

Sensory Characteristics of Edamame Soy Yogurt with Stevia Sweetener Based on Scoring and Hedonic Tests

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Abstract

Edamame soy yogurt is a beverage developed from yogurt made from edamame juice. One important aspect in the development of edamame soy yogurt is its sensory characteristics, which are attributes perceived by consumers. The purpose of this study was to determine the sensory characteristics of edamame soy yogurt sweetened with stevia. The research method used was organoleptic testing through scoring and hedonic testing, which included color, aroma, taste, texture, and overall appearance, with panelists selected using purposive sampling consisting of 30 nutrition students as trained panelists. The results of this study indicate that the use of stevia as a substitute for sucrose in edamame soy yogurt does not have a significant difference in organoleptic assessment and hedonic tests for color and aroma. However, there are significant differences in texture characteristics through assessment tests and taste characteristics through hedonic tests. Nevertheless, both organoleptic tests show significant differences in overall acceptance.

Keywords: Sensory characteristics, Soy yogurt, Edamame, Stevia

INTRODUCTION

Edamame soy yogurt is a yogurt-based beverage made from edamame juice. Edamame is a variety of young soybeans (*Glycine max*) that is rich in nutrients and has the potential to be used as a raw material for *plant-based yogurt*. Edamame-based yogurt products have great potential for development, especially among vegans, lactose intolerant individuals, and those who want alternatives to conventional dairy products. Demand for plant-based yogurt innovations is also driven by healthy eating trends and *the sustainability benefits* of plant-based ingredients (Grasso *et al.*, 2020).

One important aspect in the development of edamame soy yogurt is its sensory characteristics, namely attributes perceived by consumers such as taste, aroma, texture, and appearance. Research on plant-based yogurt shows that texture and taste are the main determinants of consumer acceptance; a less thick texture or the characteristic "beany" taste of soybeans can affect the hedonic score or overall preference for the product (Gupta *et al.*,

2022). Therefore, research on soy yogurt needs to evaluate how sensory attributes change with different formulations.

In an effort to reduce sugar content while maintaining consumer acceptance, alternative sweeteners such as Stevia rebaudiana have become the focus of modern food research. Stevia is a natural non-caloric sweetener known to be 200–300 times sweeter than regular sugar and does not contribute to the energy content of products, making it suitable for consumers who want low-sugar or healthy options (Meylia Aisyah Putri *et al.*, 2022). Previous studies on yogurt products have shown that the use of stevia can affect the flavor profile and other sensory attributes, such as the emergence of certain *aftertastes*, which in turn affect the comfort and liking scores of panelists in hedonic testing (Chadha *et al.*, 2022).

Scoring tests and hedonic tests are the main quantitative approaches in the analysis of food sensory characteristics. Scoring tests usually assess objective attributes such as texture or viscosity based on a numerical scale,

while hedonic tests measure consumers' subjective acceptance of aspects such as aroma and taste. Both types of tests provide comprehensive information on how formulation changes (e.g., stevia sweetener versus conventional sweetener) affect overall product preference and acceptability (Kartika *et al.*, 2019).

Given that edamame soygurt is still relatively new and differs from traditional cow's milk-based yogurt in terms of both substrate and organoleptic sensations, a systematic scientific study of its sensory characteristics is essential. This not only helps to understand how stevia affects sensory attributes, including the possibility of a bitter *aftertaste* or the dominance of certain flavors, but also provides a basis for the development of products that are more acceptable to consumers. Such findings are important for the food industry in providing healthier plant-based yogurt alternatives that still maintain high sensory acceptance in the broader market (Chadha *et al.*, 2022).

Despite the increasing interest in plant-based yogurt products, there is still a limited number of studies that specifically compare different edamame soygurt formulations using stevia as a sweetener in relation to their sensory characteristics. Previous research has largely focused on dairy-based yogurt or soy yogurt in general, without systematically evaluating how stevia substitution influences key sensory attributes such as taste, aroma, texture, and overall acceptability in edamame-based soygurt. Therefore, this study aims to analyze and compare the sensory characteristics of edamame soygurt formulated with stevia using scoring and hedonic tests. The findings of this research are expected to provide scientific evidence regarding the sensory impact of stevia in edamame soygurt and contribute to the development of healthier

plant-based yogurt alternatives with improved consumer acceptance.

