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FLAVOUR COMPARISON OF ROASTED PORK ORIGINATED FROM BALI AND LANDRACE PIGS

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Abstract

Flavor is a way to determine and differentiate food based on its taste. Flavor is a food characteristic that includes appearance, smell, taste, texture, and temperature. This study aims to compare the organoleptic quality of suckling pigs from two breeds. pig Which different, that is Pig Bali and Pig Landrace. Evaluation The test was conducted on four main parameters: color, odor, tenderness (texture), and taste. The method used in this study was a hedonic test involving 12 panelists as respondents. Each panelist provided an assessment. in a way subjective to sample pig roll Which has prepared, using a Likert scale. The results of organoleptic tests show that suckling pigs from Babi Bali consistently get higher average scores than Landrace Pigs in all four parameters. The average color score for Bali Pigs was 4.08 and Landrace Pigs 3.61; smell respectively 4.28 and 3.61; tenderness 4.50 and 3.89; and taste 4.67 and 3.92. Mark relatively low standard deviations in each parameter indicate consistency in the assessment panelists. Findings This show that pig roll from Pig Bali panelists preferred the suckling pig from Landrace pigs in terms of sensory quality compared to suckling pig from Landrace pigs. This difference can be caused by various factors such as genetic characteristics, fat composition, and the ability to absorb seasonings during processing. Therefore, pig breed is an important factor influencing the organoleptic quality of processed meat, especially in traditional products like suckling pig.

Keywords: Ambition Flavor, Pig Bali, Landrace pigs, organoleptic.

INTRODUCTION

Meat is a vital source of animal protein for humans. Animal protein is essential for growth, maintaining and repairing damaged body tissues, regulating bodily processes, and providing energy for bodily activities. One popular meat on the island of Bali is pig meat. Pigs raised in Bali include Balinese, saddleback, Yorkshire, Duroc, and landrace pigs. Landrace pigs are among the world's most prominent breeds, boasting numerous advantages, including high carcass production and meat quality, as well as a high carcass fattening rate (Andika et al., 2015).

The majority of people in Denpasar, and on the island of Bali in general, consume pork. This is understandable because the majority of the population is Hindu, which uses pigs for ceremonial purposes and does not forbid pork consumption (Arimbhawa et al., 2022). Pigs are a very important livestock animal in providing animal protein for some people in Indonesia and are the third largest source of animal protein after poultry and beef (Putra et al., 2021). Pork sold in traditional markets generally comes from crossbred landrace pigs. Very little, if any, pork from the Balinese pig breed is found (Hutabarat et al., 2021).

Balinese pigs have higher meat fat compared to landrace pigs, because genetically this Balinese pig breed is included in the fatty type pig breed (Arimbhawa et al., 2022). Some problems in raising Balinese pigs include a relatively lower production speed than landrace pigs and limited seed supply which is the cause of the scarcity of Balinese (local) pork circulation in traditional markets. However, Balinese (local) pork has a special market/consumer segment, especially for consumers who use Balinese pork for ceremonial purposes, for example for making suckling pigs and other culinary delights derived from pork. Some consumers who are still loyal to Balinese pork express their opinion that Balinese pork has a much more savory/delicious taste than landrace pork, but this has not been scientifically proven.

In theory, meat quality is influenced by intrinsic and extrinsic factors and the interaction between the two. Intrinsic factors that influence meat quality are breed (genetics), gender, and age, while extrinsic factors include rations and handling of livestock before slaughter and post-mortem handling (Lawrie, 2003). Other extrinsic factors include cooking techniques (rolling) and seasonings.

Taste is a way to identify and differentiate foods by their taste. Taste is a characteristic of food, encompassing its appearance, color, smell, flavor, texture, and temperature. Taste is a collaboration of the five human senses: taste, smell, touch, sight, and hearing. Taste itself is the result of the work of the taste buds located in the tongue, cheeks, throat, and roof of the mouth, which are part of the palate (Pitriyani & Maulana, 2023).

