



PROMOTING RABBIT MEAT CONSUMPTION THROUGH LAPAN KINI-ING PATTY DEVELOPMENT

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ABSTRACT

This study aimed to determine the acceptability and preference of Lapan kini-ing patty and evaluate its potential cost. Utilizing sensory evaluation, the patty's appearance, aroma, texture, and taste are assessed using 7- point hedonic scale. A quantitative research design was employed utilizing sensory evaluation distributed to 77 respondents. Lapan kini-ing patty was prepared using rabbit meat, kini-ing, salt, pepper and egg then it was compared with traditional beef patty. The instrument was validated by three experts before data gathering. Data were gathered during actual taste test and it were analyzed using descriptive statistics. Results indicate that the lapan kini-ing patty was described as "like very much" in terms of appearance (M= 6.44), aroma (M=6.52), texture (M=6.51), taste (M=6.23) and overall acceptability (6.44). The lapan kini-ing patty, compared to traditional beef patty showed no significant difference in terms of appearance however, data showed significant difference in aroma, texture and taste. This indicates that lapan kini-ing patty offers a healthier protein alternative with enhanced flavor from kini-ing. Meanwhile, the pricing analysis shows that the price is expensive which may be the market barrier. This suggest incorporating binders such as flour to increase the product yield to produce more patties at a lower price.

Keywords: *Lapan kini-ing patty, beef patty, sensory evaluation, 7-hedocic scale, descriptive statistics, pricing analysis*

INTRODUCTION

In recent years, there has been a growing demand for innovative and nutritious food products that cater to health-conscious consumers. One of the main drivers of this trend is an increased awareness of health and wellness (Red Star, 2024). One such innovation is the Lapan (rabbit meat)-Kini-ing Patty which combines the traditional smoked meat preservation method known as *kini-ing* with rabbit meat (lapan). This study aims to explore the potential of this combination as a viable, sustainable, and flavorful alternative to conventional meat patties.

Rabbit meat is recognized for its high protein content, low fat and rich nutritional profile, making it an excellent choice for individuals seeking healthier meat alternatives (Dalle Zotte & Szendrő, 2011). Additionally, rabbit farming is considered more sustainable than traditional livestock farming, requiring less land, water, and feed while producing lower greenhouse gas emissions (Trocino & Xicatto, 2006). This makes rabbit meat a promising option for promoting food security and sustainability.

Additionally, the historical and cultural significance of rabbit meat in global culinary traditions is noteworthy. From ancient diets to contemporary ethical considerations, rabbit has played a vital role in diverse civilizations, influencing cultural symbolism, regional culinary techniques, and even wartime survival strategies. In ancient civilizations such as the Greeks and Romans, rabbit meat was a common dietary staple due to its availability and nutritional value (Giarratana et al., 2019). Furthermore, rabbit meat holds significant cultural symbolism in various regions around the world. For example, in Chinese culture, rabbit meat symbolizes longevity and good fortune, and it is often consumed during festive occasions such as Lunar New Year (Arena, 2023). Similarly, in certain European countries like France and Italy, rabbit meat is associated with traditional dishes that are deeply rooted in local culinary heritage (Dalle Zotte & Szendrő, 2011). Overall, the historical and cultural significance of rabbit meat underscores its enduring importance in global culinary traditions, shaping dietary practices, cultural symbolism and culinary heritage across diverse civilizations.

In the Philippines, the introduction of rabbits (*Oryctolagus cuniculus* L.) was credited to the US Peace Corps and religious missionaries post- World War II (Medenilla, 2021). The publication of "Complete Guide on Backyard and Commercial Rabbit Production" by Sicwaten and Stahl in 1982 further spurred the raising, marketing and consumption of rabbits as a novel protein source.

The 2020-2021 Covid-19 pandemic-imposed month-long quarantine, "Lapan" rabbit meat emerged as a promising protein-based alternative for individuals in the Philippines (Hernández et al., 2018). After pandemic, training was conducted on Rabbit Production and Enterprise Development for AEWs of CAR was conducted on June 19-23, 2023 with 16 AEWs participants which aimed that after training of the participants shall be able to discuss the basic principles of rabbit production and display skills in rabbit slaughtering and cooking (ATI Cordillera, 2023). In addition, the Benguet Provincial Veterinary Office initiate the first Lapan (Rabbit Meat) cooking contest as part of the 123rd

Benguet Foundation Anniversary held at Benguet Cold Chain Wangal, La Trinidad, Benguet last November 21,2023 (School Division of Benguet, 2023).

