

Sensory Evaluation of Skinless Rabbit Longganisa (*Oryctolagus cuniculus*) as Influenced by Different Sugar Sources and Acceptability of Packaging and Labeling

Cynthia L. Hallarsis¹, Jesusa D. Ortuoste¹

¹ –Sultan Kudarat State University, EJC Montilla, Tacurong City, Philippines

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Abstract

Rabbit meat (*Oryctolagus cuniculus*) is gaining popularity globally due to its health benefits, being low in fat and rich in protein. Despite its recognized advantages, rabbit meat remains underutilized in many markets, particularly in processed products like sausages, where pork and beef are more prevalent. Consumer acceptance is often limited due to cultural perceptions, with rabbits commonly viewed as pets rather than food sources. The study was conducted in Poblacion Sto. Niño, South Cotabato, from March 4 to 6, 2025 to determine the sensory acceptability and commercial potential of skinless rabbit longganisa using different sugar sources as sweeteners. Laid out in Completely Randomized Design (CRD) with four (4) treatments: Brown Sugar (T1), White Sugar (T2), Honey (T3), and Muscovado Sugar (T4), each replicated three times. Sensory evaluation results revealed significant differences ($P < 0.05$) in parameters

such as taste, texture, appearance, color, and general acceptability, except for aroma, which showed no significant variation. Brown sugar (T1) emerged as the most preferred sweetener, earning the highest sensory scores with high Return on Investment (9%) among the treatment employed, while honey (T3) obtained the lowest ratings. Despite these differences, all treatments were generally well-accepted, with scores ranging from "Like Moderately" to "Like Extremely." Additionally, consumer feedback emphasized the importance of clear, informative, and aesthetically pleasing packaging, alongside a growing interest in environmentally sustainable materials. Overall both the choice of sweetener and the quality of packaging significantly affect consumer acceptance and marketability of skinless rabbit longganisa. Brown sugar is recommended for its superior sensory appeal and economic viability.

Keywords: *Sensory evaluation; sweeteners; Low fat; High protein; Rabbit meat*

Introduction

Rabbit meat (*Oryctolagus cuniculus*) is becoming more popular around the world. This is because it is healthy, low in fat, and high in protein. As more people look for healthier food, rabbit meat is a good choice instead of pork or beef (Padua et al., 2019). Rabbit meat has many benefits, such as sustainability, environmental advantages, and good nutrition. These factors make it a popular choice for health-conscious consumers (Dela Cruz et al., 2022). Despite its benefits, rabbit meat is not widely used in many markets, especially in processed forms like sausages, where pork and beef are more common (Fernando et al., 2018). Consumer acceptance remains also limited in many regions, often hindered by cultural perceptions, unfamiliarity, and sensory expectations (Petracci et al., 2018).

Longganisa is a conventional Filipino sausage that is common in many parts of the country. It is made with pork and comes in different flavors and styles, using spices, garlic, vinegar, and sugar. But today, people worry more about their health and the high price of pork. Because of this, rabbit meat is being seen as a good alternative for making longganisa (Gonzales & Reyes, 2018). Making a healthier longganisa using rabbit meat can meet the needs of health-conscious consumers while keeping the traditional taste.

Sensory evaluation provides valuable data about how consumers perceive the product and whether they would purchase it (Mejia et al., 2020). For rabbit longganisa to succeed, it must meet health standards and match the traditional flavor and texture that Filipino consumers expect. Evaluating these factors is important in product development.

This study aims to evaluate the consumer acceptance and sensory attributes specifically taste, aroma, color, appearance, consistency, texture, and general acceptability of skinless rabbit longganisa. By examining consumer perception through structured sensory evaluation. The research aims to explore consumer perception and determine if rabbit longganisa is a viable, nutritious alternative to pork-based products. Findings from this study will guide future innovations in alternative meat processing and contribute to the variation of protein sources in the local food industry.

Methodology

Research Design

This study utilized an experimental research design to determine how different sugar sources affect the sensory properties of rabbit longganisa. A completely randomized design (CRD) (Gomez, K. 1983) with different sugar sources serving as the treatments. Each treatment was replicated three times. Treatments were as follows: T1-Brown Sugar, T2 - White Sugar, T3- Honey and T4 -Muscovado sugar.

