

Analysis of the nutritional content of chicken feather fish meatballs as an alternative additional food for toddlers with undernut nutrition

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ABSTRACT

One of the nutritional problems that often occurs in Indonesia is malnutrition. Providing additional food is one of the nutritional supplements given as additional food or nutrients that are intended especially for malnourished toddlers. Chicken feather fish meatballs are one form of fishery product diversification that can be an alternative to providing additional food for malnourished toddlers. Based on the analysis of nutritional content, chicken feather fish meatballs have good nutritional content so that they can meet the nutritional needs required by the body, have a good impact on body health, at an affordable price and easy to obtain. Chicken feather fish meatballs have nutritional content including 13.01% protein content; 0.39% fat; 8.5% carbohydrates; 70.81% water content; and 2.9% ash content.

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INTRODUCTION

Nutritional problems in Indonesia have a major impact on Human Resources (HR), so special attention is needed (Masnah & Saputri, 2020). One of the nutritional problems that often occurs in Indonesia is malnutrition. Toddlers (0-5 years) are the age group that most often suffers from malnutrition or is one of the groups of people who are vulnerable to nutrition (Nuradhiani, 2023). Malnutrition in toddlers is a condition in which children experience a lack of essential nutrients that have an impact on physical growth, cognitive development, and overall health (Nurhayani et al., 2024). The nutritional status of children is an important thing that every parent must know, because disorders that occur due to unbalanced nutritional fulfillment will cause irreversible damage (Nuradhiani, 2023). Globally, the problem of malnutrition in toddlers is still a major concern. According to a report from WHO (2023), around 144 million children under the age of five will suffer from malnutrition in 2022. The same report also shows that the highest prevalence of malnutrition is found in Africa and Southeast Asia (Nurhayani, 2024). SSGI 2022 data shows an increase in wasting in children compared to 2021, namely 7.1% to 7.7% (Ministry of Health of the Republic of Indonesia, 2023).

Providing additional food is one of the nutritional supplements given as additional food or nutrients that are intended primarily for malnourished toddlers (Ministry of Health of the Republic of Indonesia, 2023). The PMT provided is a formula that is quite dense in energy and protein, consisting of ingredients that are easily obtained in the community at affordable prices. These ingredients can be substituted with local food sources of protein (Iskandar, 2017).

Meatballs are one of the most popular products among consumers. Starting from children to adults and even the elderly. It tastes delicious, is highly nutritious, can be eaten with and in any condition and is very easily accepted by anyone (Parnanto & Atmaka, 2010). Meatballs are processed meat products that are favored by the Indonesian people. The delicious taste and high nutrition make meatballs a processed meat product that is favored by the community (PURWANTO et al., 2015). Chicken feather fish meatballs are one form of diversification of fishery products. Chicken feather fish are considered as fish with low economic value. This fish is relatively small in size, about the size of an adult's finger. Fine scales and white meat. At first glance, the shape and color are like chicken feathers. That is why this fish may be named Chicken Feather Fish (Harahap et al., 2020). So far, chicken feather fish have not been processed into food ingredients that have economic value and are highly nutritious, so innovation is needed in the development of processed chicken feather fish products. Fish is one source of protein that is very much needed by humans, because its protein content is high, it contains essential amino acids needed by the body (Natsir, 2018). Based on the description above, it is hoped that chicken feather fish meatballs can be used as an alternative choice of additional food for malnourished children.

RESEARCH METHOD

This research was conducted in November 2023, the making of chicken feather fish meatballs was made together with IRT Jiddah and IRT Barokah located in Kedungcowek Village, Surabaya, and sample testing was carried out at the Testing Service Unit of the Faculty of Pharmacy, Airlangga University.

The main ingredient used in this study was filleted chicken feather fish. Other ingredients used in making these chicken feather fish meatballs are tapioca flour, eggs, salt, sugar, pepper, powdered broth, garlic, shallots, onions, celery leaves and spring onions, The tools used include: meat grinder, blender, scales, basin, pan, stove, sieve, spoon, knife, and plastic gloves.

The technique for making chicken feather fish meatballs is through the following process; (a) Grind the cleaned chicken feather fish, (b) Stir with a machine for fish meat, tapioca flour, and eggs, (c) Add salt, sugar, pepper and broth powder, (d) After mixing well, add finely ground garlic, finely ground shallots and finely ground onions, (e) Then add celery leaves and spring onions, stir until well mixed, (f) Boil water, make the dough into small balls using your hands then boil the meatballs until they float, then lift and drain. After the chicken feather fish meatballs have been processed, they are packaged and stored in the refrigerator, some of the chicken feather fish meatballs are tested for their nutritional content, including protein, fat, carbohydrate, water content, and ash content. The data obtained will be analyzed descriptively.

