
The Effect Of Substituting Inulin Flour, Mocaf (Modified Cassava Flour), And Stevia Sugar (Stevia Rebaudiana) On Fiber Content, Acceptability, And Nutritional Economic Value In Crispy Brownies

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Abstract

Obesity is a major health problem associated with unhealthy dietary patterns, including excessive consumption of high-calorie and low-fiber snacks. Therefore, the development of healthier snack alternatives is needed to help increase fiber intake and reduce the risk of obesity-related diseases. This study aims to determine the effect of substituting mocaf flour, inulin flour, and stevia sugar on the organoleptic quality, nutritional content, and economic value of brownies crispy as a high-fiber snack alternative for individuals with obesity. This study was a laboratory experimental research using a Completely Randomized Design (CRD) consisting of one control formula (F0) and four modified formulas (F1, F2, F3, and F4). The panelists consisted of 3 expert panelists for the preliminary test and 30 untrained adult panelists aged 19–29 years for the hedonic test. Data were analyzed using the Shapiro-Wilk, Kruskal-Wallis, and Mann-Whitney tests. The results showed no significant differences in aroma, color, and texture characteristics among the formulas ($p > 0.05$), while significant differences were found in taste, aftertaste, and overall acceptance ($p < 0.05$). The selected formula met the BPOM requirements for a high-fiber claim and fulfilled 10–15% of the daily Recommended Dietary Allowance (RDA) per serving, indicating its potential as a healthier snack alternative for adults with obesity.

Keywords: Obesity, Crispy Brownies, Inulin Flour, MOCAF Flour, Stevia Sweetener.

INTRODUCTION

Obesity is a complex chronic disease, characterized by abnormal fat accumulation that has a negative impact on the health of the sufferer, increasing the risk of metabolic, cardiovascular, and musculoskeletal disorders (Ullah & Tamanna, 2025). Globally, obesity has reached alarming levels, with more than 2.5 billion adults being overweight (overweight), and about 890 million people are in the obesity category according to the World Health Organization in 2022. In Indonesia itself, the prevalence of obesity has also shown a significant increase in the last decade, where the prevalence of obesity in adults reached 21.8% based on Riskesdas 2018 and increased to 23.4% according to the 2023 Indonesian Health Survey (SKI).

One of the age groups that is prone to obesity is the adult age group, where this group often practices a lifestyle sedentary, minimal physical activity, and frequent consumption junk food or other high-calorie foods. This statement is supported by the results of research conducted by Englandi & Cleodora (2022) where there are 93% of productive age employees who have a lifestyle sedentary high.

Lifestyle practices sedentary, minimal physical activity, and consumption junk food high levels are inseparable from the demands of dense daily activities, so individuals often ignore a healthy diet (Ventilanova et al., 2023). In addition to these factors, the lack of fiber intake also contributes to the increase in the prevalence of obesity. This is because high-fiber foods generally have a lower energy content and are water-resistant and difficult to digest, so they can increase satiety for longer (Rahadian et al., 2024). Not only that, fiber also helps control blood glucose levels, improve lipid profiles, and support gastrointestinal health through increased gut microbiota activity (Nabila et al., 2021).

Low fiber intake is not only caused by the lack of consumption of vegetables and fruits, but also the low consumption of tubers as a source of dietary fiber. Therefore, functional food innovations are needed that can help increase people's daily fiber intake through practical and preferred products.

On the other hand, the high consumption of sweet foods in Indonesia is also an important factor that contributes to the increasing prevalence of obesity. The 2023 Indonesian Health Survey (SKI) shows that more than 52% of Indonesians consume sweet foods more than once per day.

