodate water vapor. With the release of air-containing moisture, the humidity in the dryer can be reduced. Thus the drying process can be carried out to be maximized. The rate of evaporation or drying is determined by the following factors: air velocity, air temperature, humidity, thickness, fish surface area, fish properties, and drying time (Erni, Kadirman, & Fadilah, 2018; Tuyu, Onibala, & Makapedua, 2014).

If using traditional drying, namely by utilizing sunlight, the advantage is that sunlight can penetrate the cell tissue of the material. However, drying using a source from the sun if it does not meet heating standards can damage the protein content of fish, and fish will rot more easily (Ikhsan, Muhsin, & Patang, 2016), so the drying of fish is very dependent on the length of drying that is carried out. Likewise, with the thickness factor of the fish meat to be dried. The findings of previous studies indicate that the longer the use of heat energy or the longer the drying time, the lower the amount of water content so that the fish meat will be more intact (Hanafi et al., 2017; Tuyu et al., 2014). The best drying time is 12 hours (Tuina, Naiu, & Yusuf, 2013). This study aims to determine the effect of fish thickness and drying time on various fish characteristics.

2. METHOD

The method used in this research is using the experimental method. The experimental method is part of the quantitative method carried out in the laboratory (Fatabura, 2012). Experimental research is systematic, logical, and thorough research in controlling the conditions. Experimental research can be interpreted as a research method used to find the effect of certain treatments on others under controlled conditions (Sugiyono, 2014). The data used in this study include data regarding the process, what materials will be carried out in this research. In this study, there were several problems in the drying time of fish. In this study, the data collection technique was the implementation of experiments and documentation.

3. RESULT AND DISCUSSION

Result

At this stage, the researcher will describe and explain the data and research results about the effect of fish thickness on the level of dryness and the length of time for drying fish. The results of this study were obtained using experiments and documentation. This study focuses on the effect of fish thickness on the level of dryness and the length of time for drying fish. Based on the results of the experiments that have been carried out, the researchers can conclude that the effect of fish thickness on the level of dryness and the length of time for drying fish greatly affects the drying results. If the dried fish has thick flesh, it will take longer to dry it. If the dried fish is not too thick, then drying the fish does not take a relatively long time. Fish drying results are presented in Table 1.

Table 1. Fish drying results

No	Name	Drying Time	Salt		Texture	Taste
			Yes	No		
1	Tilapia	Two days	√ (2 spoons)	-	Quick drying	
	Tilapia	Two days	-	√	It doesn't dry evenly.	
	Catfish	Seven days			It doesn't dry fast.	
2			√ (3 spoons)	-		
	Catfish	Five days	-	√	Quick drying	
3	Patin Fish	Three days	√ (1,5 spoons)	-	Dense, slightly hard, and dries quickly.	
	Patin Fish	Four days	-	√	A little soft and not too dry	
4	River fish (lombuik Sisik)	Three days	√ (3 spoons)	-	Quick dry and a bit hard	
	River fish (lombuik Sisik)	3 days	-	√	Quick dry and a bit hard	
5	River fish	Two days	√ (1 spoon)	-	Dry	
	River fish	One day	-	√	Drier	
6	marine fish	Seven days	√ (2 spoons)	-	Dry faster	
	marine fish	Seven days	-	√	Uneven dry	

Discussion

Preserving fish using drying techniques is intended to reduce the water content in fish so that it does not provide an opportunity for bacteria to breed (Husna et al., 2014; Imbir, Onibala, & Pongoh, 2015). Thus enhancing the durability and shelf life of fish so that the quality of fish can be maintained in good condition. Based on the results of the study obtained the following results: the first finding showed that the texture of tilapia, which was given two tablespoons of salt with a drying time of 2 days, had a dry texture because the fish were small and received sufficient sunlight, the color of the fish was white and odorless. The texture of tilapia that is not salted, with a drying time of 2 days, has a dry texture and has a brownish color. The second finding was the texture of catfish given three tablespoons of salt with a drying time of 7 days with a wet texture because it had quite thick meat and did not get enough sunlight. The color is gray, and the smell is annoying. While catfish that did not use salt, the drying time was five days, with a dry texture because it got enough sunlight and no salt content, the color was gray and odorless. The third finding was the texture of catfish using salt with a drying time of 3 days. as much as 1.5 tablespoons of salt, the texture of the fish becomes dry, hard, and oily because the fish meat contains oil the color is brown and has a slight smell. Catfish that does not use salt, drying time is four days with a wet and oily texture because there is a lot of salt in the fish and the meat is quite thick, the color of the fish