METHOD

Research Materials and Tools

The ingredients used in making Soyghurt edamame were fresh edamame as the main ingredient, granulated sugar as a sweetener and energy source for fermentation bacteria, stevia sugar as a sugar substitute for diabetic patients, pandan leaves as a flavoring agent, *carboxymethyl cellulose* (CMC) as a thickener, and biokul as a yogurt starter.

The equipment used consisted of digital scales, digital scales with an accuracy of 0.01, basins, blenders, pots, filter cloths, spatulas, spoons, plastic gloves, new plastic bottles, and styrofoam boxes. Recording and labeling were done using ballpoint pens and label paper attached to each yogurt bottle.

Making Edamame Soyghurt

Shell the edamame and weigh as needed. Wash the weighed edamame thoroughly and boil in boiling water for 3 minutes to reduce the bitter taste. Separate the boiled edamame from the skins and blend with boiled water. Strain the blended edamame using a straining cloth to extract the edamame juice. CMC solution is added to the edamame juice and stirred until well blended. Pandan leaves and granulated sugar are added to the edamame juice and boiled. After boiling, the edamame juice is cooled to lukewarm and biokul is added as a yogurt starter. The edamame juice with the yogurt starter is stirred evenly and poured into sterilized plastic bottles. The packaged edamame yogurt is labeled and arranged in a styrofoam box for the fermentation process. The fermented edamame yogurt is ready to serve.

Scoring and Hedonic Tests

This study used organoleptic testing through scoring and hedonic tests, which included color, aroma, taste, texture, and

overall appearance. The numerical scale for the scoring test was determined using the Likert and Guttman methods. The number of panelists was determined using purposive sampling, with 36 nutrition students serving as

trained panelists to provide direct feedback on the sensory characteristics of the product. The scoring and hedonic test assessments can be seen in Table 1 and Table 2.

Table 1. Scoring test evaluation of edamame soy yogurt with stevia sweetener

Parameter	Numerical Scale
Color	1 = Very Pale Green 2 = Pale Green 3 = Slightly Pale Green 4 = Green 5 = Very Green
Aroma	1 = Very Mild 2 = Mild 3 = Slightly Foul 4 = Like 5 = Very pleasant
Taste	1 = Very sour 2 = Sour 3 = Slightly sour 4 = Like 5 = Really like
Texture	1 = Very thin 2 = Not thick 3 = Somewhat thick 4 = Thick 5 = Very Thick
Overall appearance	1 = Very Unacceptable 2 = Somewhat Acceptable 3 = Fairly Acceptable 4 = Acceptable 5 = Very Acceptable

Table 2. Hedonic test evaluation of edamame soy yogurt with stevia sweetener

Parameter	Numerical Scale
Color, Aroma, Taste, Texture, and Overall Appearance	1 = Very Disliked 2 = Somewhat Dislike 3 = Somewhat Like 4 = Like 5 = Very Like

Experimental Design

This study used a completely randomized design (CRD) with one factor, namely changing the ratio of sucrose and stevia use, consisting of 5 treatments. The research design can be seen in Table 3.

Table 3. Research design

Treatment	Sucrose (%)	Stevia (%)
F0	100	0
F1	75	25
F2	50	50
F3	25	75
F4	0	100

Statistical Analysis

Data analysis using analysis of variance (ANOVA) in Microsoft Excel and IBM SPSS Statistics 25.0. If significant differences are found, the data is reanalyzed using BNJ (Beda Nyata Jujur) at a significance level of 5%.

RESULTS AND DISCUSSION

Edamame soy yogurt was developed as a food innovation that is safe for people with diabetes mellitus because it uses stevia sweetener, which is a calorie-free sweetener. However, food product development cannot be separated from public acceptance of its sensory characteristics, so it is important to evaluate the sensory properties and palatability of the product. The researchers chose two complementary evaluation methods, namely scoring and hedonic tests. These two tests provide insight into panelists' preferences and sensory quality, including color, aroma, taste,

texture, and overall appearance of the product, which are very important for product development (Permadi *et al.*, 2019). The results of the organoleptic analysis of edamame soy yogurt, as shown in Table 4, indicate significant differences in the texture variable and overall acceptance in the scoring test. This shows that the panelists gave consistent ratings for the texture variable and overall acceptance, but not for other variables. In contrast to the scoring test results, the hedonic test results show two significant variables, namely taste and overall acceptance. This difference in results indicates that

although the panelists did not see clear differences in other scoring variables, they felt

significant differences in terms of taste and overall acceptance.