A study conducted by Cayao, (2024) in the province of Benguet on rabbit meat acceptability has found out that younger adults are generally more engaged and responsive to research on new food products which may be due to their openness to new experiences and trends and despite the various efforts made by agencies to promote rabbit meat, consumers are not yet ready to purchase it. The study also identified moderate factors influencing consumer behavior towards rabbit meat. To better understand the behavior, it may be necessary to consider stronger influencing factors. Though consumers are not yet ready to purchase rabbit meat or Lapan, innovations in cooking methods may help in promoting the meat, which is considered a sustainable and healthy protein source, but it is not commonly used in many traditional dishes.

Meanwhile, *kini-ing* is a traditional food preservation technique used by indigenous communities in the Cordillera region of the Philippines, where meat is smoked and sun-dried to extend its shelf life and enhance its flavor. Smoking not only improves taste but also inhibits microbial growth, reducing the need for artificial preservatives (Toldra & Hui, 2010). By incorporating *kini-ing* into rabbit meat patty production, this study seeks to create a unique, culturally inspired, and nutritious food product. Aside from this the pungent or “gamey” smell of rabbit meat may be minimized by adding a strong flavored ingredient in order to enhance not only the taste but also the smell.

Therefore, the study aimed to explore the acceptability of incorporating *kini-ing* into ground rabbit meat. This involve assessing factors such as taste, texture, aroma, and overall appeal among potential consumers and comparative analysis with traditional beef patties to gauge the acceptance and preference among consumers. This study conduct surveys or taste tests to gather feedback on factors like flavor intensity, saltiness level, and overall satisfaction. Moreover, the research explores potential marketing strategies to promote the novel product, considering factors like branding, packaging design, and pricing strategy. Then, the study could investigate the potential impact of introducing these unconventional flavors on consumer perceptions of traditional patties and dietary habits. The study collaborates with TLE-Cookery teachers to optimize the formulation of the *kini-ing* and rabbit meat flavors for maximum acceptability. Innovating Lapan *kini-ing* Patty addresses the Zero Food waste of 2022 and sustainable development goal of responsible consumption and production

Research Objectives

The general objectives of the study are to develop lapan (rabbit meat) *kini-ing* patty. Specifically, it aimed to

1. Determine the level of acceptability of Lapan (rabbit meat) *kini-ing* Patty in terms of:
 - a. Color
 - b. Aroma

- c. Texture
 - d. Taste
 - e. Overall Acceptability
2. Compare the acceptability and preference of Lapan Kini-ing Patty against traditional Beef Patty.
 3. Evaluate the potential cost of Lapan Kini-ing Patty.

METHODOLOGY

Research Design

In this study quantitative design was used to collect numerical data through sensory evaluation form using a hedonic scale. The descriptive statistics will draw a result and to be analyze on the acceptability and preferences. This design is widely use to collect and analyze numerical data (Bhandari, 2023).

Population of the Study

The scope of the study is made up of 77 respondents. The respondents include students, TLE cookery teachers and school canteen. This method helps ensure that the research gathers insights from a diverse group of students and teachers who are likely to have opinions and preferences relevant to the acceptability of lapan (rabbit meat) kini-ing patty.