MATERIALS AND METHODS

Research Subjects

The samples used were Balinese roast pig meat and landrace roast pig meat in the abdomen (porkbelly) as many as 6 samples consisting of 3 Balinese roast pigs and 3 landrace roast pigs aged 3 to 5 months, which were obtained from the roast pig slaughterhouse owned by Mr. Mangku, located at Banjar Ulapan 2, Blakih Village and handed over to the Biang Adi roast pig food stall located at Blakih market. The tools used in this study were knives, cutting boards, spoons, tissues, plastic plates, and questionnaires. The materials used in this study were mineral water, Balinese roast pork, and the abdominal portion of Landrace roast pork.

Research Methods

The research design used in this study was an observational study, examining the differences in taste between Balinese roast pork and landrace roast pork. The results were analyzed quantitatively and then presented in tables and graphs.

Data Analysis

The mean and standard deviation of the taste test data were calculated. The test result was then presented quantitatively in tables and graphs.

RESULTS AND DISCUSSION

Results

The samples used were 6 samples of Bali suckling pig and Landrace suckling pig meat in the abdomen (samcam / porkbelly), consisting of 3 Bali suckling pigs and 3 Landrace suckling pigs aged 3 to 5 months, which were obtained from Mr. Mangku's suckling pig slaughterhouse which is located at Banjar Ulapan 2, Blakiuh Village and handed over to the Biang Adi suckling pig food stall which is right at the Blakiuh market. The data obtained is presented in the form of tables and graphs to see the organoleptic characteristics between the two types of pigs. The parameters tested are color, smell, tenderness and taste.

According to Gusnadi et al. (2021), organoleptic testing is an analysis of food ingredients based on panelists' preferences and desires for a product being tested. Organoleptic testing, also known as sensory testing, is a test that uses the human senses to measure panelists' acceptance of a product. The senses used in organoleptic testing are the sense of sight (eyes), the sense of smell (nose), the sense of taste (tongue), and the sense of touch (hands).

Color Analysis

Color is a key indicator in assessing the visual quality of suckling pig. Evenly cooked meat, not pale or too dark, will influence consumer appeal. Color assessments were conducted by male and female panelists on six provided sample codes. The following table presents the average color of the three sample codes based on the type of suckling pig:

Table 1 Average Color Ratings by Gender

No	Suckling Pig Color Score	
	Balinese Pigs	Landrace Pigs
1	4	3
2	4	4
3	4	4
4	4	4
5	5	4
6	4	3
7	4	4
8	4	3
9	4	3
10	3	3
11	4	4
12	4	4
Total	49	43
Average	4.8	3.61
Standard Deviation	0.43	0.34

Based on table 1, the test results show that Balinese pigs have an average color score of 4.80 and in terms of standard deviation, Balinese pigs have a value of 0.43, while Landrace pigs have an average score of 3.61, and a standard deviation value for Landrace pigs of 0.34. This value indicates that in general the panelists gave a higher color assessment to Balinese pig meat compared to Landrace pigs. The difference in average values shows that the panelists preferred or considered the color of Balinese pork meat to be more attractive than Landrace pork.

Furthermore, color also plays a crucial role as an indicator of ripeness and processing techniques. Balinese pork samples appear to exhibit more appealing visual characteristics and convey a high level of readiness for consumption. With a higher average color, it can be

concluded that, visually, Balinese pork possesses superior and stronger appeal, captivating consumers at first glance.