Table 4. Organoleptic Test Results for Edamame Soy Yogurt

Organoleptic	Results
Scoring:	
Color	NS (<i>p value</i> 0.509)
Aroma	NS (<i>p value</i> 0.308)
Taste	NS (<i>p value</i> 0.637)
Texture	S (<i>p value</i> 0.00)
Overall Acceptance	S (<i>p value</i> 0.001)
Hedonic:	
Color	NS (<i>p value</i> 0.132)
Aroma	NS (<i>p value</i> 0.064)
Taste	S (<i>p-value</i> 0.008)
Texture	NS (<i>p value</i> 0.776)
Overall	S (<i>p-value</i> 0.005)

Note:

NS = Non-Significant (No Significant Difference)

S = Significant (Statistically Significant)

Research by Adrianto *et al.* (2020) shows that scoring tests on yogurt using the *back slopping* method can consistently help identify panelists' preferences and provide the information needed to improve edamame soy yogurt products. Thus, the use of this test is expected to explain how panelists perceive various aspects of edamame soy yogurt, so that researchers can make the necessary adjustments to improve the quality of edamame soy yogurt products.

On the other hand, hedonic quality tests focus on assessing consumer likes or dislikes of a product (Triandini & Wangiyana, 2022). The hedonic quality test in this study used a rating scale, where panelists were asked to give scores based on their level of liking for the edamame soy yogurt product. According to Usman (2023), hedonic quality tests play a

very important role in understanding consumer preferences so that they can assist in decision-making related to yogurt product development. The use of hedonic quality tests in this study is expected to obtain clear quantitative data on how much the panelists like edamame soyghurt compared to other products, which will be the basis for further product development.

One reason for the difference in results between the two types of tests can be explained by the inherent nature of the methods used. According to Adera *et al.* (2022), scoring tests that require panelists to give numerical scores tend to be more objective but less sensitive to more subtle sensory aspects, such as nuances of taste. In contrast, hedonic quality tests allow panelists to convey their experiences in more specific terms, enabling them to better express

the differences they perceive in the taste and overall quality of edamame soy yogurt. The results of this study show that combining scoring tests and hedonic quality tests can provide a more comprehensive picture of panelists' acceptance of edamame soy yogurt products.

In addition, it is possible that the individual experiences and preferences of the panelists also influence the results. Sensory testing is often influenced by factors such as cultural background and consumption habits,

which may differ between panelists participating in scoring and hedonic tests (Handayani & Aini, 2022).

Color

The results of the organoleptic test using the scoring and hedonic methods for the color parameter are presented in Table 5. In the scoring analysis, the treatment formula that showed the highest color value was F2 (2.44), while the highest value in the hedonic test was F4 (4.03).

Table 5. Organoleptic Test Results for the Color of Edamame *Soyghurt*

Treatment	Average Color Score	
	Scoring	Hedonic
F0	2.25a	3.92a
F1	2.31a	3.67a
F2	2.44a	3.69a
F3	2.31a	3.92a
F4	2.06a	4.03a

Note:

Numbers followed by the same lowercase letter indicate Non-Significant or no significant difference (5%)

From the organoleptic test results table, it can be seen that treatment F4 with a sucrose:stevia composition of 0:100 produced a pale green color with the lowest color score (2.06) in the scoring test despite having the highest hedonic value (4.03). This shows that even though the color was less appealing, the panelists still liked the taste or other aspects of the soyghurt.

The difference in the scoring test and hedonic quality results may be due to a number of factors related to the ingredients and the edamame soyghurt manufacturing process, which affect the panelists' level of preference. In the manufacture of edamame soyghurt, edamame soybeans play an important role in providing a distinctive color. The local

edamame soybeans used in this study were obtained from PT. Mitratani 27 and have natural green pigments. The natural green color is also obtained from the addition of pandan, which gives a fresh impression to edamame soy yogurt (Ramadhan *et al.*, 2024).

Statistical analysis of color parameters, both scoring tests and hedonic quality tests, showed that the addition of sucrose and stevia sugar had no significant effect on edamame soy yogurt. This is in line with the opinion of Widodo *et al.* (2015), who stated that the addition of stevia sugar does not change the color of yogurt. In addition, the use of biokul starter, which plays a role in fermentation, can affect the final color of the product. The lactic

acid fermentation process resulting from the addition of biokul can produce antioxidant activity and give a bright green color (Diasari *et al.*, 2021). This is supported by research by Rosiana & Amareta (2016), which states that the use of biokul starter can affect the color of yogurt.