One example of a high-sugar snack that is in demand by the public is brownies crispy which has the characteristics of crunchy texture on the outside and soft on the inside (Aini et al., 2022). Brownies crispy Generally, using ingredients with low nutritional value and excessive consumption can increase the risk of obesity. Therefore, the development of products with healthier ingredients is important. The use of stevia as a natural sweetener is one of the alternatives because it does not contain calories and has a zero glycemic index, and has antihyperglycemic, antihypertensive, and anti-inflammatory activities (Uyun et al., 2025). In addition, innovation can also be made through the use of inulin flour as a source of prebiotic fiber (Sunarti et al., 2022) and MOCAF flour as a gluten-free wheat flour substitute (Manik et al., 2023).

A number of studies have shown that the use of inulin can produce products with a low glycemic index (Puspaningtyas et al., 2022), while the use of MOCAF is able to improve the characteristics of the product without significantly degrading its sensory quality (Sadiyah, 2025). However, studies that combine inulin flour, MOCAF flour, and stevia sugar in the product brownies crispy still limited. In addition, previous research generally only focused on the physical characteristics or glycemic index of products, while studies on nutritional content and acceptability at the same time have not been widely conducted. Therefore, this study aims to determine the effect of substitution of inulin flour and MOCAF flour with stevia sugar on fiber content, acceptability and nutritional economic value in brownies crispy.

RESEARCH METHODS

This study is a laboratory experimental study using a complete random design (RAL) consisting of one control formula (F0) and four modified formulas (F1, F2, F3, and F4). The panelists in this study consisted of 3 limited panelists for the preliminary test and 30 untrained panelists aged 19–29 years for the hedonic test. The observed variables included organoleptic characteristics in the form of color, aroma, taste, texture, aftertaste, and nutritional content of crispy brownies. Data collection was carried out using organoleptic test sheets and calculation of nutritional content based on the formulation of the ingredients used. The data obtained were statistically analyzed using the Shapiro-Wilk test to determine the normality of the data, then followed by the Kruskal-Wallis and Mann-Whitney tests to determine the differences between treatment formulas.

RESULTS AND DISCUSSION

The research process includes preliminary research, data analysis, and presentation of results which lasts from November 2025 to March 2026. Product manufacturing and development activities as well as organoleptic tests of trained panelists were carried out at the Processing Laboratory of the Nutrition Study Program, Faculty of Public Health, Universitas Airlangga, while the hedonic test of untrained panelists on adult respondents was carried out at Universitas Airlangga Campus C, Surabaya. The analysis of nutritional content, especially the fiber content in the best formula for crispy brownies, was carried out at the Nutrition Laboratory, Faculty of Public Health, Universitas Airlangga.

The following is the formulation of ingredients in the form of substitution of inulin flour, mocaf flour, and stevia sugar in making crispy brownies.

Table 1. Ingredients of Crispy Brownies Formulation

Ingredients	Units	Formula				
		F0	F1	F2	F3	F4
Wheat	g	60	30	20	10	0
Mocaf Flour	g	0	24	32	40	48
Inulin Flour	g	0	6	8	10	12
Chocolate Bars	g	40	40	40	40	40
Blueband	g	10	10	10	10	10
Eggs	g	45	50	50	50	50
Refined sugar	g	50	10	10	10	10
Stevia sugar	g	0	3,6	3,6	3,6	3,6
Salt	g	1	1	1	1	1

Source : Mutyasih, et al. (2023)

After the data analysis was carried out, the results of the next study were presented based on two main aspects, namely the panelists' acceptance of the sensory characteristics of crispy brownies and the analysis of the nutritional content of the product which includes energy, fat, and fiber content in each treatment formulation.

Crispy Brownies Acceptability

Table 2. Organoleptic Test Results and Acceptability of Crispy Brownies

Parameter	Mean			p-value
	F0	F1	F3	
Aroma	4,93	4,57	5,03	0,689
Color	5,43	5,4	5,27	0,188
Taste	5,07	4,47	4,97	0,047
Aftertaste	5	4,07	4,40	0,645
Tekstur	5,23	5,10	5,37	0,002

Source: Primary Data, 2026

Description: The formulations used are F0 (Crispy Brownies without MOCAF flour substitution, inulin flour and stevia sugar), F1 (Crispy Brownies with MOCAF flour substitution 24g, inulin flour 6g and stevia sugar 8g), and F3 (Crispy Brownies with MOCAF flour substitution 40g, inulin flour 10g and stevia sugar 8g).