Materials Used

Table 1: Lapan Kini-ing Patty

Product	Ingredients	Quantity
Lapan Kini-ing Patty	Ground lapan (rabbit meat) Kini-ing Oil Salt Pepper Egg	1 kg 25 grams 1/8 cup ½ teaspoon ½ teaspoon 1 large egg

- b. Tools/ Materials/ Equipment for product development
 - Measuring spoon/ cup
 - Cooking pan
 - Mixing bowl
 - Food processor
 - Flipper

c. Research Instrument

The research instrument to used is the sensory evaluation questionnaire, also known as hedonic scale or likert scale. This study presents lapan kini-ing patty and traditional beef patty that is evaluated in terms of the following:

1. Appearance- the visual appearance/ presentation of the product
2. Aroma- the smell/ fragrance of the product
3. Texture- the physical properties of the product
4. Taste- the sensation of the product
5. Over-all acceptability- the degree which the product is liked/ accepted

Each sensory attributes used 7- point Likert hedonic scale

- 7- Like very much
- 6- Like moderately
- 5- like slightly
- 4- neither like or dislike
- 3- dislike slightly
- 2- dislike moderately
- 1- dislike very much

The instrument is researcher made questionnaire validated by three experts in the field of research and food education. A research instrument validation sheet was provided to each validator, which they will evaluate the following:

1. Clarity and direction of items
2. Presentation and organization of items/ questions
3. Suitability of items
4. Adequacy of the content
5. Attainment of purpose
6. Objectivity
7. Scale and evaluation of rating

The three validators gave total scores of 25, 27 and 28. Overall score indicates that the questionnaire is highly valid and appropriate for data collection. Minor revisions recommended by the validators were incorporated before gathering data.

Procedure in making Lapan Kini-ing Patty

1. Debone and finely grind the rabbit meat on the food processor.
2. Finely chop the kini-ing.
3. Combine ground rabbit meat, kini-ing, salt, pepper, and onion powder and binder with egg.
4. Form the mixture into uniform patty shapes.
5. Refrigerate the patties for at least 30 minutes.

6. Pan- fry the patties until fully cooked then serve while still hot.

Data Collection Method

This procedure involves several steps. To make the study validated and transparent, the researcher obtains necessary permits from the adviser. Then a consent letter was presented to the respondents for the awareness about the study. Before starting the taste test analysis, the researcher explains the content and the purpose of the study including the instruction. The respondents were provided with lapan kini-ing patty and traditional beef patty to evaluate. The completed form was collected and the data is encoded for statistical analysis.

Treatment of Data

Sensory evaluation is important part of obtaining result of a food quality experiment. The interpreted result of the study uses 7-hedonic scale. The hedonic scale is based from Wangiyana, (2025) and from book of techniques to measure food safety and quality, (Al-Attabi et al., 2021). Consisting of 7 likert scale, ranging from 1 to 3 as a dissatisfaction, 4 is neutral and 5-7 represents satisfaction. This is for sensory evaluation of respondent's preferences regarding to color, aroma, texture, and taste of lapan kini-ing patty.

Table 2. Likert Hedonic Scale of Evaluating the Appearance of Lapan Kini-ing Patty

Mean Range	Numerical Equivalence	Descriptive Equivalence	Interpretation
6.14- 7.00	7	Like very much	The color is extremely appealing
5.29-6.13	6	Like moderately	The color is somewhat appealing
4.43-5.28	5	Like slightly	The color is slightly appealing
3.57-4.43	4	Neither like nor dislike	The color is neutral.
2.71-3.56	3	Dislike slightly	The color is slightly unappealing
1.86-2.71	2	Dislike moderately	The color is somewhat unappealing
1.00- 1.85	1	Dislike very much	The color is extremely unappealing

These 7 hedonic scales represent different level of preferences. The 7 score represent the (like very much) which means the highest strong of likeness because it is appealing. Followed by score 6 equivalent to (like moderately), a moderate likeness means somewhat appealing. Next is score 5 signify as (like slightly) that means the color

is slightly appealing, then score 4 as (neither like nor dislike) which the color is neutral, the score 3 is for (dislike moderately) meaning the color is somewhat unappealing, a score of 2 present (dislike moderately) unappealing and the score 1 is (dislike very much) extremely unappealing. The result of the study will be interpreted using this 7-hedonic scale.

