Journal of Nutrition Explorations
Vol. 3, No. 2, May 2025, pp. 86~97
e-ISSN: 2987-761X
DOI: https://doi.org/10.36568/jone.v3i2.218

Acceptability and Nutritional Evaluation of Moringa Mung Bean Velva as a Supplementary Snack for Stunted Children

Putri Aniq Oktavia[1], Juliana Christyaningsih[2], Melina Sari[3]
[1,2,3]Department of Nutrition, Politeknik Kesehaltaln Kemenkes Surabaya, Surabaya, Indonesia
Email : putrianiqo10@gmail.com

ARTICLE INFO
Article History:
Received August 24th, 2022
Revised form June 17th, 2025
Accepted June 17th, 2025
Published online June 18th, 2025

Keywords:
stunting
moringa
mung bean powder
velva

ABSTRACT

Stunting is a chronic nutritional disorder in toddlers, characterized by a height-for-age Z-score (HAZ) below the WHO standard due to prolonged inadequate nutrient intake. This study aimed to evaluate the acceptability and nutritional content of Moringa mung bean velva as an alternative functional snack for stunted children. A post-test only control group design was used to test three velva formulations with a fixed amount of moringa powder (15 g) and varying mung bean amounts (50 g, 60 g, and 40 g). A hedonic test involving 25 trained panelists was conducted and analyzed using Kruskal Wallis and if there is a difference continue with the Mann Whitney Test ($p < 0.05$), while protein and fiber levels were measured using the Kjeldahl and gravimetric methods. The KH03 formulation (40 g mung bean : 15 g moringa) received the highest overall acceptance (mean score: 3.33), particularly in color (3.68), texture (3.32), and taste (3.44), and contained 9.75% protein and 3.24% fiber per 100 g. These findings indicate the potential of velva KH03 as a local functional snack that is both nutritious and organoleptically acceptable for stunting prevention.

INTRODUCTION

Stunting is a chronic nutritional problem in toddlers which is characterized by a z score of height by age (TB/U) below the 2015 WHO standard due to the accumulation of nutrient intake deficiency[1]. Factors that contribute to the incidence of stunting include chronic malnutrition, especially in the first 1,000 days of life; a history of low birth weight (BBLR); improper parenting and low nutritional knowledge of mothers; low socioeconomic status of the family; low level of maternal education; limited access to health services; not getting exclusive breast milk; poor sanitary and environmental conditions; and the presence of recurrent infections in children[2–4].

South Asia is the region with the highest prevalence of stunting in the world, at 38%, which is in line with the high population in the region[5]. Globally, in 2018, the incidence of stunting in toddlers reached 21.9% or around 149 million children under five years old[6]. This condition shows that the problem of malnutrition accompanied by infectious diseases is still a serious challenge that needs to

be addressed immediately. In Indonesia itself, the results of Riskesdas 2018 recorded a stunting prevalence of 30.8%[7].

Stunting that occurs from an early age can have an impact on low academic achievement in school, below-average height that persists into adulthood, and motor development disorders[8]. This condition can decrease productivity and increase the risk of degenerative diseases in adulthood[9].

Moringa leaves have the potential to be the main source of nutrient fulfillment because they contain various therapeutic elements, including antibacterial compounds and immunostimulants. The protein content in dried moringa leaves reaches 6.7% per 100 grams, and contains more than 40 types of essential nutrients. The use of moringa leaves in powder form is considered more optimal because the nutritional content is higher than fresh moringa leaves, which only contain 23.78% protein per 100 grams. The addition of moringa in the diet is expected to accelerate the process of restoring nutritional status effectively[10–12].

Nuts are a source of plant-based protein that is relatively more affordable compared to animal protein sources such as poultry and meat. One type of bean that is widely loved by the public is mung beans. Green beans have the potential to be processed into various forms of products, one of which is in the form of flour, which can provide added value economically[13]. Processed mung bean products have been widely developed, such as wet cakes, pastries, drinks, and various other food products[14].

Fiber is defined as the part of the plant cell structure that is resistant to the process of digestion and absorption in the human gastrointestinal tract[15]. One of the functional food products that is rich in fiber is velva, which is a frozen food made from fruit that is processed using an ice cream maker. Handling malnutrition in Indonesia can be supported through balanced nutritional supplement innovations such as velva, which according to a Google Form survey is preferred by 83.5% of stunted mothers under five because it is low in sugar and high in protein. The main advantage of velva lies in its high fiber content, because it uses fresh fruit as the main raw material[16]. In addition to high fiber, the addition of mung beans as a raw material for velva also increases the content of vegetable protein which plays an important role in tissue repair and body cell formation. Therefore, this study aims to develop velva products made from mung beans and moringa leaves as a high-nutrition snack innovation in an effort to prevent stunting in toddlers.