is brown and has a disturbing smell. The fourth finding, river fish (Lombuik Sisiak) which was given three tablespoons of salt, with a drying time of 3 days, had a fairly dry, hard, and rough texture because it received enough sunlight and used a lot of salt so that the fish color was white and odorless. At the same time, river fish that do not use salt, drying time for three days has a dry and hard fish texture, white fish color, and no smell. The fifth finding, River fish (Motan), a river fish, gave one tablespoon of salt with a drying time of 2 days, had a dry texture with white color and no odor. Meanwhile, river fish that were not given salt with a drying time of 1 day had a dry texture with white color and no smell due to getting enough sunlight. The sixth finding is Marine fish, the texture of marine fish that uses as much as two tablespoons of salt, with a drying time of 7 days due to lack of sufficient sunlight, the texture of dry fish is gray and has a disturbing odor. Meanwhile, the sea fish that was not salted was two tablespoons with a drying time of 7 days. The fish texture was dry and had a disturbing smell as well.

So the results of drying fish that have been done are different. Fish drying is one of the easiest, cheapest, and oldest preservation methods (Akbardiansyah, Desniar, & Uju, 2018; Yuwana et al., 2019). Drying aims to reduce the water content in the fish. Factors that influence the drying process of fish are the salting process, the thickness of fish, type of fish, temperature, the intensity of the sun, and drying time (Erni et al., 2018). The addition of salt affects the texture of the dried fish. Drying will be better and faster if previously salted fish with a sufficient amount of salt to stop the activity of spoilage bacteria. Although drying will change the nature of the fish meat, the nutritional value is relatively constant when it is still fresh. The decreased water content will cause the protein content in the material to increase (Azka, Ratrinia, Hasibuan, & Harahap, 2019; Murti, Sumardianto, & Purnamayati, 2021; Ratrinia, Azka, Hasibuan, & Suryono, 2019).

Sunlight, the thickness of fish, and drying time greatly affect the drying rate of fish. In terms of energy use, drying using sunlight does not cost anything. Drying is a method for removing or removing some water from material by using heat energy by evaporating the water in the material (Riansyah et al., 2013). So the longer the use of heat energy or the longer the drying time, the water content will decrease so that the fish meat will be more intact. The results of previous studies also showed that the higher the temperature and the longer the drying time used to dry material, the more water that evaporates from the material (Ikhsan et al., 2016). The thickness of the fish can prolong the drying process so that the color of the fish looks more different whether it is salted or not. Thick fish will take longer to dry than fish with thin meat. The results of previous studies indicate that the drying time has a significant effect on the appearance of the dried fish products produced (Tuina et al., 2013; Tuyu et al., 2014). The longer the drying time for salted fish products, the lower the water content value of the product. So it takes a higher temperature so that the drying airflow is faster and the drying process takes place (Akbardiansyah et al., 2018). The implication of this research, it is hoped that anglers who want to increase the production of fishery products by preserving one of them with the fish drying method to produce good, quality, and competitive salted fish in the market, to pay attention to factors such as the thickness of fish meat, temperature and drying time to obtain good results.

4. CONCLUSION

The conclusion of this research is sunlight, fish thickness, and drying time greatly affect the drying rate of fish. Fish that get enough sunlight and have a small and thin shape will dry faster than fish with thick meat such as catfish and catfish. Fish drying in the sun without salt and getting enough sunlight will usually dry faster than fish given salt. Except

for fish that have thick and oily meat usually dry longer. The drying time of fish varies depending on the thickness of the fish and the sunlight it gets.

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