Table 3. Likert Hedonic Scale of Evaluating the Aroma of Lapan Kini-ing Patty

Mean Range	Numerical Equivalence	Descriptive Equivalence	Interpretation
6.14- 7.00	7	Like very much	The aroma is extremely pleasant
5.29-6.13	6	Like moderately	The aroma is somewhat pleasant
4.43-5.28	5	Like slightly	The aroma is slightly pleasant
3.57-4.43	4	Neither like nor dislike	The aroma is neutral
2.71-3.56	3	Dislike slightly	The aroma is slightly unpleasant
1.86-2.71	2	Dislike moderately	The aroma is somewhat unpleasant
1.00- 1.85	1	Dislike very much	The aroma is extremely unpleasant

These 7 hedonic scales represent different level of preferences. The 7 score represent the (like very much) which means the highest strong of likeness because the aroma is extremely pleasant. Followed by score 6 equivalents to (like moderately), a moderate likeness which the aroma is somewhat pleasant. Next is score 5 signify as (like slightly) which is slightly pleasant, then score 4 as (neither like nor dislike), the score 3 is for (dislike moderately) somewhat unpleasant, a score of 2 present (dislike moderately) slightly unpleasant and the score 1 is (dislike very much) that means extremely unpleasant. The result of the study will be interpreted using this 7-hedonic scale.

Table 4. Likert Hedonic Scale of Evaluating the Texture of Lapan Kini-ing Patty

Mean Range	Numerical Equivalence	Descriptive Equivalence	Interpretation
6.14- 7.00	7	Like very much	The texture is extremely tender and juicy
5.29-6.13	6	Like moderately	The texture is somewhat tender and juicy
4.43-5.28	5	Like slightly	The texture is slightly tender, but still acceptable

3.57-4.43	4	Neither like nor dislike	The texture is ideal
2.71-3.56	3	Dislike slightly	The texture is slightly tough, but still acceptable
1.86-2.71	2	Dislike moderately	The texture somewhat tough and chewy
1.00- 1.85	1	Dislike very much	The texture is extremely tough and unpleasant to bite

These 7 hedonic scales represent different level of preferences. The 7 score represent the (like very much” which means the highest strong of likeness interpreted as extremely tender and juicy. Followed by score 6 equivalents to (like moderately), a moderate likeness means somewhat tender and juicy. Next is score 5 signify as (like slightly) which is interpreted as slightly tender, but still acceptable, then score 4 as (neither like nor dislike) refer as the texture is ideal, the score 3 is for (dislike moderately) that means slightly tough but still acceptable, a score of 2 present (dislike moderately) interpreted as somewhat tough and chewy, and the score 1 is (dislike very much) means the texture is extremely tough and unpleasant to bite. The result of the study will be interpreted using this 7-hedonic scale.

Table 5. Likert Hedonic Scale of Evaluating the Taste of Lapan Kini-ing Patty

Mean Range	Numerical Equivalence	Descriptive Equivalence	Interpretation
6.14- 7.00	7	Like very much	The product has an extremely pleasant and savory
5.29-6.13	6	Like moderately	The product has somewhat pleasant and savory
4.43-5.28	5	Like slightly	The product has a slightly pleasant taste
3.57-4.43	4	Neither like nor dislike	The product has a neutral taste
2.71-3.56	3	Dislike slightly	The product has a slightly unpleasant taste
1.86-2.71	2	Dislike moderately	The product has a somewhat unpleasant taste
1.00- 1.85	1	Dislike very much	The product has an extremely unpleasant taste

These 7 hedonic scales represent different level of preferences. The 7 score represent the (like very much” which means the highest strong of likeness interpreted as extremely pleasant and savory. Followed by score 6 equivalents to (like moderately), a moderate likeness which means the product is somewhat pleasant and savory. Next is score 5 signify as (like slightly) which it has a slightly pleasant taste, then score 4 as

(neither like nor dislike) means a neutral taste, the score 3 is for (dislike moderately) a slightly unpleasant taste, a score of 2 present (dislike moderately) means somewhat unpleasant taste and the score 1 is (dislike very much) an extremely unpleasant taste. The result of the study will be interpreted using this 7-hedonic scale.

The 7 hedonic scale table are designed to evaluate the lapan kini-ing patty. The scale is to assess the acceptability of the product in terms of color, aroma, texture and taste. The rating 7 indicates the satisfactory to the lapan kini-ing patty while the rating 1 tells dissatisfactory. As for rating 6,5 and 4 are moderate or neutral liking and disliking and for the rating 3 and 2 are ultimately dislike the product. The hedonic scale collects participant's preferences and providing results to quantify and analyze.

