Jurnal Ilmiah Mahasiswa
E-ISSN : 2988-6228

Fakultas Tarbiyah dan Keguruan
UIN Ar-Raniry- Banda Aceh

Volume 4, Issue 2, Desember 2026

Manuscript ID :434, Desember 2026
Page : 29-28

Organoleptic Properties of UHT Milk Yogurt with Banana Addition

Muhammad A'qil[1)], Nurmahni Harahap[2)], Halimatus Sakdiah Hasibuan[3)]

[1,2,3)]MTsN 1 Banda Aceh, Aceh
Corresponding Author: mmuhammadaqil21@gmail.com

Abstract. This study aimed to describe the organoleptic characteristics of yogurt made from Ultra-High Temperature (UHT) milk with added banana. The study used a simple experimental method with quantitative descriptive analysis. Yogurt was prepared from full-cream UHT milk with a plain yogurt starter, fermented at room temperature for approximately 24 hours, and served with mashed ripe banana. Organoleptic testing was conducted with 10 panelists who were Grade VIII students at MTsN 1 Model Banda Aceh, evaluating aroma, color, texture, and taste. The results showed acceptance score percentages of 80% for aroma, 72% for color, 80% for texture, and 86% for taste. Taste received the highest percentage because the natural sweetness of bananas could balance yogurt's characteristic sourness. Overall, UHT-milk yogurt with added banana was well accepted by the panelists and has potential for development as an alternative fermented food product based on local ingredients. However, because the study used only one formulation without a control group or variations in banana concentration, the results cannot be used to demonstrate a statistically significant effect. These findings are consistent with previous research indicating that bananas can influence yogurt acceptance.
Keywords: yogurt, UHT milk, banana, organoleptic properties, fermentation.

INTRODUCTION

Milk is a food rich in protein, fat, carbohydrates, vitamins, and minerals, making it widely used as a base ingredient for various food products. However, fresh milk has a relatively short shelf life, so diversification is needed to enable it to be processed into a wider range of convenient products. One form of milk diversification is yogurt, a fermented product produced through the activity of lactic acid bacteria. During fermentation, starter bacteria convert lactose into lactic acid, which contributes to yogurt's sour taste, texture, aroma, and characteristic properties (Le Ba et al., 2025; Rahmawati et al., 2023).(Le Ba et al., 2025; Rahmawati et al., 2023).

Yogurt is generally made using starter cultures of Lactobacillus delbrueckii subsp. bulgaricus and Streptococcus thermophilus. These two bacteria play a role in fermentation by producing lactic acid and lowering the pH of milk, thereby

developing yogurt's characteristic properties. Under certain conditions, using the cultures together can also produce better sensory characteristics than using a single culture (Tang et al., 2022). Therefore, the activity of lactic acid bacteria is one of the factors involved in the development of yogurt characteristics.(Tang et al., 2022)

Ultra-High Temperature (UHT) milk is a practical ingredient for yogurt production because it undergoes high-temperature processing for a short period and is packaged hygienically. This process gives UHT milk a longer shelf life than fresh milk, making it a convenient raw material for yogurt processing. The use of UHT milk in yogurt production has also been applied in research by Rahmawati et al. (2023), which examined the organoleptic characteristics of yogurt made from UHT milk based on aroma, taste, color, and overall acceptability. That study provides a point of comparison for the present research because both studies use UHT milk as the yogurt base and evaluate product characteristics through organoleptic testing (Anggara Putra & Jumiono, 2021; Rahmawati et al., 2023).(Rahmawati et al., 2023)(Anggara Putra & Jumiono, 2021; Rahmawati et al., 2023).