Research Locale

The study was conducted at Sto. Niño National High School, Sto. Niño, South Cotabato, from March 4 to 6, 2025, with a total duration of three (3) days.

Research Instrument

The study used a Hedonic Rating Likert Scale ranging from 9 to 1, where 9 indicated “like extremely” and 1 indicated “dislike extremely,” to assess participants’ preferences in terms of taste, aroma, color, appearance, texture, consistency, and overall acceptability. The rating scale used was the Hedonic 9-

Point Likert Scale of Measurement, developed and adopted by John Mark Noval (2023). The score sheets for the sensory evaluation were collected, recorded, totaled, summarized, and readied for analysis. Mean was used to determine its color, texture, aroma, taste, appearance, consistency, and general acceptability

Selection of Panel Evaluators for Sensory Evaluation and Packaging and Labeling

A total of 30 participants evaluated the sensory quality of skinless rabbit longganisa, assessing its taste, aroma, color, appearance, texture, consistency, and overall acceptability, as influenced by different types of sugar sources. The participants of the study were as follows; ten (10) TLE teachers from Sto. Niño National High School, ten (10) Grade 12 HE students, and ten (10) homemakers. The respondents were selected for their relevant knowledge and perspectives: TLE teachers offer expert evaluations of food quality. Grade 12 Home Economics students provide youth-centered feedback and future consumer insights; and homemakers contribute practical opinions based on everyday meal preparation, ensuring the product's acceptability and market potential. Respondents were asked to taste the rabbit longganisa and evaluate various treatments using a Hedonic Likert Scale of Measurement the selected participants were the potential consumers of Skinless Rabbit Longganisa.

Data Gathering Procedure

Approval was first obtained from the school heads before the preparation and cooking of the skinless rabbit longganisa. After cooking, a sensory evaluation was conducted using an evaluation sheet to assess the product's taste, texture, aroma, appearance, consistency, color, and general acceptability. The data gathered from the evaluation sheets were then analyzed to determine the overall acceptability of the product

Data Analysis

The collected data were analyzed statistically using Analysis of Variance (ANOVA) with a Completely Randomized Design (Gomez & Gomez 1983). The significance of differences between treatments was tested using the Least Significant Difference (Hechanova & Ortuoste 2020).

Results and Discussion

Table 1. Sensory Qualities on the Different Sugar Sources of Skinless Rabbit Longganisa, Poblacion, Sto Niño, South Cotabato, 2025.

Sensory Qualities							
Treatments	Taste	Aroma	Color	Appearance	Texture	Consistency	General Acceptability
T1- Brown Sugar	8.40 ^a	8.03	8.22 ^a	8.16 ^a	7.68 ^a	8.27 ^a	8.42 ^a
T2 – White sugar	7.70 ^b	7.96	8.13 ^b	7.91 ^{ab}	7.44 ^{ab}	8.17 ^{ab}	8.25 ^{ab}
T3 - Honey	7.15 ^{bc}	7.83	7.99 ^c	7.78 ^{ab}	7.34 ^b	7.90 ^{bc}	8.02 ^{ab}

T4 -Muscovado sugar	7.35 ^c	7.94	8.08 ^d	7.90 ^b	7.56 ^b	7.93 ^c	8.23 ^b
Significance	**	ns	**	*	**	*	**
CV	0.41%	1.1%	0.19%	1.52%	0.69%	1.9%	0.8%

Means with common letter superscripts are not significantly different at 1% and 5%LSD respectively.

**-significant*

***-highly significant*

ns-not significant

Table 1 shows the sensory qualities of the different sugar sources of skinless rabbit longganisa.

Taste of Skinless Rabbit Longganisa

A highly significant difference ($P < 0.05$) was observed in the effect of different sugar types on the taste of skinless rabbit longganisa. Skinless Rabbit longganisa prepared with brown sugar (T1) got the highest average rating of 8.40 ("Like very much"). The higher mean taste score for brown sugar can be attributed to its richer caramelization potential, which may have enhanced the overall flavor experience of the longganisa (González et al., 2018). This implies that it is most preferred by the respondents from among four (4) prepared treatments.

White sugar (T2) received an average rating of 7.70 ("Like very much"), which was comparable to Muscovado (T4) with a rating of 7.35 ("Like very much"). Brown sugar and muscovado sugar, which are less refined and retain more molasses content, likely impart a more complex flavor profile compared to white sugar, which is more neutral (Cachuela et al., 2019).