Scope and Delimitations

This study holds significant implications for the culinary landscape and consumer preferences within the evolving dietary trends and culinary innovation domain. By examining the acceptability of patty enriched with lapan and kini-ing.

This study is designed to explore patty production, highlighting the renowned patty for its simplicity and time- efficient preparation. It focuses on infusing the distinct flavors of lapan (rabbit meat) and kini-ing (smoked meat) into the patty, resulting in the creation of the lapan kini-ing patty, an innovative twist on traditional patties.

For the data collection, the study will engage a targeted sample of 77 respondents, including students, TLE- Home Economics and TVL educators, and school canteen owners.

RESULTS

Table 6. Means of Lapan Kini-ing Patty and Traditional Beef Patty in terms of Appearance, Aroma, Texture, Taste and Over-all Acceptability

	Mean	Standard Deviation	Qualitative Interpretation
Appearance			
Lapan Kini-ing Patty	6.44	0.75	Like very much
Beef Patty	6.23	0.95	Like very much
Aroma			
Lapan Kini-ing Patty	6.52	0.91	Like very much
Beef Patty	5.87	1.28	Like moderately
Texture			
Lapan Kini-ing Patty	6.51	0.73	Like very much
Beef Patty	6.19	0.98	Like very much
Taste			

Lapan Kini-ing Patty	6.23	1.17	Like very much
Beef Patty	6.06	1.17	Like moderately
Over-all Acceptability			
Lapan Kini-ing Patty	6.44	1.01	Like very much
Beef Patty	6.31	0.87	Like very much

Legend: Appearance, Aroma, Taste, Texture and Over-all Acceptability (7-Like very much, 6- Like moderately, 5- Like slightly, 4- Neither like nor dislike, 3-dislike slightly, 2- dislike moderately, 1- dislike very much)

Table 7. Significant Difference Between the Preferences of Lapan Kini-ing Patty against Traditional Beef Patty

Computed P-value				
	Appearance	Aroma	Texture	Taste
Lapan Kini-ing Patty	.315 ^{ns}	.0002 ^{**}	.016 [*]	.038 [*]
Beef Patty	.315 ^{ns}	.0002 ^{**}	.016 [*]	.038 [*]