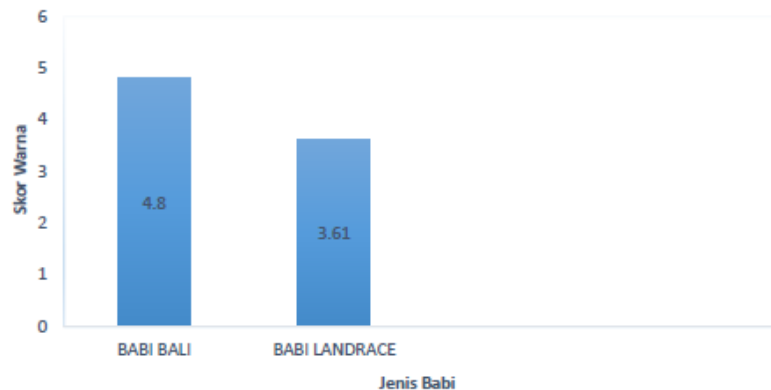


Figure 1. Average Color Rating of Suckling Pig

Odor Analysis

The aroma of roast pork plays a crucial role in forming initial impressions of the product's quality. A pleasant and distinctive flavor will stimulate consumers' appetite. This aspect is also evaluated based on the panelists' gender.

Table 2. Average Odor Rating Based on Type of Suckling Pig

No	Roast Pig Smell Score	
	Balinese Pigs	Landrace Pigs
1	4	3
2	4	4
3	5	3
4	4	4
5	5	4
6	4	4
7	4	3
8	4	3
9	4	4
10	4	4
11	5	3
12	4	4
Total	51	43
Average	4.28	3.61
Standard Deviation	0.31	0.37

Based on Table 2, the average odor rating for Balinese suckling pig meat was 4.28, with a standard deviation of 0.31. Meanwhile, the average score for landrace pigs was 3.61, with a standard deviation of 0.37. The average score for Balinese pig samples was above 4, while the average score for landrace pigs was below 4.

This difference indicates that the panelists generally preferred the aroma of Balinese pork. The pleasant and distinctive aroma provides a positive initial sensory experience before consumers experience the product as a whole. This may be related to the characteristics of the fat and the traditional processing techniques used in Balinese pork, resulting in a more complex and robust aroma.

Meanwhile, the aroma of Landrace pork tended to be lighter and less pronounced, making it less appealing to panelists. Smell is a key factor in stimulating appetite, and when this parameter is lacking, the product becomes less appealing overall. Therefore, based on these results, it can be concluded that Balinese pork has a significant advantage in enhancing the initial appeal of a product in terms of aroma.

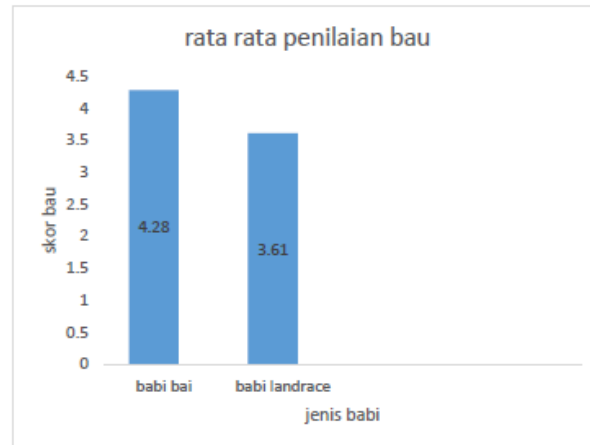


Figure 2. Average Odor Rating

Tenderness Analysis

The texture or tenderness of the meat is an important indicator of the comfort of eating suckling pig. Tender, easy-to-chew meat will increase consumer satisfaction.

Table 3. Average Tenderness Rating Based on Pig Type

No	Roast Pig Texture Score	
	Balinese Pigs	Landrace Pigs
1	4	4
2	4	5
3	5	5
4	5	3
5	5	4
6	4	4
7	5	4
8	4	4
9	5	4
10	4	4
11	5	3
12	5	3
Total	45	47
Average	4.50	3.89
Standard Deviation	0.22	0.52

The assessment of tenderness in table 3 shows that the Balinese suckling pig again received a higher score compared Landrace. The highest average score was achieved by Balinese guinea pigs, with a score of 4.50. Meanwhile, samples from landrace pigs recorded a lower average score of 3.89.

