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ARTICLE REVIEW : UTILIZATION OF SHRIMP HEAD FOR FEED MEAL

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Abstract

Waste from shrimp processing includes shrimp heads. This waste can be used as meal for feed ingredients. The article aims to examine the process of making meal from shrimp heads and the quality of the meal it produces for feed raw materials. Based on the results of the study obtained information that the manufacture of meal from shrimp heads through the stages of washing, drying and milling. The quality of the meal obtained is highly dependent on the type of shrimp. In general, shrimp head meal contains about 40-62% crude protein, 3-8% ether extract, 4-13% crude fiber, 11-14% chitin, and 12-23% ash.

Key words : *Waste, solid, protein, processing.*

INTRODUCTION

Shrimp processing industries such as the headless or skinless shrimp freezing industry produce solid waste, including shrimp heads. According to Sachindra et al. (2005), solid waste generated from the shrimp processing industry in the form of heads, shells and tails of shrimp is estimated to be around 49% of the total number of shrimp used as raw materials. The quantity of waste generated from shrimp processing is very large and needs proper handling. If not handled properly it will have a negative impact on the surrounding environment.

One of the efforts that can be made to the solid waste generated from the shrimp processing industry, especially shrimp heads is by making meal for feed raw materials.

According to Khempa et al. (2011) shrimp head meal is an alternative feed ingredient for animal feed. This is because shrimp heads contain a lot of protein and minerals, besides that there are also essential fats for animal growth.

Utilization of shrimp heads, waste from the shrimp processing industry, into meal as raw material for feed is the right choice. This is because the equipment and costs of the meal-making process are quite simple and inexpensive. The proximate content found in shrimp head meal is very supportive for the nutrition of animal growth such as fish, poultry, and other cultivated animals. According to Bakrie et al (2010) protein in shrimp, including the head, contains almost all types of essential amino acids, especially methionine. The methionine content in shrimp protein is twice as high as that of soybean meal. According to Khairuman and Amri (2003), the requirements for good feed raw materials are high nutritional value, easy to obtain, easy to process, easy to digest, relatively cheap price and do not contain toxins.

The potential of the waste generated from the shrimp processing industry is very promising in terms of quantity. Therefore, this article aims to examine the process of making meal from shrimp heads and the quality of the meal it produces for feed raw materials.

Shrimp Processing Waste

One of the mainstays of Indonesia's exports of aquatic resources is shrimp. Indonesia's shrimp exports from year to year are increasing. Shrimp exported in frozen form without heads and skins. Along with the number of shrimp exports, the waste generated will also increase as well.

Waste from the shrimp processing process can be in the form of solid and liquid waste. Solid waste in the form of heads, skins and tails. The most numerous of the three is the head.

According to Latscha (1990), shrimp heads contain many bioactive components such as chitin/chitosan, protein, carotenoids, polyunsaturated fatty acids, -tocopherol and minerals. These bioactive compounds are reported to have various bioactive activities such as antioxidant, antimicrobial, antihypertensive, anti-inflammatory, antiproliferative, etc. According to Abun (2009), it contains 18.34% protein and other nutritional components such as calcium minerals and astaxanthin pigments.

The Process of Making Shrimp Head Meal

The method of making shrimp head meal is quite simple, shrimp waste obtained from the frozen shrimp industry is washed and then dried by drying for three days or can be dried using an electric oven at a temperature of 55°C for about 10 hours. The dried shrimp head

waste was ground using a mill with a 1.0 mm sieve and then used as shrimp head meal. The finished shrimp head meal can be stored in a dry place (Brito et al. 2020).

Quality and Quality of Shrimp Head Meal

The following are the results of the proximate test of shrimp head meal made by drying and oven methods (Fox et al. 1994).

Table 1. Proximate Test of *Penaeus monodon* Shrimp Head Meal and Fish Meal

Meal type	Water content	Protein	Lipid	Chitin	Astaxanthin	Chanthaxanthin	Peroxide
Shrimp head meal drying method	5,8	44,4	8,4	27,8	11	39	17,1±0,8
Oven method prawn head meal	4,4	46,0	9,8	26,1	7	27	14,1±0,6
Fish meal	7,8	67,9	6,3	19,2			

Shrimp head waste meal has a fairly high protein content ranging from 25-50%, Based on the table above, the drying method by drying the astaxanthin and chanthaxanthin levels is higher than the oven method, but the water content, protein content and fat content in drying oven is higher than the drying method. Islam et al (1994) reported that shrimp head meal contains about 40-62% crude protein, 3-8% ether extract, 4-13% crude fiber, 11-14% chitin, and 12-23% ash. The nutritional composition of shrimp meal varies greatly, depending on the number of shells or exoskeletons, species and size, and processing and storage methods (Oduguwa 1998).

Economic Value of Shrimp Meal

Shrimp head meal is currently used by feed manufacturing companies as a substitute for fish meal in the manufacture of fish feed and other animal feeds. Currently in Indonesia, shrimp head meal is sold at prices ranging from Rp. 9,900,000 to Rp. 15.000,00 depending on the quality and purity.

Conclusion

Based on the results of the study obtained information that the manufacture of meal from shrimp heads through the stages of washing, drying and milling. The quality of the meal

obtained is highly dependent on the type of shrimp. In general, shrimp head meal contains about 40-62% crude protein, 3-8% ether extract, 4-13% crude fiber, 11-14% chitin, and 12-23% ash.

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