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Acceptability of Catfish Nugget in Toddler Integrated Health Service Post (*Posyandu*) of Dermo Subdistrict, Mojoroto District, Kediri City

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ABSTRACT

A situational analysis was conducted in the working area of the Mrican Community Health Center, Kediri City, through surveys and SQ-FFQ interviews with mothers of toddlers. The data showed energy and protein intake deficits in toddlers. This study aims to develop catfish nuggets as a functional food for toddlers, providing an alternative nutritious snack for those who are undernourished. The product was developed from local ingredients such as catfish, carrots, eggs, cornstarch, and white bread. Organoleptic test results showed the best acceptability of catfish nuggets. The average organoleptic value of a color parameter of catfish nuggets was 4.1, and chicken nuggets was 4.27. The aroma parameter of the catfish nugget was 4.27, and the chicken nugget was 3.63. The texture parameter of the catfish nugget was 4.2, and the chicken nugget was 3.13. The flavor parameter of the catfish nugget was 4.53, and the chicken nugget was 3.53. Catfish nuggets have more potential than chicken nuggets. The highest percentage of acceptance in color, aroma, texture, and taste parameters is found in catfish nuggets. In color parameters, many say that catfish nuggets are lacking because the color is darker. The taste parameter is more savory in catfish nuggets.

I. Introduction

The problem of undernutrition in toddlers in Indonesia is still a major challenge in efforts to improve the quality of public health. Based on data from the Indonesian Nutrition Status Survey (SSGI) in 2022, the prevalence of undernutrition in toddlers reached 17.1% (Ministry of Health, 2023). One of the main causes is low daily protein intake, which is essential in the process of early childhood growth and development. Underweight toddlers generally show a preference for snacks over main meals, making the intervention of healthy snacks that are high in protein a potential approach (Nardina, et. al., 2021; Dewi, et. al., 2024).

Quality snacks with attention to nutritional value content are needed to help meet the nutritional needs of toddlers, with calorie requirements for children aged 1- 3 years of 1350 kcal per day, according to the 2018 IMR. About 10 - 15% of calorie and nutrient needs can be met from snacks. According to Par'I (2017), toddlers, especially children aged 1-3 years, are in a stage of rapid physical and cognitive development, so they need adequate daily nutritional intake to support their optimal growth. Children aged toddlers are difficult to eat, causing their nutritional intake to be insufficient, which can have an impact on their nutritional status. Poor nutritional status will cause a decrease in immunity, making them susceptible to disease. Poor food selection and gastrointestinal absorption can lead to malnutrition (Lebuan, et. al., 2023).

Mrican Community Health Center in Kediri City has implemented a local food-based

Supplementary Feeding (*PMT*) program for toddlers aged 6–59 months with malnutrition status. This program is funded through the 2024 Health Operational Assistance (Bantuan Operasional Kesehatan, BOK) and is implemented for 56 days. However, the results of the field evaluation indicate that the provision of *PMT* has not been fully effective. In several integrated health posts, *PMT* is given as a substitute for main meals rather than as an addition, and its nutritional content tends to be dominated by carbohydrates with low protein content. The daily calorie requirement of toddlers aged 1–3 years is 1350 kcal, and snacks can contribute around 10–15% of this total requirement. However, people's preference for delicious food often ignores its nutritional value, so that commonly consumed snacks only provide low nutritional contributions. This can trigger double nutritional problems, both deficiencies and excesses (Ministry of Health, 2020).

The main problem found from the field survey was that children's nutritional intake did not increase significantly, even though PMT had been given. This was caused by the inappropriate method of administration and food formulation that did not meet the principles of balanced nutrition, especially in terms of protein content. In response to this problem, the development of PMT products that are more in accordance with children's preferences and nutritional needs is important. This study aims to develop alternative additional food products that are rich in protein, easily accepted by toddlers, and use local food ingredients. From the market survey, it was obtained that catfish is a cheap, easily obtained, and seasonally independent source of protein. The specific objectives include assessing organoleptic values, target acceptability, and identifying the best formulation of the product being developed.

II. Methods

This research was conducted with a product development approach that includes several stages, namely situation analysis, formulation design, organoleptic testing, and product feasibility evaluation. Data collection was carried out through market observation and interviews using the Semi-Quantitative Food Frequency Questionnaire (SQ-FFQ) instrument aimed at mothers of toddlers. The selection of raw materials is adjusted to the availability of local resources (Gusnadi, et al., 2021). The product developed is a nugget made from catfish, with the addition of carrots, eggs, white bread, and cornstarch. Acceptability assessment is carried out through sensory testing, while determining the best alternative is based on the feasibility assessment system (Lestari, et al., 2019). This study was conducted on a total population of counseling participants at the Dermo sub-district health post of 30 toddlers and mothers. The assessment was carried out by mothers including the parameters of Color, Aroma, Taste, and Texture. While the acceptability was carried out on toddlers, how many catfish nuggets can be consumed.