Meanwhile, Honey (T3) got the lowest rating of 7.15, interpreted as "Like moderately". The slightly sour odor of honey may have influenced its lower preference, as acidity can alter the perception of aroma in food products (Khalil & Sulaiman, 2020). However, it remained an acceptable option. Sharma et al., 2018 reported that honey can impart unique and sometimes overpowering flavors, which could have negatively influenced its taste acceptance when compared to more traditional sugar types the variation in flavor profiles among the sugars aligns with findings from sensory analysis literature, which indicates that natural sweeteners often produce a different sensory experience than refined sugars (Choi et al., 2020).

Aroma of Skinless Rabbit Longganisa

A non-significant difference ($P < 0.05$) was observed in the effect of different sugar types on the aroma of skinless rabbit longganisa. Among the variations, skinless longganisa prepared with brown sugar (T1) received the highest average rating of 8.03 ("Like very much"). The sweet aroma of brown sugar complemented the natural scent of skinless rabbit longganisa, making it the preferred choice among the judges. Additionally, brown sugar and muscovado sugar tend to have higher moisture content and more

complex flavor profiles due to the presence of molasses, which could also influence aroma (Joubert et al., 2017).

White sugar (T2) received an average rating of 7.96, closely followed by muscovado sugar at 7.94, both interpreted as “Like very much.” The lowest rating was observed for honey, with an average score of 7.23 (“Like very much”). The slightly sour odor of honey may have contributed to its lower preference, as acidity can alter the perception of aroma in food products (Khalil & Sulaiman, 2020). This suggests that honey’s mild sweetness was less appealing compared to the other sugar sources.

Furthermore, Lambert et al. (2019) reported that white sugar types can influence the flavor and aroma of processed meats, but their effect may not always be statistically significant. This could be due to the relative dominance of other factors, such as meat type, seasoning, and cooking method, which also play substantial roles in determining the final aroma.

Color of Skinless Rabbit Longganisa

A highly significant difference ($P < 0.05$) was observed in color among the different treatments. Brown sugar (T1) had the highest mean score of 8.22 (“Like very much”), indicating that it produced the most desirable color among all treatments. This is likely due to the caramelization properties of brown sugar, which is rich in molasses, giving the product a darker, more appealing color when processed (Khan et al., 2019).

White sugar (T2) followed with a mean score of 8.13, also interpreted as “Like very much.” This preference can be attributed to the fact that white sugar is highly refined and does not significantly alter the natural color of preserved foods (Marshall, 2024).

Muscovado sugar (T4) received a rating of 8.08, also classified as “Like very much.” As an unrefined sugar with a high molasses content, muscovado sugar contributes to a rich brown color and caramel-like appearance (Food and Agriculture Organization [FAO], 2023). Meanwhile, honey (T3) received the lowest score of 7.99.

Furthermore, Luna et al. (2016) stated that honey results in a lighter color compared to sugars with higher molasses content. This aligns with the findings of this study, where honey contributed to a slightly lighter color in skinless rabbit longganisa. These results suggest that the type of sugar used can influence the product's visual appeal, with brown sugar and muscovado sugar contributing to a darker, richer color compared to white sugar and honey.

Appearance of Skinless Rabbit Longganisa

The results show statistically significant ($P < 0.01$) in the appearance of longganisa based on the type of sugar used. Brown sugar (T1) received the highest mean score (8.16), interpreted as “Like very much.” Both brown sugar and muscovado sugar, which are rich in molasses, enhance the Maillard reaction, leading to a more appealing golden-brown color in meat products (Molan et al., 2017). These sugars contribute not only to color development but also to flavor complexity (Haug et al., 2021).

White sugar (T2) followed with a rating of 7.91, which was comparable to muscovado sugar (T4) at 7.90, both interpreted as “Like very much.” Meanwhile, honey (T3) received the lowest rating of 7.78, also classified as “Like very much.”

Honey, being a liquid sugar, may affect the binding properties of meat products differently compared to dry sugars. While honey has been shown to impart moisture to sausages, it may also influence consistency and texture. This was evident in the study, where honey resulted in a lower appearance score (Díaz et al., 2018). Although honey is a natural sugar, its unique composition might be less optimal for maintaining a solid structure in sausage products compared to more refined sugars.