MATERIALS AND METHODS

This study is an experimental study using a post-test only control group design, aimed at evaluating the acceptability and nutritional content (protein and fiber) of mung bean moringa velva as a functional snack for stunted children. Three formulations were tested with a fixed amount of moringa powder (15 g) and varying amounts of mung bean: Formulation 1 (50 g), Formulation 2 (60 g), and Formulation 3 (40 g).

The study was conducted at the Department of Nutrition, Poltekkes Surabaya, from October 2021 to June 2022. The velva production process began with soaking and boiling mung beans, followed by draining and blending with fresh milk to create mung bean purée. The purée was heated over low heat (±70°C) for approximately 5 minutes. Each formulation was then prepared by mixing the purée with moringa powder and other ingredients including fresh milk, diabetic-friendly sugar, skim milk powder, cornstarch, salt, and a stabilizer (carboxymethyl cellulose/CMC). The mixture was blended until creamy, frozen for 2–3 hours, then re-blended and re-frozen for another 2–3 hours to achieve the desired velva texture.

The acceptability test was conducted with 25 trained panelists selected based on their understanding of hedonic testing and willingness to provide informed consent. The attributes assessed included color, aroma, texture, and taste using a 4-point hedonic scale questionnaire. Organoleptic data were analyzed using Kruskal Wallis and if there is a difference continue with the Mann Whitney Test, with significance determined at $p < 0.05$. Protein content was analyzed using the Kjeldahl method, while fiber content was measured using the gravimetric method.

RESULT

The results of the study on moringa mung bean velva include the results of the Organoleptic Test, Fiber Content Test and Protein Content Test. Velva is made from mung beans, and in its processing it is formulated with moringa powder. In the process of processing mung bean velva with the addition of moringa powder, other ingredients with the same weight are used in all formulations. These ingredients include: moringa powder, skimmed milk powder, sugar, margarine, cornstarch, CMC, salt, pandan. The difference in composition lies in the addition of mung beans, the purpose is to find out the difference in organoleptic characteristics in each velva. This can be observed in table 1.

Table 1 Characteristics of Moringa Green Bean Velva Formulation

Indicator	Formulasi Velva		
	KH 01 Green Beans : Moringa Powder 50 :15	KH 02 Green Beans : Moringa Powder 60 : 15	KH 03 Green Beans : Moringa Powder 40 : 15
Color	Slightly light leaf green pale	Old leaf green	Young leaf green
Aroma	Typical green beans and smell of moringa powder	Typical green beans	Typical green beans, slight smell of moringa powder
Texture	Smooth and frozen	Smooth, slightly hard and frozen	Smooth and frozen
Taste	Typical green beans and a little moringa powder	Typical green beans and moringa powder	Typical green beans and a little moringa powder

Three formulations of molinga mung bean velva show differences in sensory characteristics based on the ratio of mung beans to moringa powder. The KH 02 (60:15) formulation has a dark leaf green color with a distinctive aroma of green beans without detecting the smell of moringa, but the taste of moringa feels quite dominant. The KH 01 formulation (50:15) shows a pale light green color with a combination of green beans and moringa powder, as well as a taste that still contains a hint of moringa. Meanwhile, KH 03 (40:15) has a light leafy green, a light scent of green beans and a slight moringa smell, as well as a smooth texture. Based on the attributes of color, aroma, taste, and texture, the KH 03 formulation exhibits the best sensory balance and has the potential to be more acceptable as a functional food product.