Aroma

Based on Table 6, the scoring test shows that F1 (75% sucrose: 25% stevia) has the highest aroma value, with an average of 3.75, categorized as "slightly bland." This means

that compared to other treatments that had a langu aroma according to the panelists, F1 had a more acceptable aroma. Meanwhile, the hedonic quality test placed F3 (25% sucrose: 75% stevia) as the most preferred (3.06, "like"). In other words, the highest intensity of the "langu" aroma does not automatically correlate with the level of preference. Panelists preferred samples with reduced/masked sour aroma and/or replaced by fermentative aromas like those typically found in yogurt.

Table 6. Results of the Organoleptic Test on the Aroma of Edamame *Soyghurt*

Treatment	Average Aroma Score	
	Hedonic	Hedonic
F0	3.28a	2.44a
F1	3.75a	2.94b
F2	3.44a	2.72ab
F3	3.72a	3.06b
F4	3.58a	3.00b

Note:

Numbers followed by the same lowercase letter indicate Non-Significant or no significant difference (5%)

The slightly rancid aroma in edamame soy yogurt comes from the main ingredient, edamame. Lipid oxidation compounds, particularly hexanal and 2-pentylfuran, are formed through the lipoxygenase pathway (Yang *et al.*, 2023). However, heating (80–90 °C, 20–25 minutes) and peeling the skin of edamame can inactivate enzymes and reduce the rancid aroma (Nur *et al.*, 2018). This is consistent with research by Blagden & Gilliland (2005) in Tao *et al.* (2022), which found that heating and/or fermentation can reduce the rancid aroma while producing new, more pleasant volatile compounds (e.g., 2,3-butanedione/diacetyl, acetaldehyde, acetoin). In soy/soy whey-based plant-based yogurt, fermentation by lactic acid bacteria (LAB) has

been shown to reduce >90% of off-flavors such as hexanal and 1-octen-3-one, while increasing compounds that contribute to a *creamy-buttery* and *fruity* impression, which generally increases panelist acceptance (El Youssef *et al.*, 2020).

The starter used in this study also plays a role in shaping the aroma perception of panelists. According to Jannah *et al.* (2014) in Rosiana & Amareta (2016), *Streptococcus thermophilus* can mask the rancid aroma in soy yogurt. During incubation at 37 °C/24 hours, these microbes produce acetaldehyde (a characteristic aroma of yogurt), *diacetyl* and *acetoin (buttery/creamy)*, as well as light esters that "mask" the langu aroma (Kaleda *et al.*, 2025).

The rancid aroma can also be masked by adding pandan during the boiling process. The rancid aroma of soybeans/edamame mainly comes from lipid oxidation (lipoxygenase activity) which forms aldehydes such as hexanal. Pandan extract contains phenolic and lipophilic components (squalene) with antioxidant activity that can inhibit oxidation and reduce the formation of langu volatiles during yogurt processing and storage (Yan *et al.*, 2025). This is in line with research by Ramadhan *et al.* (2024), which states that the addition of pandan tea to yogurt significantly affects the aroma of yogurt.

In addition, the composition of sucrose and stevia sugars also plays a role in the formation of edamame soyghurt aroma. Studies on fermented milk products show that a reduction in sucrose composition can be partially compensated by aroma modulation, but the sweet taste remains key to acceptance (Huang *et al.*, 2024). On the other hand, steviol glycosides (stevia) have a bitter aftertaste and tend to have a herbal aroma, which will

produce a more languid aroma when mixed with soy ingredients such as edamame if the proportions used are not appropriate (Crown *et al.*, 2024). This is why F4 with 100% stevia is not automatically the most preferred treatment, while a specific sucrose-stevia ratio reflected in F3 is preferred by panelists.

Taste

Based on the results of the organoleptic test of taste parameters using the scoring method presented in Table 7, it is known that the composition of stevia sugar addition in edamame *soyghurt* does not have a significant effect on taste parameters, while the hedonic method shows results that have a significant effect on taste parameters. The scoring test for flavor intensity found that F0 (100% sucrose) had a sour flavor with an average of 2.56, while the hedonic quality test showed that treatment F4 (100% stevia) was the most preferred by panelists with an average of 3.36. This difference in results may be due to a reaction between the sweeteners, sucrose and stevia, and the bacterial starter culture used.