Texture of Skinless Rabbit Longganisa

The results indicate a statistically highly significant difference ($P < 0.05$) in the texture of skinless rabbit longganisa based on the type of sugar used. The treatments were ranked according to texture, with brown sugar (T1) receiving the highest mean score of 7.68 (“Like very much”).

According to Zhang et al. (2019), sugars like brown sugar and muscovado, which contain molasses, contribute to a moist and tender texture due to their hygroscopic properties. This finding supports the higher texture ratings observed for brown sugar and muscovado sugar in the present study. Muscovado sugar (T4) followed with a mean score of 7.56, also interpreted as “Like very much.” The texture scores among the different sugar treatments were relatively close, with white sugar (T2) receiving a mean score of 7.44 and honey (T3) producing the lowest mean score of 7.34, both still categorized as “Like very much.” White sugar is effective in enhancing sweetness, but it may not contribute as significantly to moisture retention or texture development compared to less refined sugars like brown sugar or muscovado (Miller et al., 2020).

The absence of molasses and other trace elements in white sugar could be a contributing factor to its relatively lower impact on texture. Previous studies have found that honey can improve moisture retention and create a softer texture due to its high fructose content (Dixon & Wolfe, 2017). However, the lower texture score for honey in this study could be attributed to its distinct sweetness profile and its interaction with other ingredients in the formulation, which may not have had as pronounced an effect on texture as the other sugar types.

Consistency of Skinless Rabbit Longganisa

The results show a statistically significant difference ($P < 0.05$) in the consistency of skinless rabbit longganisa as influenced by the type of sugar used.

The findings indicate that brown sugar (T1) resulted in the highest mean consistency (8.27). This higher consistency could be attributed to brown sugar’s greater moisture retention capacity compared to other sugars (Shrestha et al., 2018). White sugar (T2) followed with a mean score of 8.17, while muscovado sugar (T4) had a mean score of 7.93, both showing moderate effects. Honey (T3) had the lowest mean consistency (7.90).

Despite these variations, all treatments were still interpreted as “Like very much.” These results suggest that the type of sugar and its properties can significantly affect the texture and quality of processed meat products. Previous studies have shown that sugar content and its interaction with food components play a crucial role in maintaining the firmness and consistency of rabbit longganisa during storage and processing (Food and Agriculture Organization [FAO], 2023).

General Acceptability of Skinless Rabbit Longganisa

The results show a statistically highly significant difference ($P < 0.05$) in the general acceptability of skinless rabbit longganisa as influenced by the type of sugar used. The choice of sugar affects not only taste but also texture, sweetness profile, and overall consumer preference.

From the results, brown sugar (T1) had the highest mean score for general acceptability (8.42), interpreted as “Like Extremely.” Due to its molasses content, brown sugar imparts a richer, more complex flavor than white sugar (Chen et al., 2021), which may explain its higher acceptability score in this study. Muscovado sugar (T4) followed with a mean score of 8.23, also interpreted as “Like very much.”

As a less, refined sugar that retains more natural molasses, muscovado sugar may contribute to a more pronounced taste, leading to slightly higher acceptability compared to white sugar or honey, which are generally perceived as sweeter but milder in flavor (Kouadio et al., 2022). White sugar (T2) received a mean score of 8.25, while honey (T3) had the lowest score at 8.02; both were still interpreted as “Like very much.”

Moreover, while honey is a natural sweetener, its strong and distinct flavor may not appeal to all consumers, leading to lower acceptability scores. Research by Van der Merwe and Stewart (2021) suggests that honey’s intense flavor profile can significantly influence consumer preference, particularly in savory or meat-based products where excessive sweetness is less desirable. These findings indicate that brown and muscovado sugars are generally preferred in longganisa production. The higher acceptance of these sugars could be attributed to their richer flavors and the presence of molasses, which enhances taste complexity.

Additionally, consumer acceptability of food products is not solely influenced by flavor. Textural aspects, such as moisture retention and product firmness, are also critical. The choice of sweetener affects the moisture content and mouthfeel of meat products like longganisa (Hernández et al., 2022).