In this study, crispy brownies were formulated with the substitution of inulin flour, MOCAF flour, and stevia sugar through several variations of the formula (F0 as a control to F4 as a modification). The results of the preliminary test showed that there was a difference in acceptance between the formulas. Hedonic tests showed a variation in the level of preference for sensory attributes, where one of the modified formulas obtained a higher acceptance value than the other. These results indicate that ingredient substitution not only affects sensory characteristics, but also plays a role in increasing product acceptability. Statistically, the analysis using the Kruskal-Wallis test showed a significant difference ($p<0.05$) between treatments, which was then followed by the Mann-Whitney test to find out the specific differences between the formulas (Sarastani et al., 2023). Based on the overall results, an optimal formula was obtained that has a balance between sensory quality, nutritional content, especially fiber, and the acceptance rate of the panelists, so that it has the potential to be a healthier functional snack alternative.

Aroma

Smell is a sensory attribute that comes from volatile compounds and is received by the sense of smell. In food products, aroma plays an important role because it affects the perception of quality and the level of consumer acceptance (Rahmadhanimara & Purwinarti, 2022). Based on Table 2, the aroma brownies crispy the formulas F0, F1, and F3 show different levels of likes in the "likes" category, with an average value of 4.93 each; 4.57; and 5.03. Although the F1 and F3 modified formulas have a distinctive aroma of flour derived from the use of MOCAF flour, this does not reduce

the acceptance rate of the panelists. On the contrary, the resulting aroma is still very well tolerated, and even tends to be preferred in modified formulas (F3). This shows that the distinctive scent is not considered a less preferred characteristic, but rather as a characteristic that still matches the panelists' preferences. The results of the statistical test showed a $p > 0.05$ value, namely p-value 0.188, which means there is no significant effect of the substitution of inulin flour, MOCAF flour and stevia sugar on aroma brownies crispy.

Color

Color is one of the characteristics of organoleptic assessment of products brownies crispy done by the panelists. Based on Table 2, the color characteristics brownies crispy in the formulas F0, F1, and F3 show relatively similar levels of preference with an average value of 5.43 each; 5.40; and 5.27 which are included in the category of "likes" to "very likes". Visually, the resulting colors in the control and modification formulas did not show any noticeable differences, ranging from slightly brownish black to dark brown. This indicates that the use of inulin flour, MOCAF flour, and stevia sugar in the formulation does not provide a significant discoloration, so the color brownies crispy Overall it was still well received by the panelists. This is in line with studies that report that sugar substitution with low-calorie sweeteners and the addition of inulin did not cause a significant difference in the color attributes of the product, as the color was more influenced by the reaction Maillard and caramelization during the baking process (Banu et al., 2025). The results of the statistical test showed a $p > 0.05$ value, namely p-value 0.689, which means that there is no significant effect of substitution of inulin flour, MOCAF flour and stevia sugar on color brownies crispy.

Taste

Taste is a sensation that arises due to the interaction of chemical compounds that are soluble in saliva with taste receptors in the gustatory system, then passed on to the brain to be interpreted as certain perceptions. Each basic flavor is related to specific compounds, such as the sweetness of sugar or non-caloric sweeteners, and is influenced by the complexity of sensory interactions in the body (Gutierrez & Simon, 2021). Based on Table 2, the most preferred modification formula by untrained panelists was F3 with an average value of 4.97. The control formula (F0) and the modified formula (F1 and F3) show differences in flavor characteristics. The F0 control formula has a sweet taste, while the modified F1 formula tends to have a very sweet taste with aftertaste a little bitter. Meanwhile, the F3 formula has a slightly sweet taste and aftertaste It's a bit bitter. This difference is influenced by the use of stevia as the main sweetener as well as the substitution of MOCAF flour and inulin flour. This is in line with research stating that the use of stevia can affect the taste, as well as cause a bitter sensation due to the content of rebaudiocide compounds and tannins (Aji & Nurjanah, 2025). The results of the statistical test showed $p < 0.05$ namely p-value 0.047, meaning that there is a significant effect of the substitution of inulin flour, MOCAF flour, and stevia sugar.