In addition to the type of milk and starter culture, yogurt characteristics can be developed by adding other food ingredients, including bananas. Bananas are relatively easy to obtain, have a distinctive taste and aroma, and contain carbohydrates, fiber, vitamins, minerals, and various bioactive compounds, making them potentially useful as an ingredient in yogurt products (Basaria Pakpahan et al., 2024). Bananas can also provide natural sweetness and color to yogurt (Joseph Ago & Santosa, 2015).(Basaria Pakpahan et al., 2024)(Joseph Ago & Santosa, 2015)

The addition of bananas to yogurt is also relevant to the development of synbiotic products. Bananas may serve as a source of prebiotics, including inulin, which can support the survival of probiotic bacteria in yogurt (Amelia et al., 2022). In addition to their potential as a food ingredient for yogurt development, bananas can provide distinctive sensory characteristics in terms of taste, aroma, color, and texture.(Amelia et al., 2022). Previous research on adding bananas to yogurt provides a basis for comparison. That research examined the use of bananas in yogurt development and indicated that banana addition was associated with taste characteristics and panelists' liking (Amelia et al., 2022). The previous study differs

from the present research because this study does not use banana puree as part of a synbiotic formulation or measure inulin content; instead, ripe bananas are added to UHT-milk yogurt.(Amelia et al., 2022)

Studies using other fruit ingredients also indicate that natural additions can affect yogurt properties. One study found that supplementing yogurt with fruit extract can affect physical and chemical properties, such as viscosity and total acidity (Permadi et al., 2021). Another study developed UHT-milk yogurt with the addition of red dragon-fruit peel and evaluated the product experimentally (Hiola et al., 2024). These studies are similar in their use of UHT milk and fruit-based additions, but differ in the type of added ingredient and analytical focus.(Permadi et al., 2021).(Hiola et al., 2024)

Based on these previous studies, there is still room to examine the organoleptic acceptability of UHT-milk yogurt with added banana using a simple preparation method and direct panelist evaluation. This study does not aim to statistically prove the effect of banana addition; rather, it describes the product's organoleptic characteristics and level of acceptability based on panelists' assessments. Therefore, this study aims to describe the organoleptic characteristics of UHT-milk yogurt with added banana in terms of taste, aroma, color, and texture.

METHODS

Questionnaire data were analyzed using quantitative descriptive analysis by calculating the frequency of responses in each rating category. The percentage for each category was calculated using the formula $P = f/n \times 100\%$, where P is the percentage, f is the response frequency, and n is the total number of panelists. The results were then presented in tables and descriptive explanations.

The equipment used included a saucepan, glass cups, spoons, a bowl, glass bottles, a stove, cloth or a towel, a covered plastic container, and a blender. All equipment was cleaned and sterilized with hot water beforehand to reduce the risk of contamination.

The ingredients used in this study were 1 liter of full-cream UHT milk, 80 grams or approximately 80 ml of plain yogurt starter (Biokul), and 2 ripe bananas. Full-cream

UHT milk was used as the base for yogurt production, while the plain yogurt starter (Biokul) served as the starter culture to facilitate milk fermentation. After fermentation was complete, ripe bananas were added to produce yogurt with different organoleptic characteristics, particularly in terms of taste, aroma, color, and texture.

The process began by heating the milk until small bubbles appeared around the edges of the saucepan, without bringing it to a boil. The milk was then cooled to approximately 40–45 °C. The plain yogurt starter was mixed with a small amount of warm milk, returned to the milk, and stirred until homogeneous. The mixture was placed in a covered container, wrapped in cloth or a towel, and fermented at room temperature for approximately 24 hours. During fermentation, lactic acid bacteria convert lactose into lactic acid, resulting in a thicker texture and the characteristic taste and aroma of yogurt (Negeri Padang et al., 2021; Soni Muhsinin et al., 2017). After fermentation, the yogurt was chilled in a refrigerator. The ripe bananas were mashed and mixed with the yogurt before the product was served to the panelists.(Negeri Padang et al., 2021; Soni Muhsinin et al., 2017)