Legend: ^{ns} - not significant, ^{*} - significant, ^{**} - highly significant

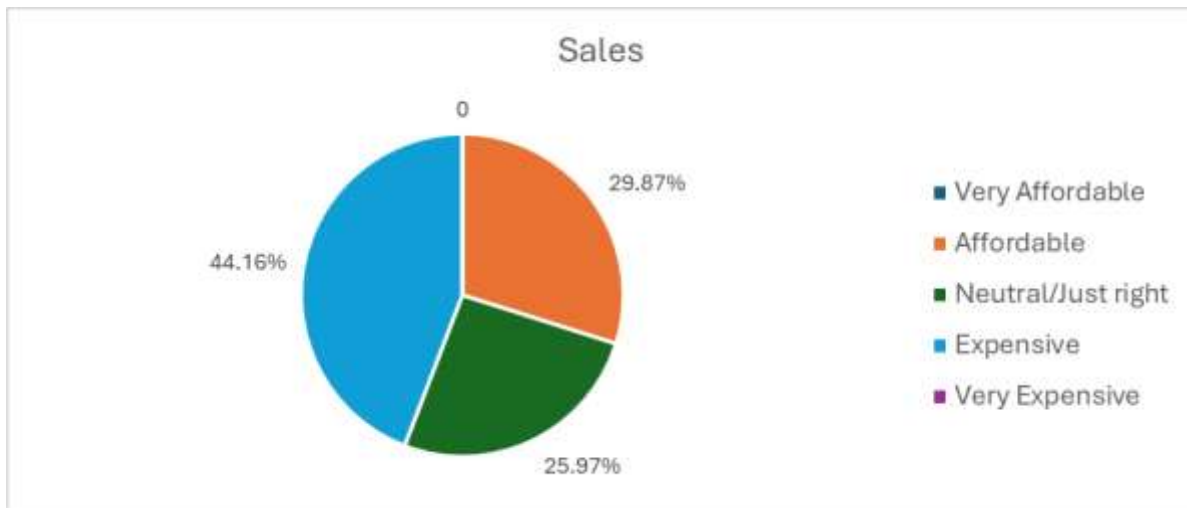


Figure 1. Price Evaluation of Lapan Kini-ing Patty

DISCUSSION

Table 6 shows the the level of acceptability of lapan kini-ing patty and traditional beef patty in terms of appearance, aroma, texture and taste among the respondents. In terms of appearance, the lapan kini-ing patty is describes as like very much (Mean= 6.44, SD=0.75). On the other hand, the traditional beef patty also describes as like very much (Mean= 6.23, SD= 0.95). Both rich brown sear appearance of lapan kini-ing patty and

beef patty is extremely appealing. Appearance is the first thing being noticed. An important aspect that catches consumers' eyes (Forde, 2024). Moving on to aroma, the respondent perceived that lapan kini-ing patty (Mean= 6.52, SD= 0.91) as like very much and beef patty (Mean=5.87, SD=1.28) perceived as like moderately. Kini-ing has a stronger aroma that contributes to the product appeal to the lapan patty production. The result lapan kini-ing patty is extremely pleasant and beef patty is slightly pleasant. Aroma is one of the characteristics that stimulates overall flavor of food, helping enhance the eating experience (Lee et al., 2024). Another characteristic is texture, the result shows that both lapan kini-ing patty (Mean= 6.51, SD= 0.73) and beef patty (Mean=6.19, SD= 0.98) are describe as like very much. Therefore, both are tender and juicy that provides satisfaction when consumed. Texture is a sensory property of food perceived through touch which provides information on the structural composition of the product (Gallego et al., 2022). Regarding taste, it shows that lapan kini-ing patty (Mean= 6.23, SD=1.17 is perceived as like very much while beef patty (Mean=6.06, SD= 1.17) are perceived as like moderately. Lapan kini-ing patty is tastier and savory than beef patty among the respondents. Taste is the major determinant of flavor that improves food enjoyment and promotes healthier eating patterns (Forde, 2024). Finally, in overall, lapan kini-ing patty (Mean= 6.44, SD= 1.01) and beef patty (Mean= 6.31, SD= 0.87) are both perceive as like very much. Both are acceptable to the respondents, indicating that lapan kini-ing patty is similar to beef patty in terms of the over-all liking.

The table shows nearly identical standard deviation in terms of appearance, aroma, texture and taste. The innovation of lapan kini-ing patty introduces a healthier option of protein. Lapan is recognized for its high protein content, low fat and rich nutritional profile, making it an excellent choice for healthier meat alternatives (Dalle Zotte & Szendrő, 2011). While kini-ing has its own distinct flavor where it is smoked and sun-dried to extend its shelf life and inhibits microbial growth (Toldra & Hui, 2010). Incorporating the kini-ing into lapan patty production enhances the aroma and texture. It elevates the overall palatability of the product. While beef patty is usually used in burger which is very common to consumers. Therefore, lapan kini-ing patty can be considered as alternative source of protein.

Table 7 presents analysis of the significant differences in the qualities of lapan kini-ing patty and beef patty. The study focuses on four key attributes which are appearance, aroma, texture and taste. For respondents, no significant differences were observed in appearance. This means that the appearance of lapan kini-ing patty and beef patty has identical color, shape, size and overall appeal. Meanwhile on aroma was noted highly significant indicating there is a difference between the lapan kini-ing patty and beef patty. Kini-ing has a strong influence on the aroma which contributes to the product. Furthermore, texture shows a significant difference between lapan kini-ing patty and beef patty. This indicates that characteristics of the patties are tender and firm. Lastly, the table reveals that the taste has significant difference. This means both products has its own flavors which contributes to the overall taste. Kini-ing has a stronger aroma, salt content and smokier flavor, while beef patty has milder and meatier taste.

In summary, the study reveals that lapan kini-ing patty and beef patty are similar in terms of appearance but they differ in aroma, texture and taste. The type of meat, the process of kini-ing and the overall patty preparation influence the differences of both treatments. As a result, lapan kini-ing patty has a stronger aroma, texture and taste compared to beef patty.

