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Original Research Article

Effect of Different Additives Incorporation in Chicken Diets on Consumers' Sensory Preference

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Abstract: Poultry meat is a key global protein source, with increasing demand driven by consumer preferences for high-quality products. This study aimed to assess the impact of six different diet systems on consumer preferences for chicken meat, focusing on taste, texture and appearance. The diets tested included Diet 1 (control feed with premium starter feed) and Diets 2 to 6, which incorporated 5% additives into premium starter feed: Diet 2 with *Trichanthera gigantea*, Diet 3 with Black Soldier Fly Larvae, Diet 4 with Crude Palm Kernel Oil, Diet 5 with Organic Acid, and Diet 6 with SK Gold Yellow Pigment. Chickens were reared for 120 days under consistent conditions, after which their meat was steamed and served to 60 respondents, including chicken producers, feed suppliers, and consumers. Respondents rated the sensory attributes using structured questionnaires. Results indicated that Diet 6 yielded the highest improvements in meat quality, closely followed by Diet 5. Diets 2, 3, and 4 showed moderate enhancements, while Diet 1 was the least effective. The study highlights the potential of specific feed modifications to enhance meat quality, aiding producers in optimizing feed formulations.

Keywords: Chicken diet systems; Consumer preference, Feed additives, Meat sensory attributes, Poultry meat quality

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1. Introduction

1.1 Background

Poultry meat and eggs are among the most widely consumed animal-source foods globally, transcending geographical boundaries, cultural customs, and religious practices. Over the past three decades, global demand for poultry meat has surged remarkably, with total meat consumption increasing from 153.9 million tonnes in 1990 to 328.4 million tonnes in 2021. During this period, poultry meat consumption exhibited the most significant and

consistent growth, rising from 34.6 million tonnes to 132.4 million tonnes (Statista, 2021). This nearly fourfold increase underscores poultry meat's crucial role in meeting global protein needs.

In Malaysia, the poultry sector is a major contributor to the livestock industry, accounting for RM 12.4 billion or 52% of the livestock ex-farm value in 2019 (DOSM, 2019). However, the sector faces challenges, particularly in the post-pandemic era, as rising costs of imported chicken feed threaten both profitability and production levels (Malaysia Gazette, 2021). The industry's reliance on imported feed has exposed it to price volatility, highlighting the need for sustainable alternatives to stabilize costs and enhance production efficiency.

Recent shifts in consumer preferences have further impacted the poultry industry. A growing segment of consumers is seeking meat products, including fresh chicken, that offer distinct intrinsic and extrinsic quality attributes compared to those produced using conventional methods (Devatkal, *et al.*, 2019). These attributes include factors such as taste, texture, nutritional value, and production practices that emphasize animal welfare and environmental sustainability.

Given these dynamics, this study aims to identify effective chicken feed systems utilizing locally produced additives to enhance consumer preference for chicken meat. By improving the quality attributes of poultry through innovative feed solutions, the study seeks to provide valuable insights into marketing strategies that can boost consumer acceptance and ultimately increase the profitability of chicken farmers. This research not only addresses the pressing economic challenges faced by the poultry sector but also contributes to the broader goal of developing sustainable, high-quality poultry products that meet evolving consumer demands.

1.2 Literature Review: Consumer Preferences in Meat Quality

Understanding consumer preferences for chicken meat is crucial for the poultry industry, as these preferences drive purchasing decisions. Research consistently highlights taste, texture, and appearance as key factors influencing consumer choices, with perceptible features like appearance, texture, juiciness, wateriness, firmness, tenderness, odour, and flavour affecting quality judgements (Mir *et al.*, 2017).

Studies by Amorim (2016) and Cha *et al.* (2014) underscore the importance of taste and texture as essential sensory characteristics that define chicken meat quality. A study conducted in Guinea by Sow & Grongnet (2010) found that sensory attributes such as colour,

texture, and flavour significantly shaped consumer preferences, identifying key drivers such as juiciness, oiliness, sweetness, hardness, persistence, and yellow colour.

Research by Wideman *et al.* (2016) indicated a strong preference among U.S. consumers for white breast meat over darker leg/thigh meat due to lower levels of myoglobin and heme pigments. Similarly, Neima *et al.* (2021) confirmed that internal factors like sensory features and portion size were more influential than external factors in shaping preferences.

In Malaysia, Imran *et al.* (2014) found that quality factors such as tenderness, colour, aroma, and juiciness heavily influenced consumer buying decisions. Kennedy *et al.* (2005) explored the impact of feed types on meat quality and found that sensory attributes, particularly meat colour, played a pivotal role in consumer choices, while Napolitano *et al.* (2013) showed that marketing strategies highlighting production methods could positively influence consumer acceptance.

