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Utilization of Fish Head as Feed Flour

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ABSTRACT

Fishery waste is often not utilized and thrown away, even though fishery waste can still be utilized in various ways. One of them is fish head waste from various processing industries or household waste that is not consumed, which can be used as a product that can be useful for other things such as feed flour.This article aims to research the use of fish heads into feed flour. Based on the results of a literature study, information was obtained that fish head meal has good potential and acceptability to be used as fish feed or animal feed (chicken) even fish head meal can replace fish meal as fish feed. In addition to the low price, fish head flour also has good quality for fish growth or sufficient intake of fish protein needed.

Keywords : *Potency, Raw material, Protein, Substitute.*

PRELIMINARY

Fish is one of the foods that humans need. Fish is very beneficial for humans because it contains various substances needed by the body, such as protein, vitamin A, vitamin B1 and vitamin B2. In addition, compared to other sources of protein production such as meat and milk, the price of fish is relatively cheap (Lawang 2013). However, in fish there are fish components that are often not used and even thrown away or often referred to as waste. One of the wastes from this fish is fish head.

Fish head is one of the waste products from the fishery product processing industry which is still often not utilized. In the fish processing industry and in the use of fish by households, part of the fish that is wasted and becomes waste including the head, tail, fins, bones, and offal resulting in 65% of waste (Manullang *et al*., 2018). Fish heads

also even though they still contain components that can be utilized. The components of the fish head still have the potential to become fish meal, one of which can be used as raw material for making cheap feed for aquaculture (Miranti and Putra 2019).

Fish meal is a dry solid product produced by removing most of the liquid and some or all of the fat contained in the fish body. Fish meal is also the best source of protein for fish, besides being rich in essential amino acids, it also contains carotenoids and its profile is also suitable for the nutritional needs of fish (Guillaume *et al*., 2001). Fish meal is generally considered the best source of protein, because fish meal has an essential amino acid profile similar to the requirements of most fish species and high nutrient availability (Houlihan *et al*., 2001 in Prawira 2017). The need for fish meal as a raw material for feed is still quite large in Indonesia, but because of the production of flour fish is still minimal, so 90% must be imported. In 2011, imports of Indonesian fish meal amounted to 167,224,729 kg or worth USD 44,384,799 with an average increase in imports per year of 39%. Meanwhile, in 2014, according to the Director General of Processing and Marketing of Fishery Products (KKP), the need for fish meal in 2014 was 90,000 tons, and imports of fish meal amounted to 80,000 tons reaching US$ 480 million or Rp. 5.7 trillion (Miranti and Putra 2019). Imports of fish meal can be reduced by turning fish waste into flour, one of which is from fish heads, namely fish head flour.

Fish head meal is a diversified fish meal that relies on waste products in the form of fish heads. Fish head flour is also an alternative to fish meal which has a fairly high price. This fish head flour becomes an alternative for farmers to get fish meal which has a fairly good content but at a fairly cheap price.

Therefore, the manufacture of fish head based feed flour needs to be discussed because this fish head based feed flour has good potential and selling value. This article aims to research the utilization of fishery waste from fish heads which are used as feed flour

Fish

Fish are cold-blooded aquatic animals, have spines, gills, fins, and especially fish are very dependent on water as a medium for where they live. Fish have the ability to move in the water by using their fins to keep their body balanced so they don't depend on currents or water movement caused by wind direction. Fish is a food that has high protein and is easily digested by the body, because fish contains essential amino

acids, saturated fatty acids, omega 3, and DHA which function as a preventative for atherosclerotic heart disease.

Fish is a source of animal protein and also has a high nutritional content including minerals, vitamins and unsaturated fats. Protein is needed by the body for growth and replacement of body cells that have been damaged. The composition of fresh fish per 100 grams is as follows: water (76%), protein (17%), fat (4.5%), minerals and protein (2.52-4.50%) (Nuraini 2008).

Fish flour

Fish meal is the best source of protein for fish, besides being rich in essential amino acids, it also contains carotenoids and its profile is also suitable for the nutritional needs of fish (Guillaume *et al*., 2001). Fish meal is generally considered the best source of protein, because fish meal has an essential amino acid profile similar to the requirements of most fish species and high nutrient availability (Houlihan *et al*., 2001 in Prawira 2017).

Fish meal is also an important raw material for feed because it is high in protein and contains minerals and vitamins, but as the demand for fish meal increases, the price of fish meal increases and will periodically result in overfishing or reduced fish stocks in public waters for the sake of aquaculture.

Fish Head Flour

Fish head flour is one of the uses of fish waste that is used as a product that can be reused.Fish head flour is also a diversification of fish meal that relies on waste products in the form of fish heads. According to Widiyanto (2018), the results of a proximate analysis of African catfish head flour (*Clarias gariepinus*) have a chemical composition with the protein content of the African catfish head meal recorded quite high at 50.94% which means that the African catfish head (*Clarias gariepinus*) have good nutrition.