Table 2 Average Distribution of Assessment of Green Bean Velva Formulation with the Addition of Moringa Powder

Indicator	Formulasi Velva		
	KH 01 Green beans : Moringa powder 50 : 15	KH 02 Green beans : Moringa powder 60 : 15	KH 03 Green beans : Moringa powder 40 : 15
Color	3,56	3,64	3,68
Aroma	2,56	3,2	2,88
Texture	3,2	3,24	3,32
Taste	2,84	3,2	3,44
Average	**3,04**	**3,32**	**3,33**

Based on the results of organoleptic tests on three formulations of mung bean velva with the addition of moringa powder, it is known that the formulation KH03 (40 g mung beans: 15 g moringa powder) obtained the highest average score of 3.33, followed by KH02 (60:15) of 3.32 and KH01 (50:15) of 3.04. The KH03 formulation was most preferred by the panelists in terms of color (3.68), texture (3.32), and taste (3.44), while the highest aroma was found in KH02 (3.20). These results show that the formulation of KH03 provides the best overall sensory characteristics, so it has the potential to be developed as an alternative to local food-based snacks preferred by children in stunting prevention efforts. The results of the analysis of fiber and protein levels in mung bean velva with the addition of moringa powder per 100 grams can be seen in the table as follows:

Table 3 Protein and Fiber Content Test Results Per 100 g of Green Bean Velva with the Addition of Moringa Powder

Indicator	Formulasi Velva		
	KH 01 Green beans : moringa powder 50 : 15	KH 02 Green beans : moringa powder 60 : 15	KH 03 Green beans : moringa powder 40 : 15
Protein Content Test Results Per 100 g (%)	10,1%	9,3%	9,75%

Fiber Content Test Results Per 100 g (%)	2,35%	3,57%	3,24%

Based on the results of the nutritional content analysis, it is known that the highest protein content is found in the formulation KH01 (50 g mung beans: 15 g moringa powder) which is 10.1%, followed by KH03 (40:15) at 9.75%, and the lowest at KH02 (60:15) at 9.3%. As for the fiber content, the highest value was found in the KH02 formulation which was 3.57%, followed by KH03 at 3.24%, and the lowest KH01 at 2.35%. These results show that an increase in the number of mung beans does not necessarily correlate directly with an increase in protein or fiber levels. The KH01 formulation has the highest protein content because the moderate proportion of mung beans (50 g) provides a balance of protein contributions from mung beans and moringa. Meanwhile, KH02 showed the highest fiber content, likely because the higher composition of mung beans contributed to greater dietary fiber. The KH03 formulation has a balanced nutritional content and is almost close to the other two formulas, so it can be said that it is quite optimal in meeting the needs of protein and fiber, especially when combined with the best level of sensory acceptance as seen in the results of organoleptic tests.

KH01, KH02, KH03

(3 Green bean velva formulation)

The following are the formulation products of velval mung beans with moringa powder. Terdalpalt 3 formulations of mung beans: moringa powder, yakni: formulation 1 (Code KH 01) before 50 : 15, Formulation 2 (Code KH 02) as long as 60 : 15, and formulation 3 (Code KH 03) as long as 40 : 15. Aldalis also alkhir products as high as 450 g, yalng alkaln is used in the orgalnoleptic test serta test kadar serat dan protein.

Indicator	Kruskal Waallis Test Value
Color	0,073
Aroma	0,052
Texture	0,869
Taste	0,100

Based on the results of the Kruskal-Wallis test, there was no significant difference in organoleptic attributes (color, aroma, texture, and taste) between the three formulations of moringa mung bean velva,

because the entire p-value was more than 0.05. The p-values for color (0.073) and aroma (0.052) indicate that although not significant, there is a tendency for differences that are beginning to be felt by the panelists, especially in aromas that are very close to the limit of significance. The texture had the highest p-value (0.869), which suggests that the panelists' perception of the texture of the three formulations was relatively uniform. As for taste, a p value of 0.100 also indicates no meaningful difference. Overall, the formulation of Moringa mung bean velva was considered quite consistent organoleptically by the panelists, although small differences in color and aroma may be a consideration in subsequent product development. The absence of that difference meant that the Man Whitney test was not continued.

DISCUSSION

Discussion of Characteristics and Organoleptic Test of Green Bean Velva Formulation with the Addition of Moringa Powder

In this study, the hedonic test carried out on the sample included 4 indicators, namely the texture, taste, aroma, and color of each formulation of moringa mung bean velva.

a) Color

Color is the first sensory attribute that panelists observe when visually assessing a food product. The assessment of food quality is generally strongly influenced by color, because colors that match expectations can give a positive impression to consumers[17]. In this study, the color assessment of mung bean velva with the addition of moringa powder was carried out subjectively based on the visual perception of the panelists. The results of the organoleptic test showed that the highest average score on the color indicator was obtained by the formulation KH 03 (40:15) with a value of 3.68, followed by KH 02 (60:15) of 3.64, and KH 01 (50:15) of 3.56. Despite the difference in scores, the difference between the formulations is relatively small so statistically it can be said that there is no significant difference. This shows that the entire formulation has a similar color display and is acceptable to the panelists' sense of vision.