These studies collectively emphasize the importance of sensory factors—taste, texture, and appearance—in shaping consumer preferences, suggesting that tailored production and marketing strategies are essential to meet consumer demands and promote sustainable poultry production.

1.3 Literature Review: The Role of Diet in Enhancing Poultry Growth, Meat Quality, and Productivity

Diet plays a crucial role in enhancing poultry growth, meat quality, and overall productivity. Feed ingredients directly influence critical meat characteristics such as taste, texture, and appearance which are essential for consumer acceptance (Hudák *et al.*, 2021). For instance, specific diet formulations can alter meat colour, making it more visually appealing, or affect tenderness and juiciness, which are key sensory attributes assessed in consumer preference studies.

Research has extensively explored the impact of various diet systems on poultry meat quality. Wideman *et al.* (2016) found that a wheat-based diet tends to lighten the colour of breast meat but has less effect on thigh meat. This highlights the role of diet in influencing meat appearance and, consequently, consumer acceptance.

The addition of Pokok Ketum Ayam (*Trichanthera Gigantean*) in poultry diets has been shown to increase chicken body weight due to its high palatability and nutritional content with low levels of anti-nutritional factors (Morbos, *et al.*, 2016; Hess & Dominguez,

1998). Research by Libatique (2020) demonstrated that including 15% *Trichanthera Gigantean* significantly improved aroma and taste, with an adjective rating of “Like Extremely”, and showed modest improvements in juiciness and tenderness, rated as "Like Very Much" for duck meat. In 2021, Libatique’s research also indicated that feeding 15% *Trichanthera Gigantean* to chickens resulted in a “Like Extremely” rating from taste panellists for the chicken meat’s aroma and flavour (Libatique, 2021).

The inclusion of insect meals, particularly Protein Larva Askar Hitam (Black Soldier Fly Larvae, BSFL), has been recognized for its potential to enhance feed with high protein content, essential amino acids, minerals, and vitamins (Kouřimská & Adámková, 2016; Van Huis, 2013; Spranghers *et al.*, 2017; Chodová, 2020). Shaviklo *et al.* (2021) found that dietary inclusion of insect meal positively influenced meat juiciness and that up to 3% insect meal could enhance the sensory attributes and overall meat quality of broilers. Conversely, Cullere *et al.* (2019) showed that the sensory traits of chicken meat fed with 10% and 15% insect meal were comparable to those of chicken fed a conventional soybean meal diet.

Dietary oils, such as Crude Palm Kernel Oil (CPKO), are valued for their high caloric content, improved nutrient absorption, and enhanced feed palatability (Abdulla *et al.*, 2017; Baiao & Lara, 2005; Chwen *et al.*, 2013). Increasing dietary fat levels up to 6.5% in broiler diets improved growth performance, feed conversion ratio (FCR), and carcass weight, with broilers gaining more weight as dietary fat increased (Sahito *et al.*, 2012). Additionally, Ayed *et al.* (2015) concluded that adding fat to diets enhances the masticability and elasticity of chicken meat.

Organic acids have also been effective in improving growth performance, serving as a substitute for antibiotic growth promoters (Khan & Iqbal, 2016). Akaichi *et al.* (2022) evaluated the impact of Humic Acid (HA), Organic Acids (OA), and their combination (HAOA) on broiler chickens, focusing on growth performance, meat quality, and other factors. While growth performance was unaffected, sensory evaluation showed that diets with HA and the HA+OA combination significantly improved the colour and smell of breast meat ($P < 0.05$). The combination of HA and OA also enhanced the sensory attributes of cooked breast meat, suggesting HAOA as a beneficial feed additive for broiler health. Stamilla *et al.* (2020) also found that organic acids and essential oils as feed additives improved meat quality, with some impact on meat colour.

The new additive, SK Gold Yellow Pigment, uses cutting-edge technology to retain the natural components of palm oil, such as beta-carotene and vitamin E, by using stearin

obtained through a patented first-cut cold process. According to the manufacturer, this additive is believed to enhance available energy, increase palatability, and improve growth performance and feed efficiency (Palma Tech, 2021). Studies (Niu *et al.*, 2009; Adebiyi *et al.*, 2011; Khattak *et al.*, 2012) indicate that dietary inclusion of vitamin E mitigates stress effects on meat quality, enhancing physical properties such as higher pH, improved water-holding capacity, and reduced cooking loss. Additionally, vitamin E supplementation resulted in darker meat with enhanced red colour saturation and reduced yellow saturation (Zdanowska-Sąsiadek, 2016). Vitamin E supplementation had a significant ($P<0.05$) effect on the keeping quality of broiler meat (Adekunmisi, 2008)

1.4 Study Objective

The primary objective of this study is to determine how various diet systems affect the sensory qualities of chicken meat, particularly taste, texture and appearance — key attributes that drive consumer preferences. Understanding these effects will help identify which diet systems produce the most desirable sensory characteristics, guiding poultry producers towards feeding strategies that enhance consumer satisfaction.