Fish head is part of fish waste that is usually not used anymore. While fish meal is the result of utilizing fish waste that is used as flour and can later be used for anything, especially for fish feed itself. According to Prawira *et al.* (2014), fish head waste can be used as raw material in the manufacture of alternative feeds as a substitute for fish meal.Fish head flour has several advantages including being easy to obtain, has a relatively cheap price value and has a fairly high nutritional content such as catfish

flour, namely 45.70% protein, 0% carbohydrate, 21.465% fat, 32.72% ash and fiber. 0.02%.

Manufacturing Procedure

Procedure for making fish head flour to be processed into feed flour (Miranti and Putra 2019)

1. Sample Collection

Samples of head waste are collected from several fish sellers or processed residues from fish processors

2. Fish Waste Flouration Process

After the samples were collected, the fish waste was floured for further testing. The flouring process follows the following procedure:

a. The fish head is steamed for about 30 minutes or until it is soft and slightly crushed
b. The steamed fish head is dried in the sun to dry.
c. The results of the drying are ground into fish meal using a flour machine.
d. The fish flour is sifted so that the results are uniform, then packed

Product quality

The quality of feed flour products made from fish head waste from several studies are as follows:

1. Prawira's research (2017), about the replacement of fish meal with catfish head meal in feed on the efficiency of feed utilization and the growth of juvenile white shrimp (Litopenaeus vannamei) with treatment A (fish meal only), B (replacement of 25% fish meal with catfish head meal) , C (50% replacement of fish meal with catfish head flour), D (75% replacement of fish meal with catfish head flour) and E (100% replacement with catfish head flour) showed the results that catfish head flour could replace fish meal up to 50% and did not affect the efficiency of feed utilization and the growth of juvenile vannamei shrimp.
2. Research by Ali *et al*. (2015), about the effect of substitution of fish meal with anchovy head meal on the growth of tilapia (Oreochromis niloticus) with treatment A (100% fish meal), B (25% anchovy head meal + 75% fish meal), C (50 % anchovy head meal + 50% fish meal), D (75% anchovy head meal + 25%

fish meal) and E (100% anchovy head meal) showed that the results of the feed formulation with 100% anchovy head meal gave the best growth. to tilapia seeds.

3. Research Manullang *et al.* (2018), about the effect of substitution of fish meal with catfish head meal (Pangasius sp) on the growth of sangkuriang catfish (Clarias sp) with treatment A (100% fish meal), B 70% fish meal + 30% catfish head meal) , and C (40% fish meal + 60% catfish head flour) showed that by giving 70% fish meal added 30% catfish head flour gave the results the best on the absolute growth of sangkuriang catfish (Clarias sp) of 40.25 g, and a daily growth rate of 0.67 g/day.

From some of the research above, it can be seen that fish head meal can replace fish meal as feed flour with various types of levels depending on the content of fish head flour used and the type of fish tested. With the results obtained, namely catfish head flour can only replace fish meal by 50% but does not affect the efficiency of feed utilization and growth of juvenile vannamei shrimp, while catfish head flour can replace 30% fish meal in sangkuriang catfish feed and gives the best results. for absolute growth of catfish sangkuriang of 40.25 g with a daily growth rate of 0.67 g/day.

Market Segmentation and Price

Market segmentation is an attempt to improve the company's marketing accuracy. Market segmentation needs to be done considering that in a market there are many buyers with different wants and needs. Basically market segmentation is a strategy based on a consumer-oriented marketing management philosophy (Sudartono 2019).

A market segment consists of a large, identifiable group within a market with similar wants, purchasing power, geographic locale, buying behavior and buying habits. Therefore marketing managers must divide the market into strategically more manageable parts, so that they can determine the target market and satisfy the needs of the targeted market more accurately by making small changes in the marketing mix (Agustini 2003).

Market segmentation or market segmentation of fish head flour itself is still very rare and if there is on average it is still a side industry from the processing industry or is still on a household scale and usually not only from fish head waste but also fish bone

waste. For the price of fish head flour itself, the average is around Rp. 6,000, - to Rp. 7,500, - and this shows that it is relatively much cheaper than fish meal.

Conclusion

Fishery waste is often not utilized and thrown away, even though fishery waste can still be utilized in various ways. One of them is fish head waste from various processing industries or household waste that is not consumed, which can be used as a product that can be useful for other things such as feed flour. Fish head flour has good potential and acceptance to be used as fish feed or animal feed (chicken) even fish head flour can replace fish meal as fish feed. In addition to the low price, fish head flour also has good quality for fish growth or sufficient intake of fish protein needed.

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