Tenderness is one of the sensory attributes that most influences comfort when consumed. Panelists tend to prefer the texture of meat that is soft, easy to chew and not tough. Balinese pork that gets a high score is likely to have a more tender and balanced texture, and not be too

dry or tough. In contrast, Landrace pork shows more varied results, but tends to be inferior in terms of tenderness. This shows that the texture of this type of meat feels tougher or less comfortable to consume in the context of traditional foods such as suckling pig. Therefore, the superiority of Balinese pork in terms of tender texture provides real added value to the eating experience.

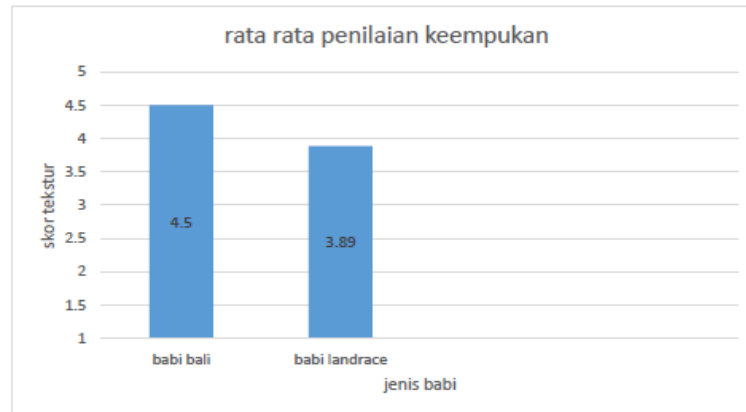


Figure 3. Average Tenderness Rating Per Sample

Taste Analysis

Taste is the most dominant aspect in determining consumer preference for suckling pig. The delicious, savory, and balance between fat and spices is the main indicator of product success.

Table 4. Average Taste Aspect Rating Based on Gender

No	Suckling Pig Taste Score	
	Balinese PigS	Landrace Pigs
1	5	4
2	5	4
3	5	3
4	5	4
5	5	4
6	5	4
7	4	4
8	4	4
9	5	4
10	5	4
11	5	4
12	4	5
Total	56	47
Average	4.67	3.92
Standard Deviation	0.32	0.35

Table 4. presents the results of the taste test, with the highest average score being 4.67 for Balinese suckling pig. Meanwhile, all panelists from *landrace pigs* recorded a lower average score, 3.92.

These results confirm that the panelists found Balinese pork to be more satisfying. The savory, fatty flavors and rich spices were likely the primary reasons why Balinese pork was preferred. Flavor is a combination of basic flavors, aromas, and textures experienced simultaneously during eating, and Balinese pork appears to have successfully created a balanced and enjoyable blend in this regard.

In contrast, the panelists found the flavor of Landrace pork to be inferior and less impressive. This suggests that, from a sensory perspective, Landrace pork products still fall short of the dining experience offered by Balinese pork. Therefore, it can be concluded that Balinese suckling pig is superior overall, particularly in terms of flavor, which is crucial for product acceptance among consumers.

