

The Effect of Consuming Edamame-Flavored Gummy with Jelutung Honey on The Management Of Stunting in Toddlers

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ABSTRACT

Stunting is a chronic nutritional problem that causes growth retardation in toddlers, negatively impacting physical and mental development, and long-term productivity. Preventing stunting is crucial, particularly during the first 1,000 days of life, by providing adequate nutrition. Edamame, which is a source of plant-based protein and essential micronutrients, and jelutung honey, which is rich in vitamins, minerals and antioxidants, have the potential to improve the nutritional status of stunted toddlers as an innovative solution. This quasi-experimental study was conducted in Sui Ambawang Village, involving stunted toddlers aged 1–5 years. The intervention involved consuming edamame gummies with a jelutung honey flavour enhancer for four weeks. Significant improvements in body weight (from 10.69 kg to 11.01 kg) and height (from 87.4 cm to 88.82 cm) were observed after the intervention ($p=0.001$). There was also a decrease in the percentage of toddlers categorised as undernourished and short. These results suggest that edamame gummies with jelutung honey could be an effective nutritional intervention for tackling stunting and could support the government's efforts to reduce stunting rates in Sui Ambawang Village.

INTRODUCTION

Stunting, also known as chronic malnutrition, occurs when a child experiences growth retardation and has a height that is not appropriate for their age (Lestari, 2023). Stunting is not only a health issue but also has social and economic consequences. Stunted children often suffer from physical and mental developmental delays, low immunity, infections, nutritional and health disorders, poor academic

achievement, as well as long-term impacts on productivity and the economy (Dasman, 2019). Adequate nutritional intake is essential for the growth and development of toddlers, as this critical period determines their growth and catch-up development. Toddlers who previously experienced nutritional deficiencies can still recover through sufficient intake of nutritious food, enabling them to achieve catch-up growth according to their



developmental stage. The prevalence of stunting in the world has reached 22.3% or around 148.1 million toddlers, Indonesia is ranked 5th in the world with a stunting prevalence of 21.5% (Kementerian Kesehatan RI, 2022).

Stunting prevention is crucial during the golden period, namely the first 1,000 days of life (20). The fourth pillar of the targets and objectives for accelerating stunting reduction focuses on strengthening food and nutrition security at the individual, family, and community levels (BKKBN, 2021). One of the nutrition-sensitive intervention programs to address malnutrition, particularly stunting, includes the management of severe malnutrition and the provision of supplementary recovery foods for undernourished children aged 7–59 months, when mothers can already provide complementary feeding (MPASI) that meets both micro- and macronutrient needs in addition to breast milk (Tarmizi, 2024). Protein, as a fundamental component for building and repairing body tissues, does not last long in the body and must be consumed daily. In stunted children, protein functions by repairing body tissues, enhancing growth hormone activity, improving the digestive system,

strengthening the immune system, and supporting brain development. Therefore, adequate protein intake is essential in both the management and prevention of stunting (Samsuddin, Agusanty, 2023).

Edamame is not yet widely known; therefore, its consumption level remains suboptimal, even though it contains high levels of macronutrients and micronutrients essential for meeting nutritional needs (Wibowo and Akbar, 2023). Edamame is a type of legume categorized as a vegetable crop. This vegetable is rich in protein, calcium, iron, vitamins A, B1, and C, potassium, ascorbic acid, and vitamin E, with nutrient composition consisting of 40% protein, 20% fat (cholesterol-free), 33% carbohydrates, and 6% fiber (Yulita Siregar and Noya, 2023). The high levels of protein, iron, calcium, and zinc in edamame can help address stunting, as edamame works in the body by providing high-quality protein, enhancing growth hormone production, improving calcium absorption and bone density, optimizing the digestive system for nutrient absorption, and strengthening the child's immune system (Fitriyani, 2013).