b) Aroma

Scent is a chemical stimulus that is detected through olfactory receptors in the nasal cavity[17]. In the organoleptic test of mung bean velva aroma with the addition of moringa powder, the KH 02 (60:15) formulation obtained the highest average value of 2.88, followed by KH 03 (40:15) of 2.72, and the lowest value obtained by KH 01 (50:15) of 2.56. The difference in score between the formulations is relatively small, so it does not show any significant sensory differences. This shows that all three formulations have similar aroma characteristics and are acceptable to the panelists' sense of smell.

c) Texture

Melting in velva refers to the rate at which the product melts at a certain room temperature[18]. Factors such as the uniformity of the size of the ice crystal and the consistency of the product can affect the melting rate of velva[19]. Based on the results of the analysis, the melting rate did not show a significant influence between formulations. In organoleptic tests of texture, the panelists' senses included characteristics such as smooth, slightly thick, to smooth and thick. The results showed that the highest average score on texture attributes was obtained by the formulation KH 03 (40:15) of 3.32, followed by KH 02 (60:15) of 3.24, and KH 01 (50:15) of 3.20. The small difference in values between the formulations showed that the velva texture of the three formulations was well received by the panelists and there was no significant difference in the perception of the texture.

d) Taste

The results of the analysis showed that there was no significant effect of the treatment on the flavor attribute, which was generally in the "somewhat preferred" category by the panelists. The flavor in velva is affected by compounds dissolved in free water, which can undergo a binding or capturing reaction, thereby reducing the intensity of flavor. However, the air trap process during the churning stage is able to reduce the impression of being too cold (icy), so that it does not interfere with the perception of flavor in the mouth[20]. Based on the organoleptic test, the highest average value on taste attributes was obtained by the formulation KH 03 (40:15) of 3.44, followed by KH 02 (60:15) of 3.20, and KH 01 (50:15) of 2.84. The difference in values between the formulations is relatively small, so it does not show a significant difference. These results indicate that the taste of mung bean velva with the addition of moringa powder tends to be neutral and is well tolerated by the panelists.

Velva Protein Levels Test Results of Moringa Green Beans

Moringa mung bean velva is a food product that is rich in protein content. The addition of moringa powder in the velva formulation is expected to increase its nutritional value, especially its protein content, so that this product has the potential to be a high-protein functional food that is friendly to diabetics. Based on the results of the protein content test using the Kjeldahl method (AOAC, 2016), the KH 01 (50:15) formulation has the highest protein content of 10.1%, followed by KH 03 (40:15) of 9.75%, and KH 02 (60:15) of 9.3%. These findings are reinforced by a follow-up analysis of Riskesdas data conducted by Hermina and Prihatini, which showed that protein contribution from food was lower in short toddlers compared to normal toddlers (19.0% vs. 23.2% for energy, and 39% vs. 41.9% for protein). Adequate protein intake is very important in toddlerhood because it plays a major role in the growth and development process, especially as a substance that builds body tissues.

The moisture and fiber content in mung beans also affect the measurement of protein levels. High starch and fiber can bind water so that it affects the results of protein analysis quantitatively. This can lead to variations in the protein content detected even if the number of mung beans increases. The variety of mung bean varieties and processing methods (such as soaking, drying, or modifying

flour) also affect the measured protein levels. Some studies have shown that substitution of mung bean flour in food products can significantly increase protein levels, but this is different from the natural conditions of germination that lead to a decrease in protein[21–23].

The CDC health organization, in the United States recommends giving snacks in the form of ice cream/velva to toddlers preferably after they are 12 months old/1 year old, and with a general dose of ice cream/velva 90 grams of toddlers is safe to consume. Therefore, in this study, the administration of mung bean velva with the addition of 1 cup of moringa powder a day is sufficient for the daily protein needs of toddlers.

Results of Velva Green Bean Fiber Content Test with the Addition of Moringa Powder

Fibrous foods are needed by the body for daily life, one of which is to help digestion[24]. Fiber works by making food thicker or viscous (gel-formed). The heavier the raw material for making velva, the higher the nutrient content contained in the velva[25].