Table 7. Organoleptic Test Results for *Soyghurt* Edamame Flavor

Treatment	Average Taste Score	
	Hedonic	Hedonic
F0	2.56a	2.56a
F1	2.19a	3.28b
F2	2.36a	3.25b
F3	2.31a	3.25b
F4	2.42a	3.36b

Note:

Numbers followed by the same lowercase letter indicate non-significant or no real difference (5%)

According to Agustine *et al.* (2018), sucrose is an easily fermentable carbon source for lactic acid bacteria (LAB). In plant substrates such as edamame juice, the addition

of sucrose has been shown to accelerate LAB growth and increase organic acid production, resulting in a more acidic taste (Gan *et al.*, 2023). Therefore, the treatment with full

sucrose (F0) obtained the highest "sour" score in the scoring test compared to the other treatments. This was the opposite of the treatment with full stevia sugar (F4). Steviol glycosides in stevia are non-fermentable by LAB and stable at low pH, so stevia does not react to form acid during incubation (Orellana-Paucar, 2023). In other words, treatments with higher stevia composition tended not to add new acidity, but rather produced a sweeter sensation that balanced the natural acidity resulting from fermentation (Orellana-Paucar, 2023). Therefore, treatment F4 with full stevia was preferred in the hedonic test.

The flavor parameters in this organoleptic test are also influenced by the biocul starter used. Fermentation by yogurt cultures is generally carried out by *Streptococcus thermophilus* and *Lactobacillus sp.*, which produce lactic acid, acetaldehyde, and other compounds that form the characteristic flavor of yogurt. In soygurt, some strains of lactic acid bacteria utilize sucrose when lactose is not available, therefore treatment with high sucrose tastes more acidic (Boulay *et al.*, 2020). The combination of stevia and sucrose can improve flavor acceptance, especially when the acidity level is not too high (Crown *et al.*, 2024).

Thus, it can be concluded that the scoring test captures how strong the acidity is, placing F0 as the highest treatment because sucrose stimulates fermentation, while the hedonic test captures how pleasant the overall taste parameters are, placing F4 as the highest treatment because the sweetness of stevia balances the acidity without adding new acid.

Texture

Based on the results of the organoleptic test of texture parameters using the scoring method presented in Table 8, it is known that the addition of stevia sugar to edamame *soyghurt* has a significant effect on texture parameters. However, based on the hedonic method, the results show no significant effect on the texture parameters of edamame *soyghurt*. Based on Table 5, it can also be seen that the texture scoring test showed that F0 (100% sucrose) received the highest score (3.42), meaning that the texture of edamame soy yogurt felt "somewhat thick" in this formulation. Meanwhile, the hedonic texture test did not show significant differences between treatments, although F1 (75% sucrose: 25% stevia) had the highest preference score (3.42). This means that even though the panelists felt that the texture was slightly thick in F0, overall they preferred the texture in another formulation, namely F1.

Table 8. Results of the Organoleptic Test on the Texture of Edamame *Soyghurt*

Treatment	Average Texture Score	
	Hedonic Score	Hedonic
F0	3.42a	3.17a
F1	3.33a	3.42a
F2	3.19b	3.28a
F3	2.69b	3.39a
F4	2.47b	3.22a

Note:

Numbers followed by the same lowercase letter indicate non-significant or no significant difference (5%)

The difference in texture in the edamame soyghurt formulation may be due to differences in the composition of sucrose and stevia. Sucrose can contribute soluble solids that help form the gel structure of yogurt (Narayana *et al.*, 2022). Meanwhile, Kalicka *et al.* (2017) stated that stevia sugar also has a thick texture (*curd hardness*) due to the production of exopolysaccharides by microbes or natural thickeners. However, the thick texture in the stevia treatment has cohesiveness that can decrease during storage, making it more pleasant on the tongue and more preferred by panelists.

The difference in texture in edamame soy yogurt can also be influenced by fermentation by the starter. According to research by Li *et al.* (2024), starters containing *Streptococcus thermophilus* and *Lactobacillus bulgaricus* can cause edamame protein denaturation, disulfide bond formation, and hydrophobic interactions, thereby forming a gel network and water holding capacity (WHC), which is important in the final texture of yogurt. Variations in sucrose and stevia levels affect the fermentation rate and gel formation. Sucrose triggers stronger fermentation, resulting in a denser gel (F0),

while stevia does not trigger fermentation, resulting in a looser but still adequate structure (Li *et al.*, 2024). Thus, although the F0 texture score is higher in intensity, the F1 formulation with a small amount of stevia provides a sufficiently thick yet "comfortable" texture, making it more preferred by panelists.