Jelutung honey is a natural forest honey produced by *Apis dorsata* bees that collect nectar from jelutung trees (*Dyera costulata*), which predominantly grow in swamp forests in the Kalimantan region Kalimantan (Paramita, Rahayu and Atasasih, 2022). Jelutung honey has advantages over cultivated honey as it is more natural and free from chemical substances, with higher levels of enzymes, proteins, minerals, and antioxidants (Zulkarnaini, Wijaya and Rahmadani, 2023). It is rich in natural carbohydrates (glucose and fructose), B-complex vitamins, vitamin C, vitamin D, calcium, magnesium, phosphorus, iron, zinc, and other minerals, as well as diastase and amylase enzymes, and contains high levels of antioxidants (flavonoids and phenolics). These properties make jelutung honey a natural superfood for health, child growth and development, and stunting prevention. Jelutung honey is safe for consumption by children over one year of age.

Toddlers may be reluctant to consume edamame directly due to its slightly savory and nutty taste. Moreover, toddlers generally prefer sweet-flavored foods, making it necessary to provide an alternative

approach in utilizing edamame for stunting management. In addition to serving as fortification, jelutung honey can also function as a flavor enhancer, providing a stronger natural sweetness that encourages toddlers to consume it. This led to the development of an innovative natural food product combining edamame and jelutung honey, namely “Edamame Gummy with Jelutung Honey Flavor Enhancer.” This product innovation offers a gummy rich in plant-based protein from edamame, enhanced with jelutung honey containing vitamins, minerals, vitamin C, B-complex, calcium, magnesium, and antioxidants. With its soft, chewy texture that does not stick to the teeth, this gummy has the potential to serve as a functional food that provides multiple benefits, including health advantages, ease of consumption in gummy form, effective formulation, and promising market potential.

It is expected that research on the effect of consuming edamame gummies with jelutung honey flavor enhancer on the management of stunted toddlers will help address the problem of stunting in Sui Ambawang Village. At Sungai Ambawang Village, the



number of toddlers experiencing stunting in 2024 was 37 toddlers.

As well as support government efforts to reduce the prevalence of stunting, which still falls short of the targeted reduction rate of 14% by 2024. The purpose of this Research was to determine the extent to which consumption of edamame flavor enhancer jelutung honey can affect weight and height increases in stunted toddlers. The novelty of this study lies in the development of edamame-based gummy bears with the addition of jelutung honey as an innovative nutritional intervention for stunted toddlers while utilizing the potential of local foods to support growth and prevent stunting.

RESEARCH METHODS

The research design employed was quasi-experimental with a one-group pretest–posttest design. The study was conducted in Sui Ambawang Village, with the research subjects consisting of all stunted toddlers aged 1–5 years in the village many as 30 Toddlers. A quasi-experimental design was used because it was not possible to fully randomize and form a control

group, and a one-group pretest-posttest design was used so that researchers could compare conditions before and after the intervention in the same group so that changes in height and weight could be identified as the effects of the treatment more objectively. Before the intervention, an ethical test was carried out at the Nani Hasanuddin Health Sciences College with an Ethics approval recommendation number 2657 / STIKES -NH / KEPK / VII / 2025.

The intervention involved administering gummies at a dosage of 3 pieces per day, each weighing 5 grams, over a period of four weeks (one month). Data collection was carried out through direct observation by measuring the toddlers' height before and after consuming the edamame gummy with jelutung honey flavor enhancer. Data analysis included a normality test using the Shapiro-wilk test, and statistical analysis was performed using the *Paired Sample T-Test* to examine the effect of the independent variable on the dependent variable (Ghozali, 2018).



RESULTS AND DISCUSSION

Results

a. Characteristics of Respondents

1) Characteristics of Toddlers

Table 1. Frequency Distribution of Toddler Characteristics Based on Age, Premature Birth, and Birth Weight

	Mean	Median	Modus	SD	Variance	Range	Min	Max
Toddler's Age	39,43	36	24	11,956	142,944	35	24	59
Premature Birth	38,8	39	38	0,925	0,855	3	37	40
Birth Weight	2977,67	3000	3000	382,746	1,46	1300	2300	3600

Based on the data analysis, the mean age of toddlers was 39.43 months, with a median of 36 months and a mode of 24 months. The standard deviation of 11.956 and variance of 142.944 indicate that the variation in toddler ages in this study was quite large. The age range was 35 months, with a minimum age of 24 months and a maximum of 59 months.