In the testing of fiber content using the Gravimetric method, the results of fiber content analysis showed that the highest level was found in mung bean velva with the addition of moringa powder code KH 02 with a formulation of 60 : 15, which is 3.57%, followed by KH 03 code of 3.24% and KH 01 of 2.35%. The fiber content in green bean velva with the addition of moringa powder is in accordance with the ratio of green beans : moringa powder, the more the main ingredient eats the higher the fiber value will be.

The addition of moringa powder contributes greatly to the fiber content because moringa leaves are rich in soluble and insoluble fiber. These results are in line with research by Afiyanti *et al.* (2022) who reported that moringa substitution in processed foods significantly increases dietary fiber levels. The total fiber content in foods with moringa can be as high as 5–8% depending on the proportion[26].

The CDC health organization, in the United States recommends giving snacks in the form of ice cream/velva to toddlers preferably after they are 12 months old/1 year old, and with a general dose of ice cream/velva 90 grams of toddlers is safe to consume. Therefore, in this study, the administration of mung bean velva with the addition of 1 cup of moringa powder a day is sufficient for the needs and daily needs of toddlers.

Kruskkal Wallis Results

The results of organoleptic tests using the Kruskal-Wallis test showed that there was no significant difference in color, aroma, texture, and flavor attributes between the three formulations of green bean velva moringa, with significance values of 0.073 for color, 0.052 for aroma, 0.869 for texture, and 0.100 for taste ($p > 0.05$). This shows that the panelists were unable to distinguish the sensory characteristics of the three formulations. However, the aroma p value close to 0.05 indicates that this attribute has the potential to influence the reception of panelists, which can be caused by the

addition of moringa powder that has a distinctive aroma. The texture showed the highest p-value (0.869), indicating that the formulation had a similar consistency and structure and was well received by the panelists. The absence of significant differences in flavor indicates that variations in the proportions of ingredients do not significantly affect taste, so all formulations are judged to have a balanced and acceptable taste. Overall, these results indicate that the addition of moringa powder of up to 15% to the mung bean velva does not significantly reduce the organoleptic quality of the product and is well tolerated by consumers. So, the Man Whitney test was not continued.

This research has several limitations. First, organoleptic tests were conducted by adult panelists, not by toddlers as the main target of the product, so that children's sensory preferences could not be directly represented. Second, nutritional analysis only includes protein and fiber content, without involving important micronutrients such as iron, zinc, and calcium that play a role in child growth. Third, velva processing is carried out on a laboratory scale with controlled conditions, so it does not represent household-scale production or MSMEs. Fourth, this study has not tested the shelf life and stability of the product against changes in temperature and time. In addition, the microbiological safety aspects and economic evaluation have not been analyzed. Therefore, the results of this study are exploratory and need to be further studied through direct acceptance tests on toddlers, as well as tests on a wider scale of production and distribution to optimize product implementation practically.

This research has potential bias that needs to be considered. First, organoleptic tests involve adult trained panelists without blinding and randomizing samples, so that perceptual bias is likely to occur. Second, panelists' personal preferences for the aroma and taste of ingredients such as moringa can affect subjective results. Third, the velva production process is done manually, allowing for inconsistencies in texture and quality between formulations. Fourth, protein and fiber content testing is only carried out once per sample without replication, so variability between replications cannot be analyzed. In addition, the panelists were not representative of the target population (toddlers), so the results did not fully reflect the acceptance rate of the end user. Therefore, further research with random design, blinding techniques, laboratory replication, and direct trials on target groups is needed to obtain more valid and applicable results in the context of stunting prevention through local food interventions.

CONCLUSION

This study shows that mung bean velva with the addition of moringa powder has the potential as a nutritious snack alternative for stunted toddlers. Based on the results of organoleptic tests on 25 trained panelists, the formulation KH03 (mung beans: moringa powder = 40 : 15) is the most preferred formulation in terms of color, aroma, taste, and texture. This shows that the combination of these

ingredients can produce products that are sensory-acceptable and potentially accepted by consumers.

In terms of nutritional content, the KH01 (50:15) formulation has the highest protein content of 10.1%, while the KH02 (60:15) formulation has the highest fiber content of 3.57%. This suggests that an increase in key raw materials such as mung beans or moringa powder may have an effect on the final nutrient composition.

This velva is not only superior sensory, but also has nutritional value that supports the growth and development of children. Thus, this product deserves to be further developed as a local functional food to help prevent stunting. The optimal formulation can be selected based on the balance between the acceptance rate of the panelists and the contribution to the daily protein and fiber needs of children under five.

