



# PHYSICAL CHARACTERISTICS OF SNACKS “TIK TIK” FROM CATFISH (CLARIAS SP) WITH THE ADDITION OF DIFFERENT CONCENTRATIONS OF TAPIOCA

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## ABSTRACT

This study aims to determine the yield value of catfish fillet, dough weight, final product weight and physical characteristics of fish tik tik snack with the addition of different tapioca flour. The main ingredient used is catfish fillet (skinless). Other ingredients are tapioca flour, and other spices as a complement. This study used treatments with the addition of different concentrations of tapioca flour, namely 30%, 40%, and 50%. The data were analyzed descriptively by looking at the changes that occurred in the physical characteristics of the fish tik tok. The results obtained in this study are that the addition of different tapioca flour affects the weight of the dough and the physical characteristics of the tik tik snack, namely the color, taste, texture and odor. The weight of the dough and the weight of the ticks were greatest in the treatment of catfish added with 50% tapioca flour. The dough weighs 1070 grams with a tick-tick weight of 890 grams. Different tapioca flours also affect the color, texture, odor and taste of catfish tik tik. The color of tik tik fish with 30% tapioca produces a brown color, while the treatment with 40% and 50% tapioca produces a brownish yellow color. All treatments produce a crunchy texture. The taste and odor of fish tik tik still has a fishy taste in 30% of tapioca.

**Keyword :** Clarias Sp, organoleptik, rendemen, snack, tapioca

## INTRODUCTION

Fish is a potential source of animal protein to meet protein needs, but it's perishable nature causes fish to be less attractive to the public. The level of fish consumption in Indonesia is relatively low compared to the potential fishery resources that are owned [1]. It is necessary to strive for processing fish meat into products that are liked by the community. One of the fish meat products is tik tik snacks to make your own. In Indonesia, the fish consumption figure targeted by the Ministry of Maritime Affairs and Fisheries in 2020 is 56.39 Kg/Capita/Year. The government continues to increase fish consumption figures every year. The increase in fish consumption from 2019 to 2020 is 7.10%. The achievement of the fish consumption target every year reaches 100%. This fish consumption includes the need and demand for fish for domestic consumption which includes fresh fish, processed fish and frozen products [2]. Fishery production can be absorbed

by the domestic market and the fishing industry. However, efforts to increase fish consumption must be maintained by diversifying fishery products that are easy, cheap and liked by the community.

Fish tik-tik is a product made from fish meat with added flour. Fish tik-tik is included in the category of snack foods or snacks. This product has high nutrition so it is very good to be used as a healthy snack choice because of its nutritional content and its delicious, savory taste and crunchy texture. Fish tik-tik can be made from various types of fish. According to the [2], fish cultivation commodities are always increasing, namely freshwater aquaculture, such as catfish. Catfish can be used as processed fishery products with added value.

Catfish (*Clarias gariepinus*) is one of the fishery commodities that is quite popular in the community. This fish comes from the African continent and was first imported to Indonesia in 1984. African catfish is one of the most easily accepted fish by the community because of its various advantages [3]. These advantages include fast growth, high adaptability to the environment, good taste and high nutritional content and low price. The nutritional composition of catfish includes protein (17.7%), fat (4.8%), minerals (1.2%), and water (76%) [4]. In addition to its nutritional content, catfish is a high economic fish with affordable prices. Based on this, it is necessary to make fish tik-tik, catfish with the addition of tapioca flour.

## MATERIALS AND METHODS

This research was conducted at the Unpad Fisheries Laboratory in Pangandaran in 2020. The materials used were catfish (*Clarias Sp*) and tapioca flour with various treatments, namely 30%, 40%, and 50% (w/w weight of fish meat). Other ingredients used are complementary spices such as salt, shallots, garlic and butter. The tools used in this research are food processor, scales, noodle mold, baking sheet, stove.

The procedure for making fish tik-tik snack is catfish fillet (skinless) crushed in a food processor with the addition of ice cubes, eggs, and seasonings. Crushed fish meat is added with tapioca flour according to treatment, knead the dough until smooth, mold the dough with a thickness of 2mm, cut the dough with a size of 0.5 x 7 cm and fry until cooked. Observations on the fish tik tik snack include the value of the fillet yield, the weight of the dough, the weight of the product, the changes that occur during the process of making fish tik tik. The data were analyzed descriptively based on the results of testing the characteristics of the snack.

## RESULTS AND DISCUSSION

Number of Yield is the ratio of the weight of meat to the weight of whole fish. Yield calculations are used to estimate the number of fish body parts (meat) that can be used as processed fishery products [5]. The results of fish fillet yield, dough weight, product weight are presented in Table 1.