Aftertaste

Aftertaste is a taste sensation that is still left in the mouth. Based on Table 2, the most preferred modification formula by untrained panelists was F3 with an average value of 4.4. The control formula (F0) has the highest average value of 5, while F1 has an average value of 4.07. Brownies crispy F1 has aftertaste rather bitter, whereas F3 has aftertaste Somewhat not bitter. Differences aftertaste The modified formula is caused by the proportion of MOCAF flour, inulin flour and stevia sugar which can affect the residual flavor characteristics after consumption. In addition, the processing process such as temperature and baking time also play a role in the formation of flavor compounds that affect the aftertaste. Research conducted by (Aji & Nurjanah, 2025) states that the use of stevia may cause aftertaste bitter due to the content of rebaudiocide compounds and tannins, especially at higher concentrations. The results of the statistical test showed a $p < 0.05$ value, namely p-value 0.002, which means that there is a significant difference between the substitution of inulin flour, MOCAF flour and stevia sugar against aftertaste brownies crispy. Some of the untrained panelists said that aftertaste brownies crispy Modification there is a rather bitter taste but not too disturbing.

Texture

Texture is one of the important factors that affect the level of acceptance of the food products served. Based on Table 2, F1, and F3 show the level of likes that are in the category of "likes" to "very likes", with an average value of 5.23 each; 5,10; and 5.37. Most of the panelists gave ratings on the likes category, which indicated that the texture brownies crispy In general, it is very well received. The F3 formula shows the highest average value. This difference is related to the composition of the ingredients used, specifically the proportion of MOCAF and inulin flour which affects the texture characteristics, such as the level of crispiness of the product. The increased use of MOCAF flour in the F3 formula contributes to the formation of a crispier texture, so it is well tolerated. This is in line with research that states that MOCAF flour substitution in products Bakery can affect the texture due to its low gluten characteristics, resulting in a more fragile and crispy structure of the product (Ibrahim et al., 2024). The results of the statistical test showed $p>0.05$ namely p-value 0.645, meaning that there is a significant influence of the substitution of inulin flour, MOCAF flour, and stevia sugar.

Overall Acceptability

The modified formula that obtained the best overall average value of acceptability (color, aroma, taste, and texture) according to the panelists was F3 with an average score of 5.01 Meanwhile, F1 had the lowest overall average with a score of 4.67. This shows that F3 is the most commonly preferred modified formula by the panelists.

Nutritional Content of Crispy Brownies

Table 3. Comparison of Nutritional Content of Crispy Brownies F0 and F3 per 100 g

Nutritional Content per 100 g of Formula	F3 Results	
	Literature	Lab Tests
Energy (kcal)	356,78	396,02
Fat (g)	12,76	4,98
Fiber (g)	9,43	8,08

Source: Primary Data, 2026

Based on Table 3 with calculations using literature, in 100 grams brownies crispy The F3 modification has an energy content of 356.78 kcal, 5.57 g of protein, 12.76 g of fat, 49.89 g of carbohydrates, and 9.43 g of dietary fiber. In addition, the nutritional content brownies crispy F3 at 100 grams includes energy of 396.02 kcal, protein 7.39 g, fat 4.98 g, carbohydrates 79.87 g, and dietary fiber 8.08 g. Laboratory test results of dietary fiber values on brownies crispy F3 was lower at 8.08 g compared to the results of the calculation of dietary fiber using literature (9.43 g). This can happen due to several factors, such as the processing process, especially heating during ovening, which can cause changes in the structure of food components, including fiber, as well as changes in nutrient levels during the process. This is in line with research that states that inulin as a type of fructan has low stability to heat treatment, where heating can cause structural degradation and decrease in its content (Maina et al., 2021).

