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EFFECT OF PAPER TYPE AS PACKAGING MATERIAL ON COOKING OIL ABSORPTION

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ABSTRACT

Packaging is one of the final stages in the production process. One of the environmentally friendly packaging materials is paper packaging. Paper packaging materials can be made from new or recycled paper. Paper packaging waste is also easily degraded so it is environmentally friendly. Packaging of various types of paper is widely used for packaging food products. Food ingredients generally contain fat or oil compounds. Foodstuffs containing oil and fat must use special packaging or packaging paper that is resistant to oil and grease. The purpose of this study was to determine the resistance of various types of paper as packaging materials that are resistant to oil. This research method was carried out experimentally in a laboratory with three replications. The materials used are cooking oil and fine sand. The treatment in this study was the use of three types of paper, namely imitation parchment paper, parchment paper, and HVS paper. Tests for oil resistance are based on the length of time the oil absorbs into the paper. The results showed that the three types of significant differences ($P<0.05$) on the absorptionof oil on paper. The average length of time for oil absorption on parchment paper is 114.33 seconds, parchment paper is 160.33 seconds, and HVS paper is 61 seconds. Based on the length of time the absorption of oil on paper shows that imitation parchment paper and parchment paper have resistance to oil compared to HVS paper as a packaging material for fatty and oily food products.

Keywords : Cooking oil, packaging materials, imitation parchment, parchment paper, HVS paper

INTRODUCTION

Food product packaging is one way to protect or preserve products which are usually equipped with labels or certain information including some of the benefits of the packaging contents [1]. There are several main functions of packaging that must be fulfilled by a packaging material, namely keeping food products clean and protected from dirt and contamination, protecting food from physical damage, having easy opening or closing, having size, shape, weight in accordance with norms or standards. available, displays identification, information, attractiveness and a clear appearance so that it can help promotion or sales, and has a function that is both efficient and economical, safe for the environment [2]. In everyday life, packaging often refers to wrapping either using leaf, midrib, plastic, aluminum foil, or paper. Paper packaging is one type of packaging material that is widely used. In addition to being environmentally friendly because it is easy to decompose compared to plastic packaging, paper packaging is also easy to obtain and widely used. However, in addition to the various advantages of paper packaging, the disadvantages of paper packaging are that it is easily affected by environmental humidity and is sensitive to liquids such as water and oil [3]. With its sensitive nature to liquids such as oil, it is necessary to know the type of paper that is good to use, especially in packaging products that contain a lot of oil. For this reason, a paper absorption test against oil can be carried out to determine the type of paper that is good so that the oil produced by food products does not contaminate the entire surface of the paper, so that food products are safer and from physical damage.

Packaging is a container that is usually used to wrap a product and is useful for reducing damage to the packaged product. According to [4], packaging is a form of activity that includes design and product, and aims to protect the product that is in it. Various types of packaging are used, including paper, wood, bamboo, and plastic. All packaging materials have their own advantages and disadvantages.

Paper is one of the packaging that is often used because it is cheap and easy to get. Various types of paper are used as wrapping, including newsprint, parchment paper, and parchment paper. absorption on paper is defined as the ability or magnitude of the paper's ability to absorb standard liquids with units of 1000/nm. The raw material for paper is generally wood fiber in the form of pulp, but over time the raw material for paper has been modified using other alternative materials such as grass, straw, bagasse, bamboo, wood, reeds and used paper. Each raw material produces different paper characteristics so that the absorption power is different [5]. The higher the absorption value of the paper, the smaller its strength or it is considered not strong enough to be used as packaging material. For this reason, it is necessary to test the level or absorption power of paper as a packaging material for food products. The importance of choosing the right packaging materials as food packaging materials, especially foods that contain fat or oil, it is necessary to do research on the absorbency of paper as a food packaging material.

METHODOLOGY

Research Time

Research on the absorption of various types of paper packaging materials to oil was carried out in November 2021-December 2021. The research was carried out at the Tropical Fisheries and Marine Laboratory, Fisheries Study Program, Pangandaran Campus at PSDKU Unpad Pangandaran.

Tools and Materials

The tools used in this study were an erlenmeyer as a container for the filtering process, a funnel as a filter, scissors for cutting paper, a stopwatch to calculate the length of time for oil absorption on paper, a dropper pipette to take oil, and a measuring cup to calculate oil. . The materials used in this study were parchment paper, parchment paper, HVS paper, cooking oil, and fine sand

Research Procedure

This study used three different types of paper. The types of paper used are parchment paper, parchment paper and HVS paper. Each type of paper is cut in a circle with a diameter of 10 cm. Prepare fine sand and weigh 5 grams. Prepare Erlenmeyer and funnel. Keep the paper that has been cut on the funnel and shaped like a funnel cone. Add fine

sand to the paper. Pour 1 ml of oil onto the paper at the same time. Calculate the length of time the absorption of oil on paper and sand. Observe until the oil penetrates the bottom of the paper and record the time it takes. This research was conducted with three replications.

Data Analysis

This research was conducted experimentally in a laboratory. The treatment in this research is the use of different types of paper on oil absorption. Three types of paper were used, with three replications, then a one-way analysis of variance (ANOVA) test was performed to determine the effect of the use of packaging paper on oil absorption with 95% confidence and continued with Duncan's test.

