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REVIEW ARTICLE: THE EFFECT of PACKAGING USE ON THE QUALITY AND SAVE DURATION OF FISH ABON

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ABSTRACT

Abon is one of the processed dry foods made from meat by boiling, slashed, fried and pressed and then added spices so that it has a distinctive taste. There are several factors that affect the quality such as taste and scent, as well as the shelf life of fish abon, one of which is the packaging used. The use of packaging can prevent the entry of bacteria that will stick to a product. Plastics commonly used in abon packaging are polyethylene (PE) and polypropylene (PP)plastics. The use of different types of plastic can also affect the quality and shelf life of fish abon such as moisture content and organoleptic rusteristics (color, scent and texture). On this review article, the temperature used were 30^{o}C, 40^{o}C, 50^{o}C, cold temperature and room temperature.

KeyWords
Abon, Fish, Packaging, Polyethylene, Polypropylene

INTRODUCTION

Abon is one of the processed dry foods made from meat by boiling, slashed, fried and pressed and then added spices so that it has a distinctive taste. Abon fish is a type of food made from fish and processed by boiling and then fried and then seasoned (Suryani et al, 2007). The manufacture of abon is one of the alternatives to fish processing to anticipate the abundance of raw materials or for the dianeagaagaman of fishery products. The type of fish that can be used as raw material abon has no restrictions, even almost all types of fish can be used as fish abon. However, there are several factors that affect quality such as taste and scent, as well as the shelf life of fish abon, one of which is the packaging used. The use of packaging can prevent the entry of bacteria that will stick to a product.

The problem of packaging used to wrap fish abon is very important and needs to be considered, because packaging has a big influence on the quality and shelf life of fish abon. During this time the packaging used by most fish abon industries only uses plastic that is tightly closed with *a sealer.* Plastics commonly used in abon packaging are polyethylene (PE) and polypropylene (PP) plastics. This is because polyethylene plastic packaging and polypropylene plastic have a high density, resistant to temperature and humidity and have low water absorption so as to protect fish abon products (Ahmad et al 2016). In addition, plastic also has a cheap price and is easily obtained in the market. The color of the transparent platic also makes the product visible from the outside of the packaging.

The writing of this review article aims to find out the influence of plastic packaging used by fish abon in its quality and durability. The packaging discussed in this review article is polyethylene plastic packaging and polypropyleneplastic. With this review article it is expected, can know good plastic packaging and more durable on fish abon packaging.

Polyethylene Plastic

Polyethylene is a transparent, white thermoplastic material that has a melting point varying between 110-137ºC. Generally Polyethylene is resistant to chemicals (Rahmawati 2015). Polyethylene plastic can increase CO2 concentration and decrease O2 concentration which can slow down the process of damage and shelf life of products (Saragen et al 2016). Based on the way it is made, polyethylene plastic is divided into 2, namely Low Density Polyethylene (LDPE) and High Density Polyethylene (HDPE). LDPE is a polyethylene plastic that polymerizes ethylene at high pressure while HDPE is performed at relatively low pressures (Karyadi

1997).

Polyethylene has beneficial properties, among others, that is, easily devolve by heat, flexible, water vapor and low water permeability, can be used in frozen storage (-50º C), transparent to opaque, and can be used as a laminate material with other materials (Wulandari et al 2013). Polyethylene plastic also has disadvantages, the disadvantage of polyethylene plastic is not suitable for products that are sensitive to oxygen, such as oily products, especially in plastic LDPE (Wulandari et al 2013).

Polypropylene Plastic

Polypropylene is a crystalline polymer resulting from the polymerization process of propylene gas. Polypropylene has a fairly high melting point of 190-200ºC, while the crystallization point is between 130-135ºC. Polypropylene has high resistance to chemicals (hemical resistance), but low impact strength (Wulandari et al 2013). The manufacture of polypropylene plastic in the chemical industry is widely used for everyday life, such as plastic bags, plastic cups, buckets and bottles (Wulandari et al 2013).