SUGGESTION

Green bean velva with the addition of moringa powder has the potential to be a nutritious snack for stunted toddlers. Follow-up tests on toddlers as the main subjects are needed, as well as analysis of micronutrient content such as iron, calcium, and zinc. Flavor modification with the addition of natural flavors such as honey or cider can increase acceptability. Testing the shelf life and safety of the product is also important. This product is recommended to be developed through MSMEs and nutrition interventions in Posyandu or schools as part of efforts to utilize local food in reducing the prevalence of stunting.

BIBLIOGRAPHY

1. Sampe Panggalo Z, Darwis, Hasrina. Faktor Yang Mempengaruhi Kejadian Stunting Pada Anak Di Wilayah Kerja Puskesmas Taraweang Kab. Pangkep. J Ilm Kesehat Diagnosis [Internet]. 2020;15(4):354–9. Available From: Https://Jurnal.Stikesnh.Ac.Id/Index.Php/Jikd/Article/View/104

2. Susianto Fm, Sudaryanto A. Analisis Tren Jumlah Balita Stunting Kota Madiun Tahun 2019-2021. J Promot Prev [Internet]. 2024 Feb 3;7(1):43–51. Available From: Https://Journal.Unpacti.Ac.Id/Index.Php/Jpp/Article/View/1111

3. Eka Oktavia, Yulia Vanda Editia, Mahardika Primadani. Faktor- Faktor Yang Mempengaruhi Kejadian Stunting Pada Balita Di Indonesia Tahun 2024. J Vent. 2024;2(1):158–68.

4. Tebi, Dahlia, Wello Ea, Safei I, Rahmawati, Sri Juniarty, Et Al. Literature Review Faktor-Faktor Yang Mempengaruhi Terjadinya Stunting Pada Anak Balita. Fakumi Med J J Mhs Kedokt [Internet]. 2022 Jan 1;1(3):234–40. Available From: Https://Fmj.Fk.Umi.Ac.Id/Index.Php/Fmj/Article/View/70

5. Lestari Ef, Dwihestie Lk. Asi Eksklusif Berhubungan Dengan Kejadian Stunting Pada Balita. J Ilm Permas J Ilm Stikes Kendal. 2020;10(2):129–36.

6. Unicef. Levels And Trends In Child Malnutrition. 2015;1–8. Available From: %3cwww.Who.Int/Nutgrowthdb/Estimates%3e%0aworld

7. Badan Penelitian Dan Pengembangan Kesehatan Republik Indonesia. Laporan Riskesdas

2018 Nasional. Lembaga Penerbit Balitbangkes. 2018. P. Hal 156.

8. Dewi Ia, Adhi Kt. Pengaruh Konsumsi Protein Dan Seng Serta Riwayat Penyakit Infeksi Terhadap Kejadian Pendek Pada Anak Balita Umur 24-59 Bulan Di Wilayah Kerja Puskesmas Nusa Penida Iii. Gizi Indones [Internet]. 2014 Sep 30;37(2). Available From: Https://Persagi.Org/Ejournal/Index.Php/Gizi_Indon/Article/View/161

9. Yadika Adn, Berawi Kn, Nasution Sh. Pengaruh Stunting Terhadap Perkembangan Kognitif Dan Prestasi Belajar. J Major. 2019;8(2):273–82.

10. Fatmawati N, Zulfiana Y, Julianti I. Pengaruh Daun Kelor (Moringa Oleifera) Terhadap Pencegahan Stunting. J Fundus. 2023;3(1):1–6.

11. Japaries W, Hardi Yf, Ayu Fd. Kajian Sistematis Efek Empiris, Farmakologis Dan Klinis Terapi Kelor(Moringa Oleifera Lam.). An-Najat J Ilmu Farm Dan Kesehat. 2023;1(3):70–84.

12. Wuryandari Mre, Tuna H. Efektivitas Ekstrak Daun Kelor Merah Sebagai Usaha Preventif Terhadap Perkembangan Sel B (Sdf-1) Dan Sel Granulosit (Gr-1) Pada Mencit Balb/C Yang Diinjeksi Salmonella Typhi. Life Sci [Internet]. 2023;12(2):18–24. Available From: Http://Journal.Unnes.Ac.Id/Sju/Index.Php/Lifesci

13. Rais, Ainun Fitriah G. Analisis Profil Protein Ikan Nila (Oreochromis Niloticus) Berbasis Sds-Page Berdasarkan Variasi Lama Marinasi Dan Konsentrasi Asam Cuka. Universitas Muhamadiyah Semarang; 2017.