RESULTS AND DISCUSSION

Testing the paper's resistance to oil or the so-called turpentine test. This turpentine test aims to distinguish the oil absorption power of each packaging material to package and determine which paper is more resistant to oil and grease. The use of fine sand as an additional material in the oil absorption process aims to absorb water content. According to [6] fine beach sand with its water absorption capacity can be used as a complement in observing the water absorption capacity of food packaging paper. Fine sand generally has the characteristics of fine grains and round, gradations (large arrangement of grains). The granules are fine and round and the gradation is uniform, which can reduce the adhesion between the grains. The absorption power of grease on paper is the ability of the oil to pass through and fill the pores of the paper. The results of the length of time for oil absorption on different types of paper are presented in Table 1.

Table 1. The length of time for absorption of cooking oil on various types of paper packaging materials

NO	Imitation Parchment	Parchment paper	HVS Paper
1	119	166	64
2	109	160	60
3	115	155	59
Average (Sec)	114,3333333[a]	160,33333[b]	61[c]
Maximum (Sec)	119	166	64
Minimum (Sec)	109	155	59

The data given different letters show a significant difference at the 5% probability level

According to [11], based on the sizer, two types can be distinguished, namely internal sizer and surface sizer. Internal sizer is a process to provide liquid absorption resistance to paper by providing a wet internal additive. Surface sizers are generally the use of thin webbed materials such as flour, rubber and synthetic polymers. The sizer will change the hydrophilic nature of the cellulose to be hydrophobic so that its water absorption ability will be reduced. To protect the interests of consumers as well as for process monitoring and quality control for paper producers, a maximum limit of the weight of water absorbed for 45 seconds is required for paper with a standard 45 g/m2 of factory standard of 25 g/m2 with a maximum tolerance of up to 27 g/m2.

According to [12] stated that HVS paper has a very high absorption capacity for water and oil, this is because during the process of making HVS paper no lamination is carried out and does not have a pigment coating layer at all so that the surface of HVS paper is not resistant to oil. . Based on the practical results obtained with liteBased on the oil absorption resistance test against different types of packaging paper obtained different results. Based on the ANOVA statistical test with 95% confidence, it showed that the three types of paper had a significant effect ($p<0.05$) on oil ab-

sorption. Based on Duncan's further test, it showed that the three types of paper showed significantly different results. The absorption time of HVS paper has the fastest time compared to parchment paper and parchment paper. The average oil absorption on parchment paper is 114.33 seconds, baking paper is 160.33 seconds, and HVS paper is 61 seconds. According to [7], the use of cooking oil functions as a heat conductor, adds savory taste, adds nutritional value and calories in food. Cooking oil is composed of several compounds such as fatty acids and triglycerides.

The length of time the oil penetrates the packaging paper shows the paper's resistance to oil or fat content. The longer the absorption time of the oil into the packaging paper, the stronger the resistance of the packaging paper to oil or grease. The length of time the oil penetrates on the Imitation parchment is in accordance with research [8] which states that glasin or Imitation parchment has a glass-like surface and is transparent and has high resistance to grease, oil and oil. According to [9], the length of time the parchment paper absorbs oil is due to the presence of coarse fibers which are the raw material for the parchment paper, which causes the parchment paper to have better resistance to oil than parchment paper.

According to [10], parchment paper is packaging that has been printed and the parchment paper has food grade material and is not sticky when packaged and stored at room temperature. Baking paper is also considered environmentally friendly because it is easy to decompose and does not contain plastic so it does not pollute the environment. Baking paper is safe to use as primary packaging to protect it from contamination. Paper has properties that are not easy to stick to food, so this type of paper is often used as a base or as a wrapper. As the name implies, this parchment paper is usually used to wrap bread and can also be used as a base for printing cakes so they don't stick.

Imitation parchment is one type of packaging that is easy to find. The manufacture of glazed paper and oil-resistant paper is done by extending the mixing time of the pulp before it is put into the paper making machine. The presence of other added ingredients such as plasticizer aims to increase the softness and flexibility of the paper, so that it can be used to package materials that have a sticky texture. Meanwhile, to slow down rancidity and inhibit the growth of fungi or yeasts, antioxidants are added [5].

The resistance of parchment paper to water and oil absorption is caused by differences in the sizing (sizer) and filler methods. According to [11], a sizer is an auxiliary material added before or after the formation of a sheet of paper which is intended primarily to increase the resistance of the paper to liquids. According to rature sources, there are similarities that the paper that has the highest resistance to oil is baking paper, so baking paper is very suitable for use because it has low water and oil absorption. This can be proven by practical results which show that baking paper has the longest absorptiontime compared to other paper, and the paper that is not suitable for use is HVS paper because it has high water and oil absorption.

CONCLUSION

Research on oil absorption in various types of packaging paper. Oil absorption on various types of paper showed significantly different results ($P<0.05$). The length of time for oil absorption of parchment paper, HVS paper and baking paper showed different average oil absorptions. The length of time for oil absorption on parchment paper is 114.33 seconds, parchment paper 160.33 seconds, HVS paper 61 seconds. The absorption time of parchment paper and parchment paper is longer than HVS paper. The longer the oil absorption time, the better the oil resistance on the paper. Baking paper and parchment paper have better oil resistance than HVS paper, so they can be used as packaging materials for products containing oil and grease.

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