The value of dietary fiber based on laboratory tests has met the criteria for the claim of "high fiber" according to the Regulation of the Head of the Food and Drug Supervisory Agency (BPOM), which is more than 6 grams per 100 grams of product. In its presentation, crispy brownies weighing 65 grams per serving can be consumed in two interlude times, each of 32.5 grams, namely between breakfast and lunch and between lunch and afternoon. This distribution aims to optimize consumption and minimize food waste. With this content, the consumption of one serving of crispy brownies (65 grams) has contributed to meeting daily fiber needs, so this product has proven to be suitable for consumption as an alternative interlude food for adults 19-29 years old.

High fiber content in brownies crispy relevant in efforts to prevent and control nutritional problems, especially obesity in the adult group. Obesity is one of the nutritional problems that can arise in various age groups, including adults, and is characterized by excess body fat due to an imbalance between energy intake and energy expenditure in the long term which can increase the risk of various metabolic diseases (Kohir et al., 2024). Low fiber consumption in the community is one of

the factors that worsens this condition, so food innovations are needed that can increase fiber intake. Therefore, the development of brownies crispy with the substitution of inulin flour, MOCAF flour, and stevia sugar, it is expected to produce products with higher fiber content and better nutritional quality.

Substitution of inulin flour, MOCAF flour, and stevia sugar can increase the dietary fiber content of food products. Dietary fiber is known to have an important role in maintaining body health, including helping to control weight, supporting digestive tract health, and contributing to lowering blood cholesterol levels and controlling glucose levels. The recommended fiber needs in adult women and men (19-29 years) according to AKG is 32-37g/day. Thus, adequate fiber consumption can reduce the risk of diabetes mellitus and cardiovascular disease (Nisrina et al., 2024). In addition to fiber, energy and fat also affect the incidence of obesity. High calorie and fat consumption in adults over a long period of time will lead to obesity.

Adequacy of Nutritional Content (Energy, Fat, and Fiber) of Crispy Brownies

The calculation of the nutritional content of crispy brownies is compared to the 2019 Nutritional Adequacy Rate (AKG) in adults 19-29 years old and is reduced by 500 kcal due to obesity conditions to determine the percentage of meeting needs. The need used for reference is the need for interlude food, which is 10-15% of daily needs. The following is the nutritional value of the best modified (F3) crispy formula brownies per serving based on laboratory tests.

Table 4. Nutritional Adequacy of Crispy Brownies (65 g)

Nutrition	Gender	Daily Intake Requirement (AKG)	Interlude Needs	Laboratory Test Results	% Fulfillment
Energy	Women	1750 kcal	10-15%	239,86	14,71
	Male	2150 kcal			11,97
Fat	Women	65 g		3,24	4,98
	Male	75 g			4,32
Fiber	Women	32 g		5,25	16,41
	Male	37 g			14,19

Based on Table 4, the results of laboratory tests show that the best modified crispy formula (F3) brownies contain energy, fiber, and fat that are able to contribute to nutritional fulfillment in adults aged 19-29 years. In each serving (65 grams) this product contains 239.86 kcal of energy, 3.24 grams of fat, and 5.25 grams of fiber. The fiber content contributes to meeting the daily fiber requirement of 14.19-16.4% in the adult age group.

CONCLUSIONS

Based on the results of the study, the substitution of MOCAF flour, inulin flour, and stevia sugar in crispy brownies affects the acceptability and nutritional content of the product. The results of organoleptic and hedonic tests showed significant differences in taste, aftertaste, and overall acceptance, proving that the use of substitute ingredients affected the panelists' preference level for crispy brownie products. In addition, the products produced have energy, fat, and fiber content that is in accordance with the needs of adult interlude foods aged 19-29 years and meets the criteria for high-fiber foods based on BPOM regulations, so it has the potential to be a healthier alternative to interlude food. Further research is recommended to conduct laboratory testing on all formulas, shelf life testing, and consumer preference tests on a wider scale so that the research results become more comprehensive.

