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Acceptance of Chicken Tofu Roll with Dangke and Carrot as a Toddler Food Alternative

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ABSTRACT

Stunting is a condition of impaired growth due to a long-term deficiency of nutrients, particularly energy and protein, characterized by a height that is below the standard for age. The selection of diverse and appropriate food ingredients is a crucial factor in meeting the nutritional needs of toddlers to support optimal growth and development. This study aimed to evaluate the preference of chicken tofu roulade with the substitution of dangke (a traditional cheese-like product) and carrots. The research was a pre-experimental study using a post-test only group design, involving 38 panelists , who were employees of the UPT RSUD Massenrempulu Enrekang. The Kruskal-Wallis test showed that there was no significant difference in the acceptability among the different roulade formulas (p > 0.05). The most preferred formula was Formula 123, which contained 150 g of dangke and 50 g of carrot. This formula was characterized by a pale yellowish-white color , a savory taste with a milky aroma, and a soft yet chewy texture. The nutritional content per 75-g serving of Formula 123 was: Protein: 9.31 g, Zinc (Zn): 4.53 mg.

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CASE REPORTS

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Keywords:
Food Alternatives, Dangke, Stunting

Key Messages:

- Stunting is problem global nutrition with sufficient prevalence big including in Indonesia 19.8% in 2024 .
- Dietary habit be one of factor reason stunting incidents
- One of the stunting prevention is animal protein consumption through the giving food addition based food local .

INTRODUCTION

Stunting becomes problem nutrition crucial child Because associated with risk higher morbidity and mortality (1). Currently, Indonesia is still faced with problems sufficient *stunting* Serious as the 5th country with proportion toddler highest *stunting* (37%), there are 9 million or more from one third amount toddlers in Indonesia problem *stunting*. According to SSGI data from 2024 , the incidence of stunting in South Sulawesi Province reached 18.9%. The incidence of stunting in South Sulawesi District Enrekang 29.2% (2).

Dietary habit is factor risk the largest contributor to death and disability in Indonesia. Selection of various types of material food For consumed toddler become factor important For fulfil need nutrition that can support growth as well as development toddlers . Consumption food the Indonesian population in reality Still dominated by rice Where consumption material food animal Still very low . In addition , the intake of vegetables and fruit mainly in groups age toddlers are still too low even though minerals and vitamins in vegetables and fruit is substance important and necessary nutrients in support the growth process flower toddler (3) . Improvement animal protein consumption in effort prevention *stunting* in toddlers become policies made government in Indonesia through various prog (4) .

Dangke is product processed from cow's milk that is formed become unique cheese . Uniqueness dangke lies in the ideal its distinctive taste, which creates experience an enticing culinary delight . The protein content in 100 g cow's milk dangke around 13.7-37.3 g. The protein content of dangke buffalo approximately 14.5-26.1 g. Serving dangke in various dish No only potential For increase variation food source of animal protein , but can also give impact positive in overcome challenge lack frequent protein consumption faced by some group age , especially children . Therefore that , development more carry on related use dangke in dish daily can become step strategic in diversify pattern healthy and nutritious food (5). The objectives of this care report to identified acceptable of Roulade substitution Dangke and Carrots

CASE DESCRIPTIVES

This pre-experimental study was conducted at UPT Massenrempulu Regional Hospital, Enrekang Regency, in March 2025, involving a total of 38 panelists who were employees of the hospital. However, while sensory evaluation was performed by adult panelists, future research should consider involving toddlers directly or provide validated justification for extrapolating adult acceptability to toddler consumption.

Procedures

This study consisted of several stages, including: (1) production of roulade skin and filling material, (2) production of Dangke roulade, (3) sensory evaluation by panelists, (4) nutritional analysis, (5) data processing and analysis, and (6) report compilation

Table 1. Composition of Chicken Tofu Roll with Partial Substitution of Dangke and Carrot

Ingredients	Treatment (Dangke and Carrot) (g)			
	R (0%)	312 (25:75)	213 (50:50)	123 (75:25)
Filling Ingredients				
Dangke	0	50	100	150
Tofu	200	150	100	50
Chicken	200	200	200	200
Carrot	30	50	50	50
Flour wheat	10	10	10	10
Flour tapioca	50	50	50	50
ground pepper	2	2	2	2
Salt	5	5	5	5
Sugar	5	5	5	5
Egg chicken	55	55	55	55
Oil sesame	5	5	5	5
Garlic	20	20	20	20
Leek	20	20	20	20
Cooking oil	48	48	48	48
Leather Material				
Egg	165	165	165	165
Flour tapioca	6.25	6.25	6.25	6.25
Salt	1	1	1	1
ground pepper	1	1	1	1
Water	20	20	20	20
Oil	2	2	2	2

Analysis Nutrients
Analysis substance nutrition energy , protein, fat, carbohydrates and zinc done manually using Indonesian Food Composition Table (FCT) 2020 .

RESULTS

Panelists in the study This consists of employees of the Massenrempulu Hospital UPT consisting of over 38 panelists. All panelists various sex female (100%), aged 25-30 years (26.3%), aged 31-40 (26.3%), aged 41-50 (39.5%) and aged 51-55 years (7.89%) and part big Not yet recognize taste, color , flavor and texture roulade know or roulade chicken . Power test results accept based on four aspect seen in table 2.