Table 1. Fish Fillet Yield, Dough Weight, Product Weight in Making Catfish Tik Tik

Treatment	Average Initial Weight (gr)	Average Fillet Weight (gr)	Yield (%)	Dough Weight (gr)	Tik-Tik Weight (gr)
Catfish + Tapioca 30%	375	110	29.33	445	370

Catfish + Tapioca 40%	280	112.5	40.17	612.5	465
Catfish + Tapioca 50%	540	235	43.51	1070	890

The highest weight of Tik Tik product resulted from the highest dough weight, namely the treatment of catfish with 50% tapioca flour with fish fillet yield weight of 43.51%. The results of the lowest tik tik weight were in the treatment of catfish with the addition of 30% tapioca flour with a fish fillet yield of 29.33%. This is presumably because the high yield of catfish meat fillets affects the weight of the dough and the weight of the final product produced. The more raw materials for fish filets, the more flour is added, the more the amount of product produced. Tapioca flour is one of the ingredients for filling the dough. Fillers are added in the restructured product to increase the weight of the product by substituting some meat so that costs can be reduced. Another function of the filler material is to help increase the volume of product [6]. Based on research of [7], showed that the weight of the dough increased with the addition of fillers to the dough nuggets.

Changes that occur during the process of making fish tik tik affect the physical characteristics of fish tik tik. The results of the physical characteristics of fish tik tik are presented in Table 2. The use of tapioca flour affects the results of the physical characteristics of the snack such as color, odor, taste and texture of fish tik tik.

Table 2. Physical Characteristics of Catfish Snack “Tik Tik”

Treatment	Color	Texture	odor	Taste
Tapioca 30%	Brown	Crispy	No fish smell	Typical taste of fish
Tapioca40%	Brownish yellow	Crispy	No fish smell	The distinctive taste of fish is less pronounced
Tapioca 50 %	Brownish yellow	Very crispy	No fish smell	taste is lacking

Based on the table above, it shows that fish tik tik dough with the addition of different tapioca produces different colors, tastes, textures and odor. The use of 40-50% tapioca flour produces a crunchy texture but the distinctive taste of fish is reduced. While the use of 30% tapioca flour produces a crunchy texture with a distinctive fish taste in snacks. Additional ingredients used in making fish tik tik are tapioca flour, salt flour, shallots and garlic. These additional materials have their respective functions in making ticks. Tapioca flour serves as a texture to the resulting tik tik. Added salt serves to evoke the texture of the fish tik tik. Salt can also bind water so that it can function as a preservative from fish tik tok. Garlic and shallots serve to give the fish the taste and odor of the tik tik fish produced. The addition of eggs and margarine makes the tik tik fish that is produced becomes crispy.

The colors on fish tik tik on 30%-50% tapioca flour are brown and brownish yellow. This is presumably due to the use of tapioca flour and the color change process during frying. According to [8], frying is the formation of color, flavor and odor because when frying occurs a combination of Maillard reactions and compounds are absorbed into the oil. The Maillard reaction is the browning of food on heating or on storage, usually caused by a chemical reaction between reducing sugars, especially D-glucose, with free amino acids or free amino groups of an amino acid that is part of a pro-

tein chain [9]. The weight of the initial and final dough has decreased. The shrinkage of the dough weighs with the final product due to evaporation of water resulting in a decrease in the weight of the final product. According to [10], the factors that affect the color and texture of food are the length of heating or frying.

The texture of fish tik tok is affected by heating and the use of flour in the dough. Tick ticks experience volume floating due to the formation of air cavities due to high temperatures, so that the density of the product becomes lower [11]. The mechanism of volume expansion is suspected that amylose and amylopectin molecules released from the granules due to the gelatinization process will immediately form a three-dimensional network structure that is outside the granule called a gel [12]. The development of tick ticks occurs because some of the water content in starch granules in tick ticks will evaporate due to high temperatures and force the skeletal structure on tick ticks so that the size of the framework is larger. This volume expansion will affect the crispness of the tick. Friability will decrease with increasing fracture strength, and fracture strength will increase with increasing water content. The more air cavities formed, the more peaks produced from the fracture strength graph, this indicates that the tik-tik is getting crisper. According to [13], the crispness of a food depends on the cohesiveness of the constituent particles, size, shape, firmness, and consistency. particle uniformity and ease of dissolution of constituent particles when the product is chewed. Tapioca has the main content of starch, namely amylose and amylopectin which will undergo gelatinization and produce air cavities in fried tiktik due to the influence of temperature [12]. This will affect the texture of the tick which will determine the quality of the tick. The tiktik with tapioca as the main ingredient will produce a very crispy tiktik.

## KESIMPULAN

Snack tik tik with the addition of different tapioca flour affects the weight of the dough and the physical characteristics of the tik tik snack, namely the color, taste, texture and aroma. The weight of the dough and the weight of the ticks were greatest in the treatment of catfish added with 50% tapioca flour. The dough weighs 1070 grams with a tik-tik weight of 890 grams. Different tapioca flours also affect the color, texture, aroma and taste of catfish tik tik. The color of tik tik fish with 30% tapioca produces a brown color, while the treatment with 40% and 50% tapioca produces a brownish yellow color. All treatments produce a crunchy texture. The taste and aroma of fish tik tik still has a fishy taste in 30% tapioca.

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