REFERENCES

- Aini, N., Prameswari, D., & Putri, R. (2022). Consumer preference toward scrispy brownies as modern snack innovation. *Journal of Culinary Science and Hospitality*, 11(1), 22–30.
- Aji, A. S., & Nurjanah, R. (2025). Pengembangan Produk Brownies Labu Kuning (Cucurbita Moschata) dengan Substitusi Pemanis Alami Daun Stevia (Stevia Rebaudiana) sebagai Pangan Fungsional. *Amerta Nutrition*, 9(2), 186–198.
- Arziyah, D., Yusmita, L., & Wijayanti, R. (2022). Analisis mutu organoleptik sirup kayu manis dengan modifikasi perbandingan konsentrasi gula aren dan gula pasir. *Jurnal Penelitian Dan Pengkajian Ilmiah Eksakta*, 1(2), 105–109.
- Azwa, Y., & Rosmiati, M. (2025). Uji Hedonik Masker Peel Off yang Beredar Di Kota Bandung. *Journal of Pharmacy Student (JPhaS)*, 3(1), 9–17.
- Banu, A., Watawana, M., Ryan, G., Pogorzalek, M., Granato, D., & Sarda, F. (2025). A study on optimizing functional oats and quinoa cookies: the role of fiber in enhancing texture, taste, and sensory acceptance of Rebaudioside A-sweetened formulation. *Functional Food Science-Online ISSN: 2767-3146*, 5(12), 690–702.
- CahyanI, S. A. N., Ulfa, R., & Setyawan, B. (2022). Pengaruh Penambahan Simplisia Daun Stevia (Stevia Rebaudiana) Terhadap Karakteristik Kimia Dan Organoleptik Jamu Instan: The Effect of The Addition of Stevia Leaf Simplicia (Stevia Rebaudiana) On The Chemical and Organoleptic Characteristics of Instant Jamu. *Jurnal Teknologi Pangan Dan Ilmu Pertanian (JIPANG)*, 4(2), 1–7.
- Englardi, N. P., & Cleodora, C. (2022). Gambaran sedentary lifestyle, aktifitas fisik, dan keluhan pada tubuh karyawan usia produktif di kantor balai kota padang 2021. *Jurnal Kesehatan Kusuma Husada*, 77–83.
- Gutierrez, R., & Simon, S. A. (2021). Physiology of taste processing in the tongue, gut, and brain. *Comprehensive Physiology*, 11(4), 2489–2523.
- Hastati, D. Y., Fajri, A. I., Febrinda, A. E., Anggarkasih, M. G., Trianawati, M. L., Fatimah, A. I. F., Sarastani, D., Mariyani, N., Adzkiya, M. A. Z., & Suhaima, N. R. (2025). Consumer Perception and Market Entry Strategy for a Novel MOCAF-Based All-Purpose Seasoning: Persepsi Konsumen dan Strategi Masuk Pasar untuk Produk Tepung Bumbu Serbaguna Berbasis MOCAF yang Inovatif. *Journal of Integrated Agribusiness*, 7(1), 1–12.
- Ibrahim, M. I., Fizriani, A., & Mardiana, M. (2024). Karakteristik fisikokimia dan organoleptik mi kering dengan substitusi tepung mocaf (modified cassava flour) dan tepung daun singkong (manihot utilissima). *Journal of the Science of Food and Agriculture*, 1(1).
- Jaya, F., Radiati, L. E., Prayogi, H. S., Masyithoh, D., & Agustini, D. (2024). Development of Inulin-Enriched Honey Powder for Further Application in Prebiotic Biscuits. *Jurnal Ilmu-Ilmu Peternakan*, 34(3), 379–390.
- Kohir, D. S., Murhan, A., & Sulastri, S. (2024). Skrining Faktor Risiko Obesitas Usia Produktif. *Jurnal Wacana Kesehatan*, 9(2), 97–104.
- Maina, N. H., Rieder, A., De Bondt, Y., Mäkelä-Salmi, N., Sahlstrøm, S., Mattila, O., Lamothe, L. M., Nyström, L., Courtin, C. M., & Katina, K. (2021). Process-induced changes in the quantity and characteristics of grain dietary fiber. *Foods*, 10(11), 2566.
- Manik, G. O., Agustini, T. W., & Romadhon, R. (2023). Karakteristik Brownies Panggang Ikan Teri (Stolephorus spp.) dengan Penggunaan Tepung Mangrove Api-Api (Avicennia marina) dan Tepung Mocaf. *Jurnal Ilmu Dan Teknologi Perikanan*, 5(2), 71–81.
- Nabila, M. T., Tsani, A. F. A., Rahadiyanti, A., & Dieny, F. F. (2021). Pengaruh Pemberian Diet Isokalori Tinggi Serat terhadap Tingkat Satiety pada Kelompok Usia Dewasa Awal. *Amerta Nutrition*, 5(3), 237–244.
- Nisrina, O. S., Sulistyowati, E., Luthfiyah, F., & Sutjiati, E. (2024). Beban Glikemik Diet Diabetes Melitus, Tingkat Konsumsi Energi, Protein, dan Serat Kaitannya dengan Kadar Glukosa Darah