The mean age of preterm birth was 38.8 months, with a median of 39 and a mode of 38. The standard deviation of 0.925 and variance of 0.855

indicate that the variation in the data in this study was relatively small. The range was 3, with a minimum of 37 months and a maximum of 40 months.

The mean birth weight was 2977.67 grams, with a median of 3000 grams and a mode of 3000 grams. The standard deviation value of 382.746 and variance of 1.46 indicate that the variation in birth weight in this study was quite large. The range was 1300 grams, with a minimum value of 2300 grams and a maximum value of 3600 grams.

2) Characteristics of Mothers

Table 2. Frequency Distribution of Mothers' Characteristics Based on Parity, Pregnancy Interval, Education, Occupation, and Income

	Mean	Median	Modus	SD	Variance	Range	Min	Max
Parity	2,47	2	2	1,279	1,637	4	1	5
Pregnancy Interval	22,47	24,50	4	13,564	183,982	37	3	40
Gestational Age	38,8	39	38	0,925	0,855	3	37	40

Based on the data analysis, the mean parity was 2.47, with a median of

2 children and a mode of 2 children. The standard deviation of 1.279 and



variance of 1.637 indicate that the variation in the number of children in this study was quite large. The range of 4, with a minimum of 1 child and a maximum of 5 children, indicates that the number of children varied between 1 and 5.

The mean pregnancy interval was 22.47 months, with a median of 24.50 months and a mode of 4 months. This indicates that most respondents had a pregnancy interval of approximately 2 years. The standard deviation of 13.564 and variance of 183.982 indicate that the data showed considerable variation. The range of 37 months, with a minimum of 3 months and a maximum of 40 months, indicates that the respondents' pregnancy intervals were quite varied.

The mean gestational age was 38.8 months, with a median of 39 months and a mode of 38 months. This indicates that most respondents were at full-term gestational age. The standard deviation of 0.925 and variance of 0.855 indicate that the data showed relatively little variation. The range of 3 months, with a minimum value of 37 months and a maximum of 40 months, indicates a relatively uniform gestational age.

Characteristics	n	%
Education		
No schooling	1	3,3
Elementary School	1	3,3
Junior High School	0	0
Senior High School	23	76,7
Higher Education	5	16,7
Total	30	100
Occupation		
Housewife	23	76,7
Seller	1	3,3
Tailor	2	6,7
Private employee	2	6,7
Teacher	2	6,7
Total	30	100
Monthly Income		
< 2.000.000	16	53,3
2.000.000 – 3.000.000	3	10,0
> 3.000.000	11	36,7
Total	30	100

Based on these characteristics, it was found that 23 mothers (76.7%) had multiparity, 17 mothers (56.7%) had a pregnancy interval of less than 24 months, 29 mothers (96.7%) delivered at gestational age > 37 weeks, 23 mothers (76.7%) had senior high school education, 23 mothers (76.7%) were housewives, and 16 mothers (53.3%) had a monthly income of less than IDR 2,000,000.



b. Determinant of Stunting Incidence

Table 3. Determinant Stunting Incidence

Determinants	n	%
Mother experienced anemia during pregnancy		
Yes	2	6,7
No	28	93,3
Total	30	100
Mother was given/consumed iron/folate supplements during pregnancy		
Yes	30	100
No	0	0
Total	30	100
Mother suffered from infectious diseases (e.g., TBC, hepatitis, malaria, STI, Toxoplasmosis)		
Yes	0	0
No	30	100
Total	30	100
Mother regularly underwent antenatal care (ANC) at least 4 times at Posyandu, health center, or maternity clinic		
Yes	30	100
No	0	0
Total	30	100
Mother ever received education about stunting from health workers (midwife, nurse, doctor)		
Yes	30	100
No	0	0
Total	30	100
Child received exclusive breastfeeding for the first 6 months		
Yes	30	100
No	0	0
Total	30	100
Age when child started complementary feeding (CF)		
6 months	27	90
> 6 months	3	10
Total	30	100
How often does the child eat per day (age $\geq$ 6 months)?		