14. Amin Na, Julia M. Faktor Sosiodemografi Dan Tinggi Badan Orang Tua Serta Hubungannya Dengan Kejadian Stunting Pada Balita Usia 6-23 Bulan. J Gizi Dan Diet Indones (Indonesian J Nutr Diet [Internet]. 2016 Aug 30;2(3):170. Available From: Http://Ejournal.Almaata.Ac.Id/Index.Php/Ijnd/Article/View/299

15. Kusharto Cm. Serat Makanan Dan Perannya Bagi Kesehatan. J Gizi Dan Pangan [Internet]. 2007 Jul 16;1(2):45. Available From: Http://Journal.Ipb.Ac.Id/Index.Php/Jgizipangan/Article/View/4357

16. Indriya Priyono Dewi Ey, Soekopitojo S, Issutarti I. Analisis Sifat Fisik Velva Labu Kuning Dengan Kombinasi Pektin Dan Gum Arab Sebagai Bahan Penstabil. J Inov Teknol Dan Edukasi Tek [Internet]. 2021 Jun 21;1(2):137–41. Available From: Http://Journal3.Um.Ac.Id/Index.Php/Ft/Article/View/344

17. , Et Al. Aspek Mikrobiologis, Serta Sensori (Rasa, Warna,Tekstur, Aroma) Pada Dua Bentuk Penyajian Keju Yang Berbeda. J Ilmu Produksi Dan Teknol Has Peternak. 2016;4(2):286–90.

18. Handoko Ic, Suprijono Mm, Widyawati Ps. Pengaruh Jenis Dan Kosentrasi Hidrokoloid Terhadap Sifat Fisik Dan Organoleptik Velva Apel Manalagi. J Teknol Pangan Dan Gizi (Journal Food Technol Nutr. 2017;16(1):41–6.

19. Bahramparvar M, Tehrani Mm. Application And Functions Of Stabilizers In Ice Cream. Food Rev Int. 2011;27(4):389–407.

20. Bahramparvar M, Mazaheri Tehrani M. Application And Functions Of Stabilizers In Ice Cream. Food Rev Int [Internet]. 2011 Oct;27(4):389–407. Available From: Http://Www.Tandfonline.Com/Doi/Abs/10.1080/87559129.2011.563399

21. Habibi Na, Putri Vd, Andrafikar A, Safyanti S, Sartika W, Kasmiyetti K. Pengaruh Subtitusi Tepung Kacang Hijau Terhadap Mutu Organoleptik Dan Kadar Protein Beras Rendang. J

Sehat Mandiri. 2023;18(1):181–90.

22. Ponelo F, Bait Y, Ahmad L. Pengaruh Penambahan Tepung Kacang Hijau Termodifikasi Annealling Terhadap Karakteristik Fisik, Kimia Dan Organoleptik Roti French Baquette. Jambura J Food Technol. 2022;4(2):185–97.

23. Jamila F, Fitria, Nugraheni F, Khoir Tf. Daya Terima Dan Kadar Protein Pada Kastengel Sebagai. 2023;4(2):1079–83.

24. Nurzakiah, Hadju V, Jafar N, Indriasari R, Sirajuddin S, Amiruddin R, Et Al. Literatur Review : Pengaruh Pola Makan Terhadap Sindrom Metabolik. J Kaji Dan Pengemb Kesehat Masy. 2021;1(2):215–24.

25. Suprayatmi M, Novidahlia N, Ainii An. Formulasi Velva Jagung Manis Dengan Penambahan Cmc. J Pertan [Internet]. 2017 Oct 30;8(2):98. Available From: Http://Ojs.Unida.Ac.Id/Index.Php/Jp/Article/View/1055

26. Qonita F, Setyawardani T, A. H. D. Rahardjo. Pengaruh Penambahan Bubuk Daun Kelor (Moringa Oliefera L.) Dengan Persentase Yang Berbeda Terhadap Yield Dan Warna Keju Susu Low Fat. J Anim Sci Technol [Internet]. 2023;5(1):117–23. Available From: Https://Doi.Org/10.20884/1.Angon.2023.5.3.P333-339%0aabstrak