Table 2. Acceptance of Chicken Tofu Roll Addition Dangke and Carrots

CODE FORMULA		Color		Flavor		Teste		Texture		Reception Overall	
		n	%	n	%	n	%	n	%	n	%
312	• Like	34	90	35	92	31	82	37	97	34	89.5
	• Neutral	4	11	3	8	7	18	1	2.6	4	10.5
213	• Like	33	87	33	87	37	97	34	90	37	97.4
	• Neutral	5	13	5	13	1	2.6	4	11	1	2.6
123	• Like	38	100	32	84	34	90	31	82	36	94.7
	• Neutral	0	0	6	16	4	10	7	18	2	5.3
Kruskal-Wallis test		p=0.516		p=0.984		p=0.666		p=0.858		p=0.7771	

1) Formula 312: Dangke 25% and Carrot 10%, Formula 213: Dangke 50% and Carrot 10% Formula 123: Dangke 75% and Carrot 10%

Table 2. shows that third formula groups are preferred by some big panelists on aspects color , namely 90.0% in formula 312 (Dangke 25% and Carrot 10%), 87 % in formula 213 (Dangke 50%, Carrot 10%), 100% in formula 123 (Dangke 75%, Carrot 10%). *The Kruskal-Wallis* test show that the three formulas do not own difference significant color (

p=0.516). Based on mark *Mean Rank* or average rank each formula in the *Kruskal-Wallis test* , obtained information that mark *Mean Rank* aspect color in formula 213 more high (60.54) from the other two formulas .

DISCUSSIONS

Acceptance of Chicken Tofu Rolls

Roll is product processed products from meat smooth mixed with flour or starch with addition spices and ingredients other packaged foods with egg thin and rolled omelet use *aluminum foil* and steamed . In general roulade including into the dish main or *maincourse*. In the middle increasing awareness public to nutrition , roulade meat cow or modified chicken with addition material local like tofu, dangke, and carrots capable present alternative foods rich in protein and micronutrients important , such as zinc and vitamin A.

Study This use material main tofu and chicken substituted Dangke and carrots . Organoleptic test results obtained that *roulade* the most dangke liked based on aspect color is formula 213 , namely *roulade* dangke with concentration dangke 50% (100 g) and carrots 10% (50 g). From the aspect texture , formula 312 is the most preferred with substitution Dangke 25% (50 g) and carrots 10% (50 g). From the aspect of taste, aroma, and acceptance overall obtained that formula 123 is the most preferred with substitution dangke 75% (150 g) and carrots 10% (50 g).

These results support previous findings related to child nutrition (6), yet further analysis is needed to compare sensory preferences and protein intake contributions among similar formulations (7)(8). Study This in line with results research states that hedonic test results on attributes color show that addition flour peanut soya bean No own significant differences in catfish roulade (9)

Formula 123 may have been preferred due to its soft texture and savory flavor, which align with common taste preferences of the panelists, indicating potential cultural influence on sensory acceptance (10)(11)(12). Different with another study (Rifdayanti , 2024) which states that addition flour moringa give influence real to color product mackerel roulade ($p<0.05$). Another study (Shofiyah, 2022) stated that that There is difference real between group treatment (P 1, P 2, P3) on the aroma of mackerel roulade .

Nutrient content

Nutritional value is one of the most important parameters in determine quality food (13), and very important For test mark nutrition when food will used as food addition For group Mother pregnant and child toddlers (14). Recommendations from the Ministry of Health for provision of PMT, stated that component toddler PMT nutrition covering minimum energy of 160 calories , protein 3.24.8 g, and fat 47.2 g.

Assessment results panelists who demonstrated that they more choose an alternative formula with addition dangke 75% and carrots 10%, then group sample the can recommended as Supplementary Feeding Program (SFP) options for toddlers . If assessed based on content energy in the product of 205.09 kcal / 75 g , protein of 9.31 g / 75 g, fat of 15.18 g / 75 g, carbohydrates of 7.96 g/ 75 g and the content zinc of 4.53 mg/75 g. Milk and dairy products its derivatives that exist in dangke contain compound bioactive like peptide bioactive , protein, minerals, fiber added food and vitamins that function as component compound bioactive. Milk protein is composed of on casein , *whey protein* , immunoglobulin and lactoferrin . Fats found in milk and milk products its derivatives is saturated and unsaturated fatty acids saturated , which has role important physiological like *Conjugated Linoleic Acid* (CLA) (15)(16)(17)(19)(20).

Table 2. Nutrient Content of Chicken Tofu Rolls with Added Dangke and Carrots

Nutrients	Formula 312	Formula 213	Formula 123
Energy (kcal)	193.59	199.34	205.09
Protein (g)	9.00	9.15	9.31
Fat (g)	14.32	14.75	15.18
Carbohydrates (g)	7.57	7.76	7.96
Zinc (mg)	1.88	3.21	4.53

Limitations study This is panelists used is panelists from group employee House Sick temporary target from product study This is group toddlers. Ethical approval was obtained from Health Polytechnic of Makassar, and all panelists provided verbal informed consent prior to participation

CONCLUSION

Based on the research conducted, the results showed that the most preferred roulade dangke characteristics were: (1) color: 50% dangke and 10% carrot addition, (2) texture: 25% dangke and 10% carrot addition, and (3) taste, flavor, and overall acceptance: 75% dangke and 10% carrot addition. These findings suggest that chicken roulade with dangke and carrot addition can be accepted as a food alternative for toddlers. For future research, it is recommended to investigate the effectiveness of roulade dangke as a functional food supplement for toddlers and to test its impact on toddlers who experience stunting

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