3 times	25	83,3
> 3 times	5	16,7
Total	30	100
Child had diarrhea/upper respiratory tract infection in the last 2 weeks		
Yes	8	26,7
No	22	73,3
Total	30	100
Child has a Growth Monitoring Card (KMS) and is routinely brought to Posyandu		
Yes	30	100
No	0	0
Total	30	100
Child is routinely weighed at Posyandu every month		
Yes	30	100
No	0	0
Total	30	100
Type of family drinking water source		
Tap water (PDAM)	0	0
Dug well	20	66,7
River water	2	6,7
Refillable gallon wter	8	26,6
Total	30	100
Type of household latrine		
Healthy latrine (septic tank)	30	100
Pit latrine	0	0
None	0	0
Total	30	100
Mother washes hands with soap before feeding the child		
Yes	30	100
No	0	0
Total	30	100

Based on the stunting determinants, it was found that 28 mothers (93.3%) did not experience anemia during pregnancy, 30 mothers (100%) received iron supplements during pregnancy, and 30 mothers



(100%) never suffered from infectious diseases (such as TB, hepatitis, malaria, STI, or toxoplasmosis). As many as 30 mothers (100%) routinely underwent antenatal care (ANC) at least four times at Posyandu, health centers, or maternity clinics, 30 mothers (100%) received education about stunting from health workers (midwives, nurses, doctors), 30 mothers (100%) provided exclusive breastfeeding during the first 6 months, and 27 mothers (90%) introduced complementary feeding when the child was 6 months old.

Furthermore, 25 mothers (83.3%) fed their child three times a day (≥ 6 months), 22 toddlers (73.3%) never experienced diarrhea/upper respiratory tract infections in the last two weeks, 30 mothers (100%) had a Growth Monitoring Card (KMS), 30 mothers (100%) routinely brought their child to Posyandu for monthly weighing, 20 families (66.7%) used dug wells as their drinking water source, 30 mothers (100%) used healthy latrines, and 30 mothers (100%) washed their hands with soap before feeding their child.

c. Weight and Height of Toddlers before being given Gummy

Table 4. Frequency Distribution of Toddlers' Weight and Height Before Being Given Gummy (Z-Score Values of Weight-for-Age (W/A) and Height-for-Age (H/A))

Variable	n	%
Weight-for-Age (W/A)		
Severe Malnutrition (<-3 SD)	8	26,7
Underweight (-3 SD sd <-2 SD)	22	73,3
Normal (2 SD sd 2 SD)	-	-
Overweight (> 2 SD)	-	-
Total	30	100
Height-for-Age (H/A)		
Severe stunted <-3 SD	4	13,3
Stunted -3 SD sd <-2 SD	26	86,7
Normal - 2 SD sd $+3$ SD	-	-
Tall $> +3$ SD	-	-
Total	30	100

It was found that almost all respondents, namely 22 toddlers (73.3%), before receiving the intervention, were in the Underweight category (-3 SD to < -2 SD) based on weight-for-age. Meanwhile, based on height-for-age, almost all respondents, namely 26 toddlers (86.7%), were in the Stunted category (-3 SD to < -2 SD).



d. Weight and Height of Toddlers
After Being Given Gummy

Table 5. Frequency Distribution of Toddlers' Weight and Height After Being Given Gummy (Z-Score Values of Weight-for-Age (W/A) and Height-for-Age (H/A))