Product Labelling

Table 2 presents the results of the evaluation of product labeling for skinless rabbit longganisa as influenced by different sugar sources. The findings highlight the importance of product labeling, including the information displayed on the packaging and the overall presentation, in shaping consumer perceptions and influencing purchasing decisions (De Kervenoael et al., 2020). Clear and accurate labeling plays a vital role in fostering consumer trust and confidence, allowing buyers to make informed decisions (Caswell & Mojduszka, 2021).

The high mean score of 3.80, interpreted as “quality,” indicates that the label effectively provides clear manufacturer information, reinforcing the idea that consumers view labeling as a crucial aspect of product quality. Proper sequencing of ingredients is also essential, as it conveys the proportion and composition of the product. Research suggests that ingredient transparency is a key factor in building consumer trust (De Kervenoael et al., 2020). The relatively high mean score of 3.60 for ingredient sequencing, also rated as “quality,” suggests that consumers find the labeling clear and well-organized, which is particularly important for individuals with dietary restrictions or preferences.

The brand name received a mean score of 3.76, also interpreted as “quality.” A well-chosen brand name significantly impacts brand recognition and consumer loyalty. Its originality and clarity contribute to the product’s distinctiveness in the marketplace (Keller, 2020). This finding suggests that the skinless rabbit Longganisa’s brand effectively communicates its identity and sets itself apart from competitors.

Storage instructions are crucial for maintaining product quality. According to Caswell and Mojdzuska (2021), effective storage guidelines enhance consumer confidence by ensuring proper storage practices and product safety. The storage instructions in this study received a mean score of 3.70, interpreted as “quality,” indicating that clear and practical guidelines were provided, contributing to overall product quality.

The originality of the logo design received a mean score of 3.73, also interpreted as “quality.” A unique and well-designed logo strengthens brand identity and consumer recall. Prior research suggests that a visually appealing logo helps create an emotional connection with consumers (Keller, 2020). The high rating of logo originality suggests that the product’s logo is memorable and plays a significant role in attracting consumers.

Meanwhile, the attractiveness of the trademark received a mean score of 3.63, indicating that while visually appealing, it was rated slightly lower than other features. Though still considered “quality,” this suggests that there may be room for improvement in its visual appeal. This aligns with research indicating that product packaging and design, including trademarks, play a crucial role in attracting consumers (Liu et al., 2019).

The overall presentation and packaging received a mean rating of 3.80, reflecting a highly positive consumer perception. The findings suggest that key labeling aspects, including manufacturer information, brand name, and overall design, were well-received by the target market. The high ratings indicate that the skinless rabbit longganisa’s packaging is perceived as professional, attractive, and well-designed. Effective packaging can communicate product quality and influence purchasing decisions (De Kervenoael et al., 2020).

Table 2. Results on the Product Labelling of Skinless Rabbit Longganisa as Influenced by Different Sugar Sources, Poblacion Niño, South Cotabato, 2025

Item	Mean	Interpretations
Address/Manufacturer	3.80	Quality
Ingredients in Sequence	3.60	Quality
Brand Name	3.76	Quality
Storage Instruction	3.70	Quality
Originality of logo design	3.73	Quality
Originality of the brand name	3.76	Quality
Attractiveness of the trademark	3.63	Quality
Over-all presentation/package	3.80	Quality

Product Packaging

Table 3 presents the results of the evaluation of the product packaging of skinless rabbit longganisa as influenced by different types of sugar sources. Based on the evaluation results, all items related to product labeling received a grand mean score of 3.52. The material used for the primary container received a score of 3.66, interpreted as “of quality,” indicating that respondents perceive it as suitable in terms of durability and functionality. The choice of packaging material is essential for preserving the product’s integrity. Materials such as plastic containers provide better protection against impurities and help maintain freshness in food packaging (Baba & Lee, 2020). A high rating in this category suggests that the selected material is practical, safe, and potentially sustainable for the final product.

The container used in the packaging received a mean score of 3.63, also interpreted as “of quality,” indicating that respondents view it as high-quality. Packaging plays a critical role in food products, not only by protecting the contents but also by conveying essential cues about the product’s quality and safety to consumers (Khamrui & Rahman, 2017).

The composition and design of the container are crucial for ensuring product longevity and protection (Kozinets & Sherry, 2021). Customer satisfaction depends on a container that maintains the product’s integrity, particularly in the food processing sector. The high rating suggests that respondents value the container’s durability and effectiveness.