RESULTS AND DISCUSSIONS

Featherfish is considered a fish with low economic value. This fish is relatively small, about the size of an adult's finger. Fine scales and white meat. At first glance, the shape and color are like feathers. That is why this fish may be named Featherfish (Harahap, 2020). Alternative processing to improve the quality and variety of processed fish products is expected to create processed featherfish products with added value that are more in demand by consumers and are able to maintain nutritional content and extend the shelf life of the product (Ferdina et al., 2024).

Proximate Test

Proximate analysis was carried out to determine the nutritional content of featherfish meatballs based on the content of protein, fat, water, ash, and carbohydrate content (Hidayat & Insafitri, 2021). Based on the results of the nutritional content analysis, the nutritional content of featherfish meatballs can be seen in Table 1.

Table 1. Nutritional content of featherfish meatballs

No	Nutrisi	Nutrient content (%)
1	Water Content	70.81
2	Ash Content	2.9
3	Protein	13.1
4	Fat	0.39
5	Carbohydrate	8.5

Source: Analysis Results at the Testing Service Unit of the Faculty of Pharmacy, Airlangga University, 2024.

Water Content

A food ingredient consists of the main component, namely water, the water content in this food ingredient can affect the color, texture, taste, freshness level and durability of the food ingredient (Hidayat, 2021). The water content in chicken feather fish meatballs can come from the raw material content, the boiling process, and storage of fish meatballs. The water content in chicken feather fish meatballs can decrease due to the use of flour in making catfish meatballs, because the function of flour as a material that can bind water so that the more flour used, the higher the water binding capacity which causes the water content in chicken feather fish meatballs to decrease (Rachman et al., 2022). The water content in chicken feather fish meatballs is 70.81%, this result does not exceed the standard water content limit set by SNI, which is a maximum of 80% (Fitriyani et al., 2017).

Ash Content

The ash content of meatballs is influenced by the ash content of the raw materials used (Purwanto, 2015). The ash content in food is closely related to the mineral content, the ash content in a material means indicating the amount of minerals contained in the material. The ash content also explains that the organic content in food will burn while the inorganic material will not burn (Wodi & Cahyono, 2022). Chicken feather fish meatballs have an ash content of 2.9% where the ash content is the remaining combustion of organic materials so that the higher the ash content indicates the higher the mineral content (Handayani & Kartikawati, 2015).

Protein Content

Protein is an important component that is very much needed by humans, protein is needed for tissue replacement, energy supply, and immunity. The component that plays the biggest role in making meatballs is protein, because it functions as a binder that forms a compact structure and as an emulsifier, so that it can bind water and fat well (Munassir, 2019). The amount of protein contained in chicken feather fish meatballs comes from the protein contained in the main raw material for making it, namely chicken feather fish. The use of tapioca flour in making chicken feather fish meatballs can also increase its protein content. The protein content of chicken feather fish meatballs is 13.1% which meets the quality standards for fish meatballs and complies with SNI 7266-2017 which has a minimum protein content of 7% (Alamsyah et al., 2021).

Fat Content

Fat is one of the important food substances in maintaining body health, fat can provide more energy than carbohydrates or protein, in 1 gram of fat content can provide approximately nine calories (Wodi, 2022). Fish can be categorized based on their fat content, namely: high-fat fish have a fat content of 2.5-8%, medium-fat fish with a fat content of 0.5-2.5%, and low-fat fish with a fat content of <0.5%. The fat content in chicken feather fish is 0.39% so chicken feather fish is

classified as a fish with a low fat content. This shows that the fat content of fish meatballs is in accordance with the standard fat content of fish meatballs according to SNI 01-7266-2014, which is a maximum of 2% (Tarigan, 2020).

Carbohydrate Content

Carbohydrates greatly influence the characteristics of food ingredients such as taste, smell, color, and texture. The carbohydrate content in chicken feather fish meatballs is 8.5%. The carbohydrate content in chicken feather fish meatballs comes from the addition of flour in the process of making chicken feather fish meatball dough.

Good nutrition is very important to support the growth and development of toddlers (Rumahorbo, 2020)(Mardihani & Husain, 2021)(Rahmiyati et al., 2021). Toddlerhood is a critical period in which a child's brain and body develop very rapidly, so they require optimal nutritional intake. Adequate nutrition, both in terms of quantity and quality, will support normal physical growth, brain development, and a strong immune system (Kusumawati & Kom, 2020)(Ardiansyah et al., 2022)(Alia et al., 2024)(Soetjningsih, 2022). Conversely, malnutrition during this period can cause long-term impacts such as impaired cognitive development, decreased immunity, and an increased risk of chronic diseases later in life (Hartono, 2023).

CONCLUSION

Processed chicken feather fish products into chicken feather fish meatballs can be a diversified food product from processed chicken feather fish. Based on the analysis of nutritional content, chicken feather fish meatballs have good nutritional content so that they can meet the nutritional needs required by the body, provide a good impact on body health, at an affordable price and easy to obtain. Chicken feather fish meatballs have nutritional content including protein content of 13.01%; fat 0.39%; carbohydrates 8.5%; water content 70.81%; and ash content 2.9%.

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