Variable	n	%
Severe-for-Age (W/A)		
Severe Malnutrition (<-3 SD)	6	20
Underweight (-3 SD sd <-2 SD)	21	70
Normal (2 SD sd 2 SD)	3	10
Overweight (> 2SD)	30	100
Total		
Height-for-Age (H/A)		
Severe stunted <-3 SD	2	6,7
Stunted -3 SD sd <-2 SD	24	80
Normal - 2 SD sd +3 SD	4	13,3
Tall > +3 SD	30	100
Total		

It was found that almost all respondents, namely 21 toddlers (70%), after receiving the intervention, were still in the Underweight category (-3 SD to < -2 SD) based on weight-for-age. Meanwhile, based on height-for-age, almost all respondents, namely 24 toddlers (80%), were in the Stunted category (-3 SD to < -2 SD).

e. The Effect of Consuming Edamame Gummy with Jelutung Honey Flavor Enhancer on Weight Gain

Table 6. The Effect of Consuming Edamame Gummy with Jelutung Honey Flavor Enhancer on Weight Gain (n=30)

Variable	Mean	SD	SE	P value	N
Weight Pretest	10,6900	1,52352	0,27815	0.001	30
Weight Posttest	11,0090	1,73788	0,31729		

The mean body weight at the first measurement (pretest) was 10.6900 with a standard deviation of 1.52352. At the second measurement (post-test), the mean body weight was 11.0090 with a standard deviation of 1.73788. The mean difference between the first and second measurements was 0.31900 with a standard deviation of 0.58329. The statistical test results showed a p-value of 0.000, indicating a significant

difference between body weight before and after consuming the edamame gummy with jelutung honey flavor enhancer. Thus, it can be concluded that the consumption of edamame gummy with jelutung honey flavor enhancer has an effect on the management of stunted toddlers in Sui. Ambawang Village.



f. The Effect of Consuming Edamame Gummy with Jelutung Honey Flavor Enhancer on Height Gain

Table 7. The Effect of Consuming Edamame Gummy with Jelutung Honey Flavor Enhancer on Height Gain

Variable	Mean	SD	SE	P value	N
Height Pretest	87,4000	7.53804	1.37625	0.000	30
Weight Posttest	88,8200	7.55793	1.37988		

The mean height at the first measurement (pretest) was 87.4000 with a standard deviation of 7.53804. At the second measurement (posttest), the mean height was 88.8200 with a standard deviation of 7.55793. The mean difference between the first and second measurements was 1.42000 with a standard deviation of 1.43465. The statistical test results showed a p-value of 0.000, indicating a significant difference between height before and after consuming the edamame gummy with jelutung honey flavor enhancer. Thus, it can be concluded that the consumption of edamame gummy with jelutung honey flavor enhancer has an effect on the management of stunted toddlers in Sui. Ambawang Village.

Discussion

1. Characteristics of Toddlers

a. Age

The majority of toddlers are between 24 and 36 months of age, or 53.3%. This age is a critical

phase in a child's growth and development, as they have passed the period of exclusive breastfeeding and are beginning to rely on complementary foods (MP-ASI) as their primary source of nutrition. During this period, nutrient needs increase along with rapid growth, so the quality and adequacy of food intake are crucial for a child's nutritional status.

b. Premature Birth

The majority of toddlers in this study were born full-term (>37 weeks), (96.7%), indicating that prematurity was not a dominant factor in stunting. This indicates that most toddlers had relatively good initial conditions at birth, considering their gestational age. Stunting can still occur even if toddlers are born full-term, as it is more influenced by postnatal factors such as nutritional intake,



complementary feeding practices, infections, and parenting patterns.

c. Birth Weight

A total of 90% of toddlers had normal birth weight (2500–4000 grams), but there were still cases of low birth weight (<2500 grams), which increases the risk of stunting. Low birth weight is often caused by poor maternal nutrition, short birth intervals, or inadequate monitoring during pregnancy. The prevalence of low birth weight (LBW) in this study was 10%, while the majority of toddlers (90%) had normal birth weight.