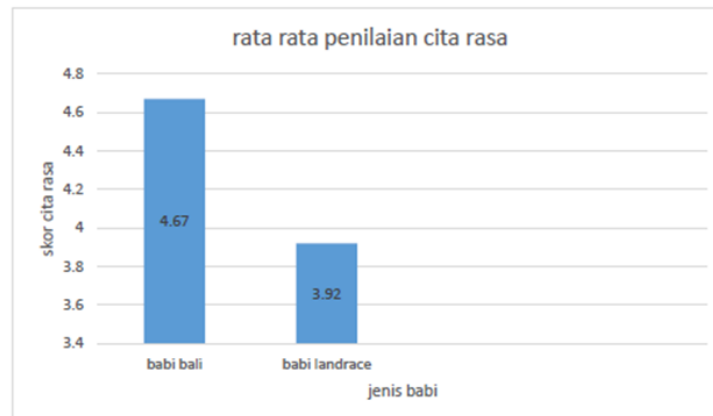


Figure 4. Average Taste Aspect Rating Per Sample

Discussion

Organoleptic testing evaluates food products based on panelist preferences across four sensory dimensions sight, smell, taste, and touch to measure consumer acceptance (Gusnadi et al., 2021). In this study, a hedonic test using a Likert scale was conducted with 12 panelists evaluating pork belly (*samcam*) samples from six roasted pigs aged 3 to 5 months (three Balinese pigs and three Landrace pigs) sourced from Mr. Mangku's slaughterhouse and handed over to the Biang Adi food stall. The evaluation revealed that roasted pork from Balinese pigs consistently earned higher average scores across all tested parameters color, odor, tenderness, and taste compared to Landrace pigs, demonstrating superior overall organoleptic quality.

In the color analysis, Balinese roasted pork achieved an average score of 4.08, whereas Landrace pork scored 3.61. The higher score for Balinese pork indicates an appealing visual presentation, ideal ripeness, and an attractive cooked appearance that captivates consumers at first glance. For the odor parameter, Balinese pork received a mean score of 4.28 (SD 0.31) compared to 3.61 (SD 0.37) for Landrace pork. The pleasant, robust, and complex aroma of Balinese pork generated a positive initial sensory impression, which is attributed to its distinctive fat characteristics and traditional processing methods, while Landrace pork exhibited a lighter and less pronounced aroma.

Regarding tenderness, Balinese pigs recorded a higher mean score of 4.50 (SD 0.22) compared to Landrace pigs at 3.89 (SD 0.52). Panelists favored the soft, easily chewable, and non-tough texture of Balinese pork, whereas Landrace pork demonstrated wider score variation and a tougher texture that reduced eating comfort. In the taste aspect the most influential parameter in determining consumer preference Balinese pork achieved the highest score of 4.67 (SD 0.32), outperforming Landrace pork, which scored 3.92 (SD 0.35). This preference was driven by a harmonious blend of savory fat content and the optimal absorption of spices during the roasting process.

These results are aligned with the theoretical framework that meat quality is governed by intrinsic factors, such as breed, genetics, gender, and age, alongside extrinsic factors including rations, livestock handling, cooking techniques, and seasonings (Lawrie, 2003). Genetically, Balinese pigs are classified as a fatty-type pig breed, possessing higher fat content in meat than Landrace pigs (Arimbhawa et al., 2022). Extrinsically, the synergy between traditional roasting

techniques, seasoning absorption, and fat composition creates a complete flavor profile that simultaneously engages the senses of taste, smell, and touch (Lawrie, 2003; Pitriyani & Maulana, 2023). Therefore, pig breed represents a fundamental factor influencing the organoleptic quality and overall consumer acceptance of traditional roasted pork products

CONCLUSIONS AND SUGGESTIONS

Conclusions

1. The color score of Balinese suckling pigs was higher, respectively (average 4.08) compared to Landrace pigs (average 3.61).
2. The average aroma score of Balinese suckling pigs was 4.28, while that of Landrace pigs was 3.61.
3. Balinese pigs also received the highest tenderness rating (average 4.50) compared to Landrace pigs (average 3.89).
4. In terms of flavor, Balinese pigs were superior, with an average score of 4.67 compared to Landrace pigs, which scored 3.92.

Suggestions

1. Culinary businesses, especially roast pork restaurants, are advised to use more Balinese pork as their roast pork ingredient, as it has been proven to produce products with a superior taste, aroma, and tenderness that consumers prefer.
2. For further research, it is recommended to conduct additional chemical analyses (such as fat and protein content) to support objective organoleptic test results, and to involve more panelists from diverse backgrounds to obtain more representative results.
3. Developing innovative products based on Balinese roast pork, such as frozen or ready-to-eat meals, can be considered as a diversification strategy for local culinary businesses.

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