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Sensory Testing of Breadfruit as a Main Ingredient for Syrup

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Abstract. Breadfruit is a tropical fruit with potential for processing into various beverage products. This study aims to determine the level of consumer acceptance of breadfruit-based syrup through sensory testing. The method used in this study was an experimental method with two raw material processing treatments: steamed breadfruit and charcoal-grilled breadfruit before being processed into syrup. Sensory assessments were conducted by panelists, observing several attributes, including color, aroma, taste, and texture. The resulting data were then analyzed descriptively to determine the panelists' preference for each treatment. This study is expected to provide an overview of the sensory characteristics of breadfruit syrup and determine processing methods that produce better syrup quality. Furthermore, the results of this study are also expected to contribute to innovations in utilizing breadfruit as a value-added beverage product.

Keywords: beverage innovation, breadfruit processing, breadfruit syrup, sensory testing

Introduction

Indonesia has significant potential for developing local fruit-based food products, supported by its tropical climate, which allows a wide variety of plants to grow well year-round. One abundant local fruit commodity is breadfruit (Artocarpus altilis), which is readily available in various regions, yet its utilization remains relatively limited (Larasati et al., 2022). However, breadfruit boasts a comprehensive nutritional profile, including carbohydrates, fiber, vitamins, and minerals that are beneficial for the body, giving it the potential to be developed into value-added food products (Prastika et al., 2022).

Currently, breadfruit utilization in the community is dominated by simple processing methods, such as frying, boiling, or making chips. These conventional processing methods indicate that breadfruit's potential as a raw material for innovative food products has not been optimally utilized. This situation opens up opportunities for diversification of processed products that not only increase economic value but also expand the variety of breadfruit consumption, particularly in the form of beverages that have broader market appeal and are more practical to consume.

One potential development alternative is processing breadfruit into syrup. Syrup products are considered to have good prospects because they can increase the selling value of raw materials and extend product shelf life (Julyasih et al., 2025). Furthermore, syrup is a type of beverage that has a high level of acceptance among the public due to its preferred sweet taste and ease of preparation (Deva & Juniarta, 2023). Therefore, processing breadfruit into syrup not only has the potential for product innovation but also an effort to optimize the use of local food ingredients.

In food processing, the method used plays a crucial role in determining the quality of the final product. Processing methods such as steaming and baking can affect the product's sensory characteristics, including color, aroma, taste, and texture (Burhanuddin et al., 2026). These differences in methods can result in different product characteristics, making it important to determine which method produces a product with a better level of acceptance.

Therefore, sensory testing is necessary to evaluate the level of consumer acceptance of the resulting product based on human sensory perception (Linangsari et al., 2022). Through sensory testing, the extent to which the developed breadfruit syrup product is accepted by panelists based on the attributes of color, aroma, taste, and texture can be determined.

Based on this description, this study aims to analyze the sensory characteristics and panelist acceptance of breadfruit syrup processed using two processing methods: steaming and baking.

Literature Review

Breadfruit (Artocarpus altilis) is an alternative food source rich in carbohydrates and essential nutrients and has the potential to be developed into various processed food products. However, its utilization is still limited to simple preparations, necessitating product diversification to increase added value (Nendissa et al., 2026).

Syrup is a beverage product based on a high-concentration sugar solution mixed with fruit juice, characterized by a sweet taste and thick texture, and is easy to consume (Deva et al., 2023). Processing fruit into syrup can also extend shelf life and increase the economic value of the ingredients (Epriyani et al., 2025).

Processing methods such as steaming and baking can affect the physical and chemical properties of food ingredients, impacting sensory characteristics such as color, aroma, taste, and texture (Saraswati et al., 2022). Therefore, sensory testing is necessary to assess consumer acceptance of food products based on sensory perception (Arziyah et al., 2022).

Research Method

This research used an experimental method with two processing treatments: steaming and charcoal-fired. The research was conducted in the Kitchen Laboratory of STP AMPTA Yogyakarta in May 2026.

Ripe breadfruit was steamed and fired, then processed into syrup through crushing, cooking with sugar and water, and filtering to obtain the final product.

Sensory testing was conducted using the hedonic method by panelists, assessing color, aroma, taste, and texture on a scale of 1–5. Data were analyzed descriptively by calculating average scores to compare preferences for each treatment.

RESULTS AND DISCUSSION

Breadfruit Syrup Sensory Test Results

The results of sensory tests on breadfruit syrup using two processing methods are presented in Table 1.

Table 1. Sensory Test Results of Breadfruit Syrup

No	Attribute	Steaming	Burning
1.	Color	3,8	4,1
2.	Aroma	3,7	4,2
3.	Taste	3,9	4,3
4.	Texture	3,8	4,0

Table 1 shows that the baking method produced higher average scores for color, aroma, and flavor than the steaming method. Meanwhile, the difference in texture between the two treatments was not significant. This indicates that the baking method tended to yield higher levels of acceptance by panelists.

Discussion

The results showed that the processing method influenced the sensory characteristics of the resulting breadfruit syrup. The different treatments, steaming and baking, elicited different responses from panelists, particularly for color and aroma. The baking treatment produced higher scores for both attributes, possibly due to the caramelization reaction and the formation of aroma compounds during the heating process (Yuwana et al., 2022; Muchtar et al., 2023). The charcoal-fired process tends to produce a richer and more attractive color, making it visually more appealing to panelists. Furthermore, the distinctive aroma emanating from the baking process also creates a stronger and more appetizing impression.

In addition to color and aroma, the taste attribute also showed a clear difference between the two treatments. The taste score for the breadfruit syrup from the baking method was higher than that from the steaming method, likely influenced by changes in chemical components during the heating process (Azzahra, 2024). The baking process can trigger the formation of compounds that enrich the flavor, resulting in a more complex and stronger flavor. This made the product more appealing to panelists because it provided a more distinctive taste experience compared to the milder flavor produced by the steaming method.

Meanwhile, in terms of texture attributes, the difference between the two treatments was not significant. This indicates that the processing method used does not significantly affect the thickness or consistency of the resulting syrup (Khotimah et al., 2024). Syrup texture is more influenced by the composition of the ingredients, such as the sugar-to-water ratio, and the cooking process. Therefore, despite differences in initial processing methods, the final texture remains relatively similar.

Overall, the baking method provided superior sensory characteristics compared to the steaming method. This was evident in the higher scores for almost all assessed attributes, particularly color, aroma, and flavor. Therefore, the baking method may be a more effective choice in producing breadfruit syrup products with higher sensory appeal and higher panelist preference.

Conclusion

Based on the research results, it can be concluded that differences in breadfruit processing methods affect the sensory characteristics of the resulting syrup. The processing methods used, namely steaming and baking, resulted in differences in several attributes assessed by panelists, thus influencing product acceptance.

Sensory test results showed that breadfruit syrup processed using the charcoal baking method received higher ratings for color, aroma, and flavor compared to the steaming method, while there was no significant difference in texture. This indicates that the baking method produces stronger and more appealing product characteristics.

In general, panelists preferred breadfruit syrup processed using the baking method because it produced a more attractive color, distinctive aroma, and stronger flavor. Therefore, the baking method can be considered as an alternative processing technique in breadfruit syrup production to produce a product with better sensory qualities. Furthermore, the results of this study can also support the development of more innovative and value-added processed breadfruit products.

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