2. Characteristics of Mothers

a. Parity

The majority of mothers (76.7%) were multiparous. High parity is often associated with the division of attention and limited resources for each child, which may result in suboptimal nutrition and childcare, thereby increasing the risk of stunting.

b. Birth Interval

As many as 56.7% of mothers had a birth interval of less than 24 months. Short birth intervals reduce the time for maternal nutritional recovery,

increasing the risk of low birth weight (LBW) and stunting in the next child (Hassen *et al.*, 2024).

c. Gestational Age

Most mothers (96.7%) delivered at term, which is a protective factor against stunting. Term infants have better physiological readiness for growth and development compared to preterm infants.

d. Maternal Education

The majority of mothers (76.7%) graduated from senior high school. Maternal education influences nutritional knowledge, parenting practices, and decision-making in child care. Mothers with higher education tend to better understand the importance of child nutrition and health, thereby reducing the risk of stunting.

e. Maternal Occupation

Most mothers (76.7%) were housewives. Maternal occupation affects childcare and nutritional fulfillment. Mothers who do not work may have more focus on childcare, but limited household income can hinder adequate nutritional provision. Conversely, working mothers can contribute to

family income but may risk reduced caregiving time if not supported by a conducive environment. In Sui Ambawang Village, the economic dependence of housewives on their husbands may limit their access to important decisions regarding child nutrition.

f. Income

As many as 53.3% of mothers had a monthly income of less than IDR 2,000,000. Low income is directly related to limited access to nutritious food, health services, and a healthy environment. Children from low-income families are more vulnerable to stunting due to inadequate nutrient intake and limited access to healthcare services. In Sui Ambawang Village, poor economic conditions are a major barrier to meeting balanced nutritional needs for toddlers.

3. Determinants of Stunting Incidence

a. Maternal Anemia

The majority of mothers (93.3%) did not experience anemia. Anemia during pregnancy poses a risk of low birth weight (LBW), which can impact child growth.

The absence of anemia indicates that prevention efforts have been relatively successful, although education and monitoring still need to be improved to prevent growth disorders starting from the womb.

b. Iron Tablet (Fe) Consumption

All mothers (100%) consumed iron tablets during pregnancy. Regular consumption of iron tablets is effective in preventing anemia, supporting fetal growth, and reducing the risk of stunting. However, its effectiveness also depends on the mother's adherence to consuming it as recommended.

c. Maternal Infections

None of the mothers experienced infections such as tuberculosis, hepatitis, or malaria. Being free from infections during pregnancy plays an important role in ensuring healthy fetal growth and reducing the risk of prematurity or LBW. In Sui Ambawang Village, this indicates good access to health services and environmental hygiene.

d. Antenatal Care (ANC)

All mothers (100%) routinely underwent ANC at least



four times. This examination is important for the early detection of pregnancy risks (anemia, infections, malnutrition), nutritional education, and breastfeeding preparation. Regular ANC helps prevent LBW and prematurity, which are risk factors for stunting. In Sui Ambawang Village, ANC has been carried out according to standards and serves as a stunting prevention strategy.

e. Stunting Education

All mothers (100%) had received education about stunting from health workers. This education increases knowledge about nutrition, parenting, breastfeeding, complementary feeding, and infection prevention. However, there remains a gap between knowledge and practice due to economic, cultural, and environmental factors. In Sui Ambawang, education is adequate but needs to be followed up to be more effective.

f. Exclusive Breastfeeding

As many as 100% of mothers provided exclusive breastfeeding for six months. Breast milk protects infants from

infections and malnutrition that may trigger stunting. However, if the mother is malnourished during pregnancy or breastfeeding, the benefits of breast milk may be reduced. Thus, maternal nutritional status before and during breastfeeding remains important.

g. Age of Introduction to Complementary Feeding (CF)

As many as 90% of mothers introduced complementary feeding at the appropriate age (6 months). Timely introduction is important to meet infants' nutritional needs. However, if CF lacks quality or sufficient animal-sourced foods, the risk of stunting remains.