Overall

Based on the results of the overall parameter organoleptic test using the scoring and hedonic methods presented in Table 9, it is known that the addition of stevia sugar to edamame *soy yogurt* has a significant effect on the overall parameters. The organoleptic test results in Table 6 show differences between the panelists' assessments in the scoring and hedonic tests for the overall parameters. Treatment F4 (100% stevia) obtained the highest score in the scoring test (3.25) with the category "acceptable", while treatment F3 (25% sucrose: 75% stevia) showed the highest value in the hedonic test (3.44) with the category "like". This indicates that panelist assessments based on acceptance intensity (scoring) are not always directly proportional to the level of liking (hedonic).

Table 9. Organoleptic Test Results for Overall Parameters of Edamame *Soy Yogurt*

Treatment	Average Overall Score	
	Scoring	Hedonic
F0	2.58a	2.69a
F1	3.14b	3.36b
F2	3.22b	3.17b
F3	3.19b	3.44b
F4	3.25b	3.39b

Note:

Numbers followed by the same lowercase letter indicate Non-Significant or no significant difference (5%)

The high scoring on F4 is due to the use of 100% stevia, which is non-fermentable and therefore does not affect starter culture activity (Orellana-Paucar, 2023). This results in edamame soy yogurt with stable sweetness, controlled acidity, and consistent sensory profile. Stevia is also known to maintain sweetness without increasing acidity due to lactic acid bacteria metabolism (Tandrian *et al.*, 2024). Therefore, the panelists rated treatment F4 as a more acceptable product in terms of technical quality. However, in the hedonic test, the panelists preferred treatment F3. The combination of sucrose and stevia produces a more harmonious balance of sweetness and acidity than the use of stevia alone (Crown *et al.*, 2024). The presence of a small amount of sucrose provides an additional substrate for microorganisms that contribute to the formation of volatile compounds characteristic of yogurt, such as *acetaldehyde* and *diacetyl*. These compounds play an important role in providing the fresh aroma and taste characteristic of yogurt (Tao *et al.*, 2022). Thus, although F4 is more technically stable, F3 is more acceptable to panelists sensorily because it produces a more complex flavor profile that is closer to that of conventional yogurt.

The results of this study are in line with the research by Crown *et al.* (2024), which shows that fermented milk products with a mixture of natural sweeteners (sucrose) and high-intensity sweeteners (stevia, allulose) tend to have higher liking scores compared to the use of stevia alone. This is because the combination of the two sweeteners is able to mask the characteristic aftertaste of stevia while maintaining a familiar sweet taste for the panelists. Overall, the results of this study

indicate that the use of a 100% stevia composition (F4) is effective in producing a technically acceptable product, but the combination of sucrose and stevia in treatment F3 is superior in increasing panelist preference and acceptance.

CONCLUSION

Based on the results of this study, the use of stevia as a substitute for sucrose in edamame soy yogurt did not show any significant differences in organoleptic scoring and hedonic testing of color and aroma. However, there were significant differences in texture characteristics through scoring tests and taste characteristics through hedonic tests. Both scoring and hedonic tests also showed significant differences in overall acceptance.

For the organoleptic quality parameters of edamame yogurt, it was found that the highest scores for color were obtained in treatment F2, for aroma in treatment F1, for taste and texture in F0, and for overall acceptance in F4. Meanwhile, through the hedonic test, the highest values for organoleptic quality parameters were obtained in treatment F4 for color and taste, treatment F3 for aroma and overall acceptance, and treatment F1 for texture.

Overall, these findings indicate that substituting sucrose with stevia in edamame soy yogurt selectively influences sensory quality, particularly texture and taste, without adversely affecting color and aroma. This suggests that stevia can be applied as a low-calorie sweetener while maintaining visual and aromatic acceptance, although formulation optimization is required to improve mouthfeel and flavor balance. In line with the study objective, the observed differences among

treatments highlight the importance of sweetener concentration in determining overall consumer acceptance. Based on the combined results of scoring and hedonic tests, formulations F3 and F4 show the greatest potential for further development due to their higher acceptance scores, indicating that these formulations may serve as promising candidates for functional edamame-based yogurt products. Future product development should focus on refining texture and minimizing potential aftertaste to enhance consumer preference and market applicability.

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