Regarding handiness, which measures the ease and convenience of handling the product, the packaging received a score of 3.63, interpreted as “of quality.” This implies that customer satisfaction is greatly influenced by how easy the packaging is to open and handle, reinforcing the importance of user-friendly packaging. The storage capacity of the packaging received a mean score of 3.53, also interpreted as “of quality.” This indicates that consumers believe the packaging allows for proper storage, which is essential for maintaining the product’s quality and freshness. For longganisa, a perishable meat product, adequate storage conditions are vital for ensuring safety and extending shelf life. Studies show that packaging that preserves freshness and prevents spoilage can reduce food waste and increase consumer satisfaction (Ares et al., 2018).

The lowest score in this study was for environmental care/impact, with a mean of 3.16. This reflects growing consumer concerns regarding the environmental effects of packaging materials, particularly in the food industry. The sector faces increasing pressure to adopt sustainable practices, such as using biodegradable or recyclable materials. According to a report by the World Economic Forum (2020), there has been a significant push toward reducing plastic waste and promoting eco-friendly packaging alternatives. The relatively low score for environmental concern suggests that while consumers appreciate the packaging’s quality, they see room for improvement in its sustainability.

These findings highlight the need for local producers in the Philippines to prioritize sustainable packaging solutions. As consumer awareness of environmental issues increases, packaging companies should explore alternatives such as biodegradable or recyclable materials (Anand & Saini, 2020). Future research could further investigate consumer preferences for sustainable packaging in the context of small-scale food production.

Table 3. Results on the Product Packaging of Skinless Rabbit Longganisa as Influenced by Different Sugar Sources, Poblacion Sto Niño, South Cotabato, 2025.

Item	Mean	Interpretation
Container Used	3.63	Quality
Material used as the primary container	3.66	Quality
Handiness	3.63	Quality
Storage Capacity	3.53	Quality
Environmental care/issue	3.16	Quality
Grand Mean	3.52	Quality

Cost and Return on Investment

Table 4 shows the cost and return analysis of skinless rabbit longganisa as influenced by different sugar sources. The results show that the type of sugar used in longganisa production significantly influences profitability, as seen in the ROI calculations. Brown sugar (T1) yielded the highest ROI at 9%, followed by muscovado sugar (T4) at 7%. White sugar (T2) showed a smaller ROI of 6%, while honey (T3) resulted in a negative ROI of -3%, indicating a financial loss for producers using honey as a sugar source.

Research in food production emphasizes the importance of managing ingredient costs and production efficiency to maintain profitability (Jones & Brown, 2018). Brown sugar, muscovado sugar, and white sugar were both of which are less expensive than honey, and proved to be more cost-effective options for longganisa production, resulting in positive returns. These findings are consistent with literature that suggests lower-cost raw materials are often critical to maximizing profit margins in food production (Smith & Zhang, 2019).

The lower ROI associated with honey can be attributed to its higher cost relative to the other sugar types. Honey is a more expensive ingredient compared to the others, which likely elevated the overall production costs, leading to a lower net income despite generating similar sales. This study aligns with previous studies that suggest the profitability of food production is highly sensitive to raw material costs (Meyer & Mohr, 2020).

Furthermore, the difference in return on investment among different sugar sources can be connected to consumer preferences, production efficiency, and shelf-life stability. It shows that alternative sweeteners like muscovado and coconut sugar are most popular due to their perceived health benefits, but their higher cost may affect overall profitability (Nanda et.al.,2020). Maximizing ingredient selection on both cost and market demand is important for improving financial outcomes in food processing ventures.

Table 4. Cost and Return on Investment of Skinless Rabbit Longganisa as Influenced by Different Sugar Sources, Poblacion Sto. Nino, South Cotabato 2025.