Study data were collected through direct observation and an organoleptic-test questionnaire administered to 10 panelists who were Grade VIII students at MTsN 1 Model Banda Aceh. The evaluated aspects were aroma, color, texture, and taste, based on the rating scale provided in the questionnaire. A five-point Likert scale was used: Strongly Agree (SA) = 5, Agree (A) = 4, Moderately Agree (MA) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1. Each panelist's response was assigned a score according to its category, and the scores from all panelists were added to obtain a total score for each organoleptic aspect. The score percentage was calculated by comparing the obtained score with the maximum score using the formula: Score percentage = (score obtained / maximum score) × 100%. The maximum score was calculated by multiplying the number of panelists by the highest score on the rating scale. These calculations were used to describe panelists' acceptance of UHT-milk yogurt with added banana (Arif Rachman et al., 2024). The percentage was calculated using a simple percentage formula (Anisa Fitri et al., 2023).(Arif Rachman et al., 2024)(Anisa Fitri et al., 2023)

RESULTS AND DISCUSSION

Yogurt Preparation Results

After approximately 24 hours of fermentation, the milk became thicker and developed a characteristic yogurt aroma. After cooling, the yogurt's texture became firmer. Adding ripe bananas provided natural sweetness, a yellowish color, and a softer texture. These changes are associated with fermentation by lactic acid bacteria, which convert lactose into lactic acid and thereby alter yogurt's physical and sensory characteristics, including its thicker texture and characteristic taste and aroma (Wulanningsih, 2022).(Wulanningsih, 2022).

Organoleptic Test Results

Based on the processing of organoleptic-test data from 10 panelists, score percentages were obtained for the four evaluated aspects—taste, aroma, texture, and color—as presented in Table 1.

Table 1. Percentage Results of the Yogurt Organoleptic Test

No.	Aspect	Percentage
1.	Taste	86%
2.	Aroma	80%
3.	Texture	80%
4.	Color	72%

For taste, 5 panelists gave an Agree (A) rating (50%), 4 gave a Strongly Agree (SA) rating (40%), and 1 gave a Moderately Agree (MA) rating (10%). Based on the weighted Likert scale, taste obtained a score percentage of 86%, making it the aspect with the highest level of acceptance. The high rating for taste indicates that the combination of yogurt's characteristic sourness and the natural sweetness of bananas was well accepted by the panelists. The sour taste develops during fermentation, while bananas provide an additional sweet flavor to the yogurt.

These results are consistent with research showing that adding banana-based ingredients to yogurt is associated with taste characteristics and panelists' acceptance (Amelia et al., 2022). Thus, the present findings support previous results suggesting that bananas may be an ingredient capable of providing acceptable sensory characteristics in yogurt, although acceptance may still depend on the form and quantity of the ingredient added.(Amelia et al., 2022)

For aroma, 6 panelists gave an Agree (A) rating (60%), 2 gave a Strongly Agree (SA) rating (20%), and 2 gave a Moderately Agree (MA) rating (20%). Based on the weighted Likert scale, aroma obtained a score percentage of 80%. This indicates that the aroma of UHT-milk yogurt with added banana was well accepted by the panelists. Yogurt aroma is associated with fermentation, while the addition of bananas provides an additional aroma to the product. The combination of yogurt and banana aromas in the formulation used was acceptable to the panelists. Previous research has also shown that added ingredients and formulation can affect yogurt aroma (Joseph Ago & Santosa, 2015).(Joseph Ago & Santosa, 2015). For texture, 6 panelists gave an Agree (A) rating (60%), 2 gave a Strongly Agree (SA) rating (20%), and 2 gave a Moderately Agree (MA) rating (20%). Based on the weighted Likert scale, texture obtained a score percentage of 80%.