Results and Discussion

Table 1. Comparison of Water Content in Fish Abon

NO.	Types of Fish Abon	Temperature	Water Content	
			PE	PP
1.	Tongkol Fish Abon	30^o	8,58%	8,27%
		40^o	7,91%	6,63%
		50^o	5,16%	3,86%
2.	Flying Fish Abon	Room	10,36%	-
		Cold	10,49%	-

Source: Saragih et al (2019) and Jayadi et al (2016)

Water Content

Based on saragih et al research (2019) the water content produced by Tongkol fish using PE packaging ranges from 5.16%-6.99% with an average value of 6.43% and water content analysis using PP packaging **is between** 3.86%-6.99% with an average value of 6.00%.

During the storage of abon fish water content at 30 °C, 40 ° C and 50 ° C tends to decrease from day 0 to day 21 and increase until the 28th day. It is suspected that on the 0th to the 21st day the water content in the material is used by microbes to multiply so that the water content in the material decreases, while on the 21st to the 28th day the microbes in the material no longer exist and the water used will be removed again so that the moisture content in the material becomes elevated. According to Arizka and Daryatmo (2015), products that can absorb water during storage with RH values of 75-80% can experience water vapor absorption and changes in

physical properties in food. Absorption of water content in the air can cause water content and activity (aw) in food to increase. This is in accordance with the statement of Retnani et al (2008) which states that air humidity in high storage rooms can cause the process of absorbing water vapor from air to materials that results in an increase in water content.

While in the results of research Jayadi et al (2016) **the** water content **of** flying fish in **the storage of room** temperature continues to increase. Abon fish with **room temperature treatment with** polyethylene packaging **has** a **water content value of** 9.50% on the 15th day of observation. On the observation of the 30th day, the water content value of flying fish abon increased, where polyethylene packaging increased by 0.57%.

Fish abon packaged using PE packaging showed a smaller drop in water content compared to PP packaging. According to Budiyanto (2012), this is due to the permeability of gas and water vapor in PE plastics is lower than pp packaging so that the exchange of gas and water vapor is not easy. In researchersan Ahmad **et al** (2016) also found that plastik polyethylene causes an increase in water content in the product. But it is also caused by differences in temperature and humidity of the place during storage.

Organoleptic test

Color

In saragih et al study (2019) organoleptic test results **in** PE ranged from 3.27-4.37 with **an average** of 3.66. While on PP packaging the test results ranged from 2.85-4.37 with **an average of** 3.63. The color **value** on **a** fish abon packed with PE plastic is higher or better **than** that of **a fish** abon packed with **PP** plastic. This is **thought** to be because **the** air on **the** PE packaging **is** likely all out, so **there** is no O2 interaction **that** can cause damage **to** the color of the fish abon due to the oxide reaction (Saragih et al 2019).

Scent

The results of Saragih et al (2019) obtained organoleptic scent analysis **on** PE packaging ranging from 2.22-3.00 with **an average of** 3.00 while in PP packaging ranged from 2.12-3.00 with **an average of** 3.25. According to Tridiyani (2012), changes in the scent of fish abon due to increasing temperature and length of storage cause oxidation reactions in the material resulting in a rancid odor in fish abon.

Texture

The **texture** of **fish** abon using PE packaging **is** smaller value, according to saragih et al research (2019) which ranges from 2.32-2.55 with **an average of** 2.63 and **the texture** of **packaged** abon fish. Using PP has values ranging from 2.55-4.42 with **an average of** 2.74. Thetexture of **fish** abon is related to

the moisture content contained during storage. Decreased water content during storage causes the resulting fish abon to get rougher. This is in accordance with Purnomo (1995), who stated that the water content of a food can affect the texture of the food.

Save Duration

According to suragih et al research (2019) with calculation of **the** acceleration method **of** the Arrhenius model obtained **the shelf** life of fish abon with PE packaging is for 113 days while pp packaging is during 63 days. With that, it means **pe** packaging has a longer **shelf** life compared to **fish** abon packed with PP.

Conclusion

This type of plastic can affect the water content and organoleptics of fish abon. The use of PE type plastic is better than PP type plastic. This is because the shelf life of pe type plastic has a higher shelf life value than PP type plastic. But when viewed from the moisture content contained in the packaging during packaging using PE plastic and PP plastic, PP type plastic is better than PE type plastic because of plastic. PP produces less water if the product is placed in a hot place.

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