III. Results and Discussion

Preference tests are important for the food processing industry to develop new products based on an assessment of the level of consumer preference for existing and new products. Table 1 shows the average organoleptic value of panelists, and Figure 1 shows the percentage of acceptability of catfish nuggets and chicken nuggets.

Table 1. Organoleptic Value of Catfish Nuggets and Chicken Nuggets

Value	Product							
	Catfish Nuggets				Chicken Nuggets			
	Color	Aroma	Texture	Flavor	Color	Aroma	Texture	Flavor
Minimum value	3	3	3	3	3	2	2	2
Maximum value	5	5	5	5	5	5	5	5
Modes	4	4	4 & 5	5	5	3	3	4
Average	4.10	4.27	4.20	4.53	4.27	3.63	3.13	3.53

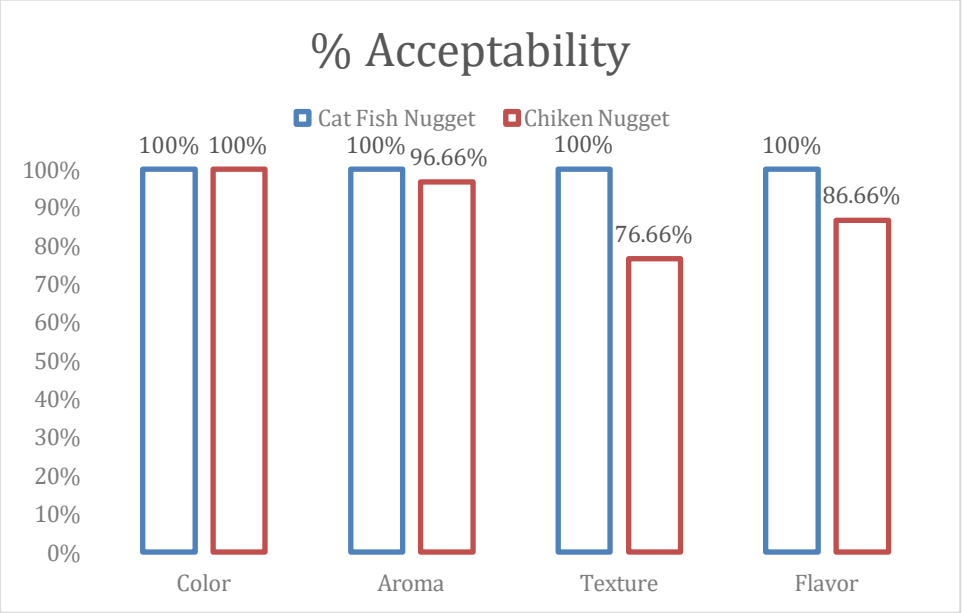

Figure 1. Acceptability Percentage of Catfish Nuggets and Chicken Nuggets

Chicken nuggets have a higher average score (4.27) than catfish nuggets, according to the results of organoleptic testing of color criteria. The percentage value of color acceptability for catfish nuggets and chicken nuggets is the same, both have an acceptability value of 100%. The dough made from catfish nuggets produces a rather pale grayish color. The nuggets are changed into a golden yellow color during the frying process, making them appealing to panelists. According to Astawan (2008), color can indicate the taste of food. When the color of a food deviates from the generally accepted color, it does not attract customers and will not be eaten, regardless of whether the food is in good condition.

Catfish nuggets have a higher average score (4.27) than chicken nuggets (3.63), according to the results of organoleptic testing of aroma criteria. The percentage of acceptability of catfish nugget aroma (100%) was greater than the percentage of acceptability of chicken nuggets (96.66%). Various peptides, free amino acids, and free fatty acids are often associated with the aroma of fish meat. The presence of these compounds no longer has a significant impact because some of these compounds are so unstable that they evaporate during steaming (Hadiwiyoto, 2003).

According to studies, texture is a very important component for maintaining the quality of meat and its derivative products. According to Hadiwiyoto (2003), the overall impression

of the chewiness of nuggets includes texture and various factors, including how easy it is to chew into smaller pieces and how much residue remains after chewing. Catfish nuggets had a higher average score (4.20) than chicken nuggets (3.13), according to the organoleptic testing results for texture criteria. The percentage of acceptability of the texture of catfish nuggets (100%) was greater than chicken nuggets (76.66%). The texture of catfish is softer than chicken meat, so the acceptance value of catfish nugget texture is higher.

The role of flavor can attract consumers' preference for food. The sense of taste, also known as taste buds is a unity of interaction between sensory properties that are considered important because they can quickly provide an assessment of a food that is acceptable or not (Winarno, 2004). Catfish nuggets have a higher average score (4.53) than chicken nuggets (3.53), according to the results of organoleptic testing of texture criteria. The percentage of acceptability of catfish nuggets was greater (100%) than chicken nuggets (86.66%). A savory taste can be produced from catfish nuggets that have been fried.