- Pasien Diabetes Melitus Tipe 2. *Nutriture Journal*, 3(2), 57–66.
- Puspaningtyas, D. E., Nekada, C. D. Y., & Sari, P. M. (2022). Penambahan inulin terhadap indeks glikemik dan beban glikemik cookies growol: pengembangan makanan selingan diabetes. *AcTion: Aceh Nutrition Journal*, 7(2), 169–178.
- Rahadian, F. A., Wahyuningsih, U., & Simanungkalit, S. F. (2024). Factors Associated with the Incidence of Obesity among College Students at Fakultas Ilmu Kesehatan Universitas Pembangunan Nasional" Veteran" Jakarta. *Amerta Nutrition*, 8, 24.
- Rahmadhanimara, R., & Purwinarti, T. (2022). Sensory marketing: Aroma dan cita rasa terhadap pembentukan persepsi konsumen (studi kasus: gerai roti o di Stasiun KRL Commuter Line Jakarta Selatan). *Epigram*, 19(2), 162–173.
- Sadiah, I. I. S. (2025). Karakteristik Fisik dan Organoleptik Mie Kering dari Kombinasi Tepung Ubi Jalar Oranye dan Mocaf: Physical and Organoleptic Characteristics of Dry Noodles from a Combination of Orange Sweet Potato Flour and Mocaf. *Journal of Innovative Food Technology and Agricultural Product*, 27–32.
- Sunarti, S., Ginting, C. N., & Ginting, S. F. (2022). Narative Review: Potensi Inulin Umbi Dahlia sebagai Anti Diabetes. *Jurnal Keperawatan Priority*, 5(1), 53–65.
- Ullah, M. I., & Tamanna, S. (2025). Obesity: clinical impact, pathophysiology, complications, and modern innovations in therapeutic strategies. *Medicines*, 12(3), 19.
- Uyun, H. S. K., Fajrina, A., Wiliantari, S., Makmur, I., Oktavia, S., Bellatasie, R., Sari, Y. N., Kardela, W., & Octavia, M. D. (2025). Pelatihan Pembuatan Teh Stevia dan Manfaatnya Sebagai Pemanis alami. *Jurnal Pengabdian Masyarakat Bangsa*, 3(3), 1014–1019.
- Ventilanova, V., Trinugraha, Y. H., & Zuhri, S. (2023). Konstruksi Sosial Makanan Sehat Di Kalangan Pekerja Kesehatan Rumah Sakit Dr. Oen Surakarta. *Jisip (JURNAL ILMU SOSIAL DAN PENDIDIKAN) Учредители: Lembaga Penelitian Dan Pendidikan (LPP) Mandala*, 7(3), 2835.