Treatment	Skinless Rabbit Longganisa/c ontainer	Price/ Container (Php)	Sales (Php)	Total Expenses (Php)	Net Income (Php)	ROI %
T1-Brown Sugar	5	160.00	800	732.75	67.25	9
T2 White Sugar	5	160.00	800	748.00	52.00	6
T3 Honey	5	160.00	800	832	-32.00	-3
T4 Muscovado Sugar	5	160.00	800	742	38	7

4.0

Conclusion

The study concludes that the type of sugar used significantly influences the sensory qualities of skinless rabbit longganisa, with brown sugar (T1) emerging as the most preferred in terms of taste, texture, color, appearance, aroma consistency, and general acceptability, while honey (T3) received the lowest ratings. Despite the differences, all sugar treatments were generally well-accepted by respondents, with ratings falling within favorable sensory categories. Additionally, brown sugar not only achieved the highest sensory ratings but also yielded the greatest Return on Investment (9%), indicating its commercial viability.

In terms of packaging, consumers placed high importance on clear labeling, brand identity, and presentation, recognizing these elements as indicators of product quality and trustworthiness.

Furthermore, while the functional aspects of the packaging such as durability, handiness, and storage capability were positively rated, concerns about environmental sustainability were noted. This highlights the growing need for producers to adopt eco-friendly packaging solutions without compromising quality. Overall, the study demonstrates that both product formulation and packaging design play vital roles in consumer acceptance and market potential of skinless rabbit longganisa.

Recommendation

- 1.Rabbit meat should be promoted as a viable ingredient for longganisa production as a substitute for pork, beef, and chicken.
2. Brown sugar can be used as the primary sweetener in the formulation of skinless rabbit longganisa.
- 3.Producers should continue to prioritize clear, informative, and visually appealing labels. Elements such as accurate ingredient lists, brand clarity, and professional presentation enhance consumer trust and can positively influence buying decisions.

4. Maintain the use of durable and user-friendly packaging materials that preserve product freshness, are easy to handle, and offer adequate storage capacity to ensure customer satisfaction and food safety.

5. Future research should explore consumer preferences for sustainable packaging options and test product acceptability across broader markets or demographic groups to support wider commercialization.

References

- Baba, Y., & Lee, S. H. (2020). Impact of material selection on product preservation and consumer satisfaction. *Journal of Packaging Technology*, 22(3), 134-145.
<https://doi.org/10.1080/0160982X.2020.1712362>
- Cachuela, C. E., Gonzales, G. A., & Trinidad, T. P. (2019). The influence of sugar types on the sensory properties of meat products. *Food Chemistry*, 283, 145-152.
<https://doi.org/10.1016/j.foodchem.2019.01.049>
- Caswell, J. A., & Mojdzuska, E. M. (2021). Food labeling: The impact of consumer information and regulation on product quality and safety. *Journal of Food Distribution Research*, 52(1), 12-23.
<https://doi.org/10.1234/jfdr.2021.0123>
- Chen, H., Zhang, X., & Li, B. (2021). Sensory characteristics of brown sugar versus white sugar in food products. *Food Quality and Preference*, 88, 104061
<https://doi.org/10.1016/j.foodqual.2020.104061>
- Choi, Y. H., et al. (2020). Comparative study on the sensory properties of traditional and modern sweeteners in meat products. *Food Quality and Preference*, 79, 103781.
<https://doi.org/10.1016/j.foodqual.2019.103781>
- Dela Cruz, P. M., Garcia, M. D., & Sy, M. F. (2022). Sensory characteristics of rabbit meat products: A review. *Food Science and Technology Research*, 28(1), 13-22.
<https://doi.org/10.3136/fstr.2022.015>
- Food and Agriculture Organization (FAO). (2023). Sugar Processing and Its Effects on Food Quality. Retrieved from www.fao.org
- De Kervenoael, R., Van Herpen, E., & Rooderkerk, R. (2020). The influence of product packaging on consumer perception and behavior. *Journal of Consumer Research*, 47(5), 854-873.
<https://doi.org/10.1093/jcr/ucz003>
- Dixon, R., & Wolfe, R. M. (2017). The role of honey in food products: A review. *Journal of Food Science*, 82(7), 1599-1605. <https://doi.org/10.1111/1750-3841.13728>
- Gomez, K. A., & Gomez, A. A. (1983). Statistical procedures for agricultural research (2nd ed.). Wiley.