These results indicate that the yogurt texture was well accepted by the panelists. During fermentation, the formation of lactic acid changes milk proteins, giving yogurt a thicker texture than milk before fermentation. After bananas were added, the texture was also influenced by the properties of the fruit, resulting in a softer consistency. Yogurt texture develops through acidification during fermentation, which causes milk proteins to coagulate (Wulanningsih, 2022).(Wulanningsih, 2022). For color, 6 panelists gave an Agree (A) rating (60%), while 4 gave a Moderately Agree (MA) rating (40%). No panelists gave a Strongly Agree (SA), Disagree (D), or Strongly Disagree (SD) rating. Based on the weighted Likert scale, color obtained a score percentage of 72%. This was the lowest value among taste, aroma, and texture. Nevertheless, the score of 72% indicates that the yogurt's color was still acceptable to the panelists. The addition of bananas changed the yogurt's appearance to a yellowish color. Differences in color acceptance may be influenced by the type and form of added ingredient, the quantity used, and the characteristics of the resulting yogurt. Previous research has also shown that fruit-based ingredients can be considered in the organoleptic evaluation of yogurt (Hiola et al., 2024). In addition, the quantity of fruit used can affect yogurt color intensity, making formulation an important consideration (Amelia et al., 2022).(Hiola et al., 2024)(Amelia et al., 2022)

Overall, the organoleptic-test results indicate that UHT-milk yogurt with added banana achieved good acceptance among the panelists. Based on the calculated score percentages, taste received the highest value (86%), followed by aroma and texture (80% each), while color received 72%. These results indicate that, in the formulation used, taste was the most preferred sensory characteristic, whereas color had the lowest acceptance among the evaluated aspects. The addition of bananas provided distinctive taste, aroma, and color characteristics. These findings also support previous research showing that fruit-based additions can affect the sensory characteristics of yogurt (Amelia et al., 2022; Miftachul Chusnah et al., 2022).(Amelia et al., 2022; Miftachul Chusnah et al., 2022).

CONCLUSION

Based on the findings, UHT-milk yogurt with added banana achieved acceptance score percentages of 80% for aroma, 72% for color, 80% for texture, and 86% for taste among 10 Grade VIII student panelists from MTsN 1 Model Banda Aceh. Taste had the highest acceptance, indicating that the panelists liked the combination of yogurt's sourness and the natural sweetness of bananas. Color received the lowest percentage and may therefore require further attention in product development. These results are consistent with previous research on banana-based yogurt, which reported an association between banana addition, taste characteristics, and sensory acceptance. UHT-milk yogurt with added banana has potential for development as a fermented product based on local food ingredients. However, because this study used only one formulation, without a control group or variations in banana concentration, the findings cannot determine an optimal concentration or demonstrate a statistically significant effect.

REFERENCES

Amelia, F. Y., Warkoyo, W., Manshur, H. A., & Husna, A. (2022). Karakteristik Organoleptik Yoghurt Sinbiotik dengan Penambahan Inulin Pure Pisang Barangan (Musa acuminata Colla). *Food Technology and Halal Science Journal*, *5*(1), 32–44. https://doi.org/10.22219/fths.v5i1.18760

Anggara Putra, I., & Jumiono, A. (2021). *Proses Pengolahan Susu Ultra High Temperature (Uht) Beserta Kemasan Yang Berpengaruh Terhadap Masa Simpan*.

Anisa Fitri, Rani Rahim, Nurhayati, Azis Sadrack Luden Pagiling, Irmawaty Natsir Anis Munfarikhatin, Daniel Nicson Simanjuntak Kartini Hutagaol, & Nanda Eska Anugrah. (2023). *Dasar-Dasar Statistika Untuk Penelitian* (Ronal Watrianthos, Ed.).

Arif Rachman, E. Yochanan, Andi Ilham Samanlangi, & Hery Purnomo. (2024). *Metode Penelitian Kuantitatif, Kualitatif Dan R&D* (S. Ag. , M. Pd. , M. Si. Dr. Bambang Ismaya, Ed.). CV Saba Jaya Publisher.