In today's world, traditional meat production is facing environmental and health-related challenges, leading to a growing interest in alternative sources of meat. Consumer trends indicate a rising interest in healthy eating, as more people become health-conscious (Daniels, 2024). One of the main drivers of this trend is an increased awareness of health and wellness (Red Star, 2024). To improve overall health, it is essential to seek out nutritious food sources that provide various nutrients. For instance, rabbit and hare meat are excellent sources of protein, which is vital for maintaining health by building and repairing muscles, skin, and blood (Health and Social Services, n.d)

Figure 1 indicates that majority of respondents perceive the retail price is 22.68 (25 grams), wholesale price is 20 and per tab with 6 pieces is 185 as expensive, with 44.16%. In the data, 25.97% of respondents says the price is just neutral/ just right and 29.87% of respondents says affordable. This distribution shows the pricing is expensive to the target group. This indicates that the production cost may be the barrier to purchase the product.

During the "Kapihan sa Benguet" event held on October 28, 2024 and spearheaded by the Provincial Government of Benguet, a discussion to ensure a continuous supply of meat in the province. One of the recommendations given by the provincial veterinary office was to include the production of alternative meat sources, such as rabbits in local agricultural practices (Herald Express News Team, 2024).

Conclusions

1. The sensory evaluation demonstrated that both lapan kini-ing patty and beef patty are acceptable to respondents in terms of appearance, aroma, texture and taste. Lapan kini-ing has higher mean scores in most sensory attributes, particularly in aroma and texture due to the distinct smoky flavor of kini-ing. The findings indicates that the incorporation of kini-ing into lapan meat enhances the overall qualities of the products.
2. The study concludes that lapan kini-ing patty and beef patty has no significant difference. However, in terms of aroma, texture and taste has significant difference. The infusion of kini-ing contributes to the patty production. As a result, the lapan kini-ing patty display a stronger aroma, extremely tender and savory.
3. The findings reveal that 44.16% of respondents perceive the product pricing as expensive. Then 29.87% of respondents perceive as affordable and 25.97% of respondents perceive as neutral/just right. This indicates that the cost is the concern to limit wider market appeal and influence purchasing choices.

Recommendations

1. Based on the findings, it is recommended that lapan kini-ing patty can serve as a viable and nutritious alternative protein source due to its high acceptability and nutritional benefits. Future studies can explore improvements in flavor to suit the consumers preferences. It can consider also commercializing the lapan kini-ing patty and introducing it to the market as a healthier and innovative alternative to beef patties.
2. Based on the findings, it is recommended the lapan kini-ing patty can be developed and promoted emphasizing its distinct aroma, the texture and savory taste. And further studies may be conducted to refine the formulation and determine consumer preferences across wider market. Additionally, to conduct an analysis of patty's nutritional composition utilizing methodologies to provide consumers with precise information.
3. Based on the findings, it is recommended the cost of production may be lessened by incorporating extenders and binders such as flour, breadcrumbs or cornstarch. This can help increase product yield which allows more patties to produce at a lower cost.

Compliance with Ethical Standards

The study was conducted with due regard for the welfare of all respondents. During the data collection, informed consent was obtained from all participants to ensure that they fully understood purpose, procedures, and potential risks and benefits of the study (American Psychological Association [APA], 2020). The participants were informed of their right to withdraw any time, participation of this study is voluntarily. The privacy of the participants was confidentially protected and all collected data were securely kept and used for the study. No conflict has been found to the research process and the well-being of respondents are protected. Plagiarism was avoided through acknowledging all sources used and the findings were interpreted without bias ensuring the reliability of the results.

Food handling and preparation procedures adhered to safety and hygienic standards to minimize potential risks to participants (Food and Agriculture Organization of the United Nations, 2016). All personnel involved in food preparation follows established food-safety protocols, and appropriate facilities and equipment was utilized to maintain sanitary conditions throughout the research process. The study utilized AI-powered tools in the preparation and analysis of the study. Specifically, Perplexity, a language model-based AI tools, was utilized to enhance the grammar, clarity and overall readability of the manuscript. Additionally, ChatGPT was used to provide insights and suggestion for the study.

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