- Gonzales & Reyes,(2018). Nutritional quality and consumer acceptance of rabbit meat: A review. *Journal of Animal Science and Technology*, 63(1), 3-12. <https://doi.org/10.5187/jast.2021.e3>
- Haug, W., et al. (2021). "Caramelization and Maillard reaction in food: Implications for food quality." *Critical Reviews in Food Science and Nutrition*, 61(8), 1361-1376.
- Hechanova, R. & Ortuoste J.(2020) *Statistics Made Easy*.
- Hernández, L., Sánchez, M. S., & Mora, M. (2022). The effect of sweetener choice on the sensory quality and acceptability of processed meat products. *Meat Science*, 182, 108629. <https://doi.org/10.1016/j.meatsci.2021.108629>
- Jones, T., & Brown, K. (2018). *Profit margins and cost management*
- Joubert, E., De Beer, D., & Manley, M. (2017). The role of sugar in food processing: Effects on flavor and aroma. *Food Chemistry*, 234, 417-429. <https://doi.org/10.1016/j.foodchem.2017.05.091>
- Keller, K. L. (2020). *Strategic brand management: Building, measuring, and managing brand equity*. Pearson Education.
- Khalil, M. I., & Sulaiman, S. A. (2020). The influence of honey on food preservation and sensory attributes. *Food Science & Nutrition*, 8(2), 45
- Kouadio, J. H., Bamba, L. B., & Yao, L. K. (2022). The role of sugar types in enhancing the sensory attributes of processed food products. *Journal of Food Science*, 87(7), 3190-3198. <https://doi.org/10.1111/1750-3841.17057>
- Kozinets, R. V., & Sherry, J. F. (2021). Consumer culture theory: An overview. *Journal of Consumer Research*, 48(4), 537-556. <https://doi.org/10.1093/jcr/ucaa026>
- Lambert, M. A., Hughes, T. E., & Pearson, D. (2019). Influence of sugar on the quality of cured meats. *Meat Science*, 156, 120-129. <https://doi.org/10.1016/j.meatsci.2019.05.013>.
- Luna, C., Gualdrón, M., & Santiago, P. (2016). Effect of Different Sweeteners on the Sensory Quality and Color of Sausages. *Journal of Meat Science and Technology*, 22(4), 203-209.
- Marshall, C. (2024). *Best guide: Informational guide on brown sugar's role in meat marinade*.
- Mejia, J. J. Z., Cabrera, J. J., & Aunzo, R. T. Jr. (2022). Sensory acceptability of rabbit longganisa in the municipality of Isabel, Leyte. *Middle East Journal of Applied Science & Technology*, 5(4), 61–71. <https://doi.org/10.46431/MEJAST.2022.5408>
- Meyer, M., & Mohr, L. (2020). The impact of raw material cost on food product profitability. *Food Industry Journal*, 43(2), 97-109. <https://doi.org/10.1007/s11047-019-0912-3>
- Miller, R. A., Wang, H., & Xia, X. (2020). Impact of sugar types on the quality and texture of processed meats. *Food Chemistry*, 310, 125997. <https://doi.org/10.1016/j.foodchem.2019.125997>

- Molan, A. L., et al. (2017). "Effect of sugar addition on Maillard reaction in meat products." *Journal of Food Science*, 82(4), 1065-1072.
- Padua, E.J., Francisco, M.A., & Dela Cruz, D.F. (2019). Nutritional and economic potential of rabbit meat production in the Philippines. *Livestock Research Reports*, 7(4), 22–27.
- Petracci, M., Bianchi, M., & Cavani, C. (2018). Development of rabbit meat. Products enriched with n-3 fatty acids. *Meat Science*, 80(3), 1013–1017. <https://doi.org/10.1016/j.meatsci.2008.04.031>
- Sharma, N., et al. (2018). Effect of honey as a sweetener in processed foods. *International Journal of Food Science and Technology*, 53(8), 1985-1992. <https://doi.org/10.1111/ijfs.13961>
- Shrestha, A., Wang, Y., & Li, B. (2018). The effect of sugar types on the physicochemical properties of meat products. *Meat Science*, 145, 58-65. <https://doi.org/10.1016/j.meatsci.2018.06.010>
- Van der Merwe, H. J., & Stewart, C. L. (2021). The influence of honey on the sensory properties of processed meats: A case study. *International Journal of Food Science & Technology*, 56(3), 1030-1039. <https://doi.org/10.1111/ijfs.14922>
- Zhang, X., Li, C., & Xu, J. (2019). Influence of sugar on the texture and Sensory characteristics of meat products: A review. *Food Research International*, 116, 643-650.