h. Child Feeding Frequency

As many as 83.3% of children were fed three times per day. The frequency is adequate, but the quality of meals needs improvement. Monotonous and nutrient-poor diets may still cause stunting despite frequent feeding.

i. Diarrhea/ARI

As many as 73.3% of children did not experience diarrhea or acute respiratory infections (ARI) in the past two weeks. Infections can hinder

nutrient absorption and child growth. However, the risk of stunting still exists if maternal nutrition and sanitation are poor.

j. Ownership of Growth Monitoring Card (KMS)

All mothers have a KMS and monitor their children's growth and development, but ownership and recording in the KMS does not guarantee the prevention of stunting if it is not followed by appropriate follow-up when growth disorders are found.

k. Regular Visits to Posyandu

All mothers regularly took their children to the Posyandu (community health post). Despite high attendance, if nutritional services are suboptimal or follow-up is minimal, stunting prevention may remain ineffective.

l. Family Water Source

As many as 66.7% of families used dug wells. Unsafe water poses a risk of infection and nutritional disorders. Efforts to improve water quality are important for stunting prevention.

m. Type of Latrine

All mothers used sanitary latrines. However, without other

hygiene practices (handwashing, waste management), the risk of stunting persists. Sanitation must be supported by comprehensive WASH (Water, Sanitation, and Hygiene) practices.

n. Handwashing Before Feeding

All mothers washed their hands with soap, but improper techniques may reduce effectiveness. Handwashing is important but must be supported by good nutrition and sanitation.

o) Provision of Gummies

Before the intervention, most children were classified as undernourished (73.3%) and short (86.7%), indicating chronic nutritional problems. After the intervention, there was a decrease in children with severe malnutrition and short stature, indicating improvement.

p) Effect of Consuming Edamame Honey Jelutung Gummies

Edamame honey jelutung gummies were proven to improve the nutritional and height status of children. Edamame is rich in protein, iron, and isoflavones for growth, while jelutung honey provides energy and antioxidants.



This combination is effective as a highly nutritious, locally sourced intervention that is easy to consume and well-accepted by children.

CONCLUSION

In general, the majority of toddlers who participated in this study were aged between 24–36 months (53.3%), born at full term (>37 weeks: 96.7%), and had a normal birth weight (2500–4000 grams: 90%). Maternal characteristics showed that most were multiparous (76.7%), had an interpregnancy interval of less than 24 months (56.7%), had completed senior high school education (76.7%), worked as housewives (76.7%), and had a family income below Rp2,000,000 per month (53.3%).

Risk factors contributing to stunting had largely been minimized by the respondents. Almost all mothers did not experience anemia during pregnancy (93.3%), received iron supplementation (100%), had no history of infectious disease (100%), and attended routine antenatal care (100%). In addition, all mothers had received education about stunting from health workers, exclusively breastfed their

babies for the first six months, and introduced complementary feeding at the appropriate time. Compliance with child growth monitoring was also high, as evidenced by all mothers owning and using growth monitoring cards (KMS) and regularly bringing their children to Posyandu each month.

Before the intervention, most toddlers were classified as undernourished (73.3%) and stunted (86.7%). After the intervention with the consumption of edamame honey jelutung flavour-enhancer gummies, the percentage of undernourished toddlers decreased to 70%, and stunted toddlers decreased to 80%.

Measurements showed an increase in average body weight from 10.69 kg to 11.01 kg, with an average difference of 0.319 kg. Likewise, average height increased from 87.4 cm to 88.82 cm, with an average difference of 1.42 cm. Statistical tests indicated that these differences were statistically significant (p value = 0.000), both for weight and height.

Therefore, it can be concluded that the administration of edamame honey jelutung flavour-enhancer gummies had a significant effect on improving the nutritional status and



height of toddlers, and has potential as an alternative nutritional intervention in addressing stunting in Sungai Ambawang Village.

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