Table. 2. Macro Nutritional Value of Catfish Nuggets per 100 gr according to Nutrisurvey

Analysis	**Energy**	**Protein**	**Fat**	**Carbohydrate**	**Dietary fiber**	**PUFA**
Unit	Kcal	gr	gr	gr	gr	gr
Value	372,35	22,75	15,75	33,65	0,8	1,75

Table. 3. Micro Nutritional Value of Catfish Nuggets per 100 gr according to Nutrisurvey

Analysis	**Cholesterol**	**Na**	**K**	**Ca**	**Mg**	**P**	**Fe**	**Zn**	**Omega-3**
Unit	mg	mg	mg	mg	mg	mg	mg	mg	mg
Value	43	233,65	308,05	53,7	29,45	283,15	1,9	0,5	159

The results of the nutrisurvey analysis showed that catfish nuggets have a protein content of 22.75%, indicating that the product has met the standards because the minimum quality standard is 12% for chicken nuggets (SNI 6683:2014). The combination quality standard has a standard of 9% (SNI 6683:2014). The protein content of catfish nuggets is 11.5% according to the research results of Justisia and Adi (2016). The body can use fat from food as an energy source, such as carbohydrates and protein. The fat content analysis showed 15.75% in this product, which is under the quality requirements of SNI 6683:2014 nuggets with a maximum content of 20%. The fat content of catfish itself, 4.53%, is low and increases during the frying process, according to the research results of Agustin (2013). Most fish carbohydrates are found in the form of glycogen produced from additional ingredients, especially tapioca flour, which is low in carbohydrates. The catfish nuggets in this study had a carbohydrate content of 33.65%, which still does not meet the quality requirements for chicken meat nuggets with a maximum content of 20% (SNI 6683:2014).

IV. Conclusion

The acceptability percentage of catfish nuggets is highest compared to chicken nuggets for color, aroma, texture, and taste parameters. Catfish nuggets can be used as an alternative snack or high-protein side dish to overcome the problem of undernutrition in the Kediri City area.

V. References

Agustin, T.I. 2013. Pengaruh pengolahan yang berbeda terhadap komposisi proksimat dan profil asam lemak ikan lele dumbo (Clarias gariepenus). Prosiding Seminar Nasional MPHPI V. hal. 161-168

Astawan, Made., 2008. Sehat Dengan Hidangan Hewani. Swadaya: Depok.

Badan Kebijakan Pembangunan Kesehatan, Kementerian Kesehatan RI, 2023, Hasil Survei Status Gizi Indonesia (SSGI) 2022

Dewi, et al. 2024. Macronutrient Intakes for Breakfast, Morning Snack, and Lunch are Relatedto Work Fatigue in Elementary School Teachers at Full Day School Surabaya. Media Gizi Kesmas, 13(1), 308– 315

Gusnadi, D., Taufiq, R., & Baharta, E., 2021. Uji organoleptik dan daya terima pada produk Keputusan Kepala Badan Penyelenggara Jaminan Produk Halal Nomor 88 Tahun 2022 tentang Penggunaan Label Halal pada Produk yang telah Memperoleh Sertifikat Halal.

Hadiwiyoto, S. (2003). Hasil-hasil Olahan Susu, Ikan, Daging dan Telur. Liberty.Yogyakarta.

Justisia, S.R.W.A.H dan A. C. Adi. 2016. Peningkatan daya terima dan kadar protein nugget substitusi ikan lele (Clarias batrachus) dan kacang merah (Vigna angularis). Media Gizi Indonesia, 11(1): 106–112

Kementerian Kesehatan RI. 2020. Pedoman Gizi Seimbang Anak Usia 6-59 Bulan. Jakarta: Kemenkes RI

Lebuan AKS, Syafar M, Hartati N. Hubungan Pola Pemberian Makan Pada Balita Stunting di Puskesmas di Flores Timur. INHEALTH: Indonesian Health Journal. 2023;2(2):93-110.

Lestari, S. P., & Utomo, T. P. 2019. Penerapan Uji Daya Terima Metode Comstock pada Produk Minuman Fungsional. Jurnal Ilmu Pangan dan Gizi, 8(1), 45-54

Nardina, E. A., et al. 2021. Tumbuh Kembang Anak. Kudus: Yayasan Kita Menulis

Par'i, H. M. 2017. Penilaian Status Gizi. Jakarta: EGC

Standar Nasional Indonesia 6683. 2014. Syarat Mutu Nuget Daging Ayam. BSN

Winarno, F. G. (2004). Analisa Pangan dan Gizi. PT Gramedia Pustaka Utama. Jakarta