Basaria Pakpahan, S., Anjani, G., & Pramono, A. (2024). Peran Kandungan Zat Gizi Dan Senyawa Bioaktif Pisang Terhadap Tingkat Nafsu Makan : A Literature Review. *Journal of Nutrition College*, *13*(4), 382–394. https://doi.org/10.14710/jnc.v13i4.43280

Hiola, F., Rasdianah, N., Puluhulawa, L. E., & Paputungan, J. U. (2024). Pembuatan Yoghurt dengan Penambahan Kulit Buah Naga Merah (Hylocereus Polyrhizus) Sebagai Minuman Kesehatan. *Jurnal Farmasi Teknologi Sediaan Dan Kosmetika*, *1*(2), 72–81. https://doi.org/10.70075/jftsk.v1i2.27

Joseph Ago, A., & Santosa, B. (2015). *Banana Yogurt Making Of Skin And Feasibility Ambon Need (Type And Concentration Effect Stabillizer)*.

Le Ba, T., Dam, M. S., Nguyen, L. L. P., Baranyai, L., & Kaszab, T. (2025). A Review of Processing Techniques and Rheological Properties of Yogurts. In *Journal of Texture Studies* (Vol. 56, Number 1). John Wiley and Sons Inc. https://doi.org/10.1111/jtxs.70006

Miftachul Chusnah, Nurul 'Aini, Yessita Puspaningrum, Ana Mariatul Khiftiyah, Anggih Indah Yuliana, & Amrini Shofiani. (2022). Edukasi dan Pelatihan Pembuatan Yoghurt Buah sebagai Peluang Usaha Berbasis Komoditi Lokal kepada Warga Desa Banjarsari, Jombang. *Pertanian: Jurnal Pengabdian Masyarakat*, *3*, 141–145.

Negeri Padang, U., Hidayati, H., Afifi, Z., Reinetha Triandini, H., Permata Sari, I., Ahda, Y., Fevria Biologi, R., Matematika dan Ilmu Pengetahuan Alam, F., Negeri Padang Jln Hamka, U., Tawar Barat, A., & Barat, S. (2021). *Prosiding SEMNAS BIO 2021 Pembuatan Yogurt Sebagai Minuman Probiotik Untuk Menjaga Kesehatan Usus*.

Permadi, E., Suciati, F., & Lestari, R. B. (2021). Kualitas Yoghurt Susu Kambing PE Dengan Suplementasi Ekstrak Buah Lakum Terhadap Viskositas, Total Asam dan Total Padatan Terlarut. *Jurnal Sains Peternakan*, *9*(1), 40–47.

Rahmawati, S., Napirah, A., Fitrianingsih, F., & Kimestri, A. B. (2023). Karakteristik Organoleptik Yogurt Susu Ultra High Temperature (UHT) dengan Penambahan Bakteri Lactobacillus acidophilus. *Jurnal Ilmiah Peternakan Halu Oleo*, *5*(3), 240. https://doi.org/10.56625/jipho.v5i3.40172

Soni Muhsinin, Rahmat Rizaldi, & Dolih Gozali. (2017). *Formulasi Produk Minuman Probiotik (Yoghurt) Dari Sari Jagung Manis (Zea Mays L.) Dengan Penambahan Bakteri Probiotik Lactobacillus Bulgaricus Dan Streptococcus Thermophilus* (Vol. 3).

Tang, K., Huang, X., Yi, Y., Zhu, C., Deng, J., Ye, H., & Tang, J. (2022). Effect of Fermentation with Single and Co-culture of Lactobacillus bulgaricus and Streptococcus thermophilus on the Quality of Yogurt. *Science and Technology of Food Industry*, *43*(23), 127–132. https://doi.org/10.13386/j.issn1002-0306.2022020250

Wulanningsih, U. A. (2022). Pelatihan Pembuatan Yoghurt Susu Sapi Dengan Metode Sederhana Menggunakan Lactobacillus Bulgaricus Dan Streptococcus Thermophilus. *Jurnal Cerdik: Jurnal Pendidikan Dan Pengajaran*, *1*(2), 66–78. https://doi.org/10.21776/ub.jcerdik.2022.001.02.06