1.5 Significance of Study

This study serves as a pilot that will provide preliminary insights into how different diet systems impact the sensory qualities of chicken meat, such as taste, texture and appearance. The findings will offer guidance for poultry producers on adjusting feeding practices to enhance meat quality and consumer appeal.

The results will also add value to future research by highlighting key areas for further investigation, setting the stage for more comprehensive studies on diet and meat quality. This pilot study will lay the groundwork for optimising feed formulations, contributing to improved strategies in poultry production and subsequent research efforts.

2. Materials and Methods

2.1 Study Design

This study evaluates the impact of six different diet systems on consumer preferences for chicken meat, specifically focusing on taste, texture and appearance. Each diet system includes variations in additives, uniformly mixed using a mixer to ensure consistency. The diet systems tested are:

1. Diet 1 (D1): "KL Supreme" brand Premium Starter Feed, produced by KL Supreme Feedmill Sdn Bhd in a 50 kg pack, serving as the control diet and the most popular choice among poultry farmers.
2. Diet 2 (D2): 5% Pokok Ketum Ayam (*Trichanthera gigantea*) added to Premium Starter Feed.
3. Diet 3 (D3): 5% Protein Larva Askar Hitam (Black Soldier Fly Larvae, BSFL) added to Premium Starter Feed.
4. Diet 4 (D4): 200 g of Crude Palm Kernel Oil (CPKO) mixed into 50 kg of Premium Starter Feed.
5. Diet 5 (D5): 100 g of "PERFAT Pfi-7" brand Organic Acid mixed into 50 kg of Premium Starter Feed.
6. Diet 6 (D6): 100 g of Yellow Pigment (SK Gold brand) mixed into 50 kg of Premium Starter Feed.

Additives were limited to 10% to ensure balanced nutrient intake, ensuring any differences in meat quality stemmed from feed variations rather than nutritional deficiencies.

Chickens were reared under controlled conditions that mimic typical poultry environments, including regulated temperature, humidity, and lighting. The experimental setup ensured consistency in housing, lighting, and temperature to isolate the effects of diet on meat quality. Chickens were housed in open, fenced areas, with a temperature of 30 ± 3°C. Activity levels were kept uniform by providing similar space allocations for each group.

A total of 60 chickens (10 chickens per diet) were raised for 120 days on their respective diets before being slaughtered for evaluation. Two chickens from each group were selected, and their meat was prepared using a standard steaming method. The steamed meat was cut into pieces and served to respondents, who assessed taste, texture, and appearance through a structured questionnaire. This approach allowed a controlled assessment of how different diet systems affect chicken meat's sensory qualities.

This study serves as a pilot for a larger, more comprehensive investigation into the effects of diet systems on chicken meat quality, aiming to refine methodologies and establish preliminary findings for future research.

2.2 Sample Selection

A total of 60 respondents were selected using convenience sampling and divided into three categories: 15 chicken producers, 15 feed suppliers and 30 general consumers. This sample size was chosen to ensure a balanced representation of both industry experts

(producers and suppliers) and general consumers, whose preferences significantly influence market trends. Convenience sampling was employed for its practicality in sensory evaluation studies. The ethnic diversity of the respondents was determined based on chicken meat consumption patterns, with the sample consisting of 16 Chinese, 22 Indian, and 22 Malay participants. This distribution ensures a representative assessment of consumer preferences across key ethnic groups (Sugiyama *et al.*, 2003). Respondents were selected based on their roles within the poultry industry or as consumers, with producers and suppliers offering industry-specific insights, and regular consumers reflecting broader market preferences.

Consumer preferences were gathered through structured questionnaires, which asked respondents to evaluate chicken meat samples based on appearance, taste and texture. Each attribute was ranked on a scale from 1 to 6, with 1 representing the lowest quality and 6 the highest. This ranking system enabled a detailed analysis of consumer preferences. Figure 1 below shows the questionnaire questions:

Ref	Description	Rank					
		Least tasty/ Attractive					Most tasty/ Attractive
A)	Control Farm (Premium Starter Feed)						
	Chicken taste (in terms of chicken flavour)	1	2	3	4	5	6
	Chicken meat tenderness / texture	1	2	3	4	5	6
	Chicken outlook (yellowish / attractiveness)	1	2	3	4	5	6
B)	Pokok Ketum Ayam						
	Chicken taste (in terms of chicken flavour)	1	2	3	4	5	6
	Chicken meat tenderness / texture	1	2	3	4	5	6
	Chicken outlook (yellowish / attractiveness)	1	2	3	4	5	6
C)	Protein Larva Askar Hitam (BSFL)						
	Chicken taste (in terms of chicken flavour)	1	2	3	4	5	6
	Chicken meat tenderness / texture	1	2	3	4	5	6
	Chicken outlook (yellowish / attractiveness)	1	2	3	4	5	6
D)	Crude Palm Kernel Oil (CPKO)						
	Chicken taste (in terms of chicken flavour)	1	2	3	4	5	6
	Chicken meat tenderness / texture	1	2	3	4	5	6
	Chicken outlook (yellowish / attractiveness)	1	2	3	4	5	6
E)	Organic acid						
	Chicken taste (in terms of chicken flavour)	1	2	3	4	5	6
	Chicken meat tenderness / texture	1	2	3	4	5	6
	Chicken outlook (yellowish / attractiveness)	1	2	3	4	5	6
F)	Yellow Pigment (Brand: SK Gold)						
	Chicken taste (in terms of chicken flavour)	1	2	3	4	5	6
	Chicken meat tenderness / texture	1	2	3	4	5	6
	Chicken outlook (yellowish / attractiveness)	1	2	3	4	5	6

Figure 1. Questionnaire questions

2.4 Data Analysis Methods

Three analytical methods were used in the study:

1. Descriptive Statistics (Chattamvelli, 2023): This analysis measured the mean, median, and standard deviation of the rankings for each diet system, providing an overview of consumer preferences for taste, texture and appearance.
2. Friedman Test (Karunarathna *et al.*, 2016): A non-parametric test was used to compare the rankings of the six diet systems for each category (taste, texture and appearance). The Friedman test identified significant differences in preferences across the diet systems.
3. Post-Hoc Analysis (Nordstokke & Stelnicki, 2014): Pairwise comparison methods were employed to identify significant differences between diet systems, clarifying which systems significantly differed from one another.

These methods provided a comprehensive analysis of how different diet systems influence the sensory attributes of chicken meat, informing the study's pilot findings and future research directions.

3. Results and Discussions

3.1 Descriptive Statistics

The following tables, i.e. Table 1, 2 and 3 show the results for the distribution of rankings for taste, texture and appearance of chicken meat based on different diets.

Table 1. Descriptive statistics for taste of chicken based on different diets

	N	Mean	Standard Deviation	Minimum	Maximum
Diet 1	60	2.13	1.096	1	5
Diet 2	60	3.30	1.522	1	6
Diet 3	60	2.40	1.317	1	6
Diet 4	60	3.47	1.556	1	6
Diet 5	60	4.53	1.268	1	6
Diet 6	60	5.17	1.196	1	6

Table 2. Descriptive statistics for texture of chicken meat based on different diets

	N	Mean	Standard Deviation	Minimum	Maximum
Diet 1	60	2.13	1.186	1	6
Diet 2	60	3.00	1.626	1	6
Diet 3	60	2.30	1.331	1	6
Diet 4	60	4.03	1.119	2	6
Diet 5	60	4.30	1.253	1	6
Diet 6	60	5.23	1.240	1	6

Table 3. Descriptive statistics for appearance of chicken based on different diets

	N	Mean	Standard Deviation	Minimum	Maximum
Diet 1	60	2.77	1.760	1	6
Diet 2	60	2.90	1.633	1	6
Diet 3	60	2.43	1.212	1	5
Diet 4	60	3.70	1.197	1	6
Diet 5	60	3.93	1.539	1	6
Diet 6	60	5.27	1.133	1	6

3.2 Friedman Test Results

Based on Table 4 and Figure 2 below, the Friedman test was conducted to compare the rankings of six different diet systems based on the taste, texture, and appearance of chicken meat. The results indicated significant differences among the diets for all three sensory attributes—taste, texture, and appearance—with *p*-values of 0.000, confirming that these differences are statistically significant.

Diet 6 achieved the highest mean rank (5.17) for taste, indicating it was rated as having the most preferred taste, followed by Diet 5 (4.53) and Diet 4 (3.47). Diet 1 received the lowest rank (2.13), suggesting it was the least preferred in terms of taste. Similarly, Diet 6 ranked highest for texture (5.23), indicating it was perceived as having the best texture, followed by Diet 5 (4.30) and Diet 4 (4.03), with Diet 1 again receiving the lowest ranking (2.13). For appearance, Diet 6 also secured the highest ranking (5.27), followed by Diet 5 (3.93) and Diet 4 (3.70), while Diet 3 was rated the lowest (2.43).

Table 4. Friedman test results for chicken meat taste, texture and appearance based on different diets

	Chicken Meat Taste	Chicken Meat Texture	Chicken Meat Appearance
Diet 1	2.13	2.13	2.77
Diet 2	3.30	3.00	2.90
Diet 3	2.40	2.30	2.43
Diet 4	3.47	4.03	3.70
Diet 5	4.53	4.30	3.93
Diet 6	5.17	5.23	5.27
Chi-Square	119.390	128.343	92.305
Df	5	5	5
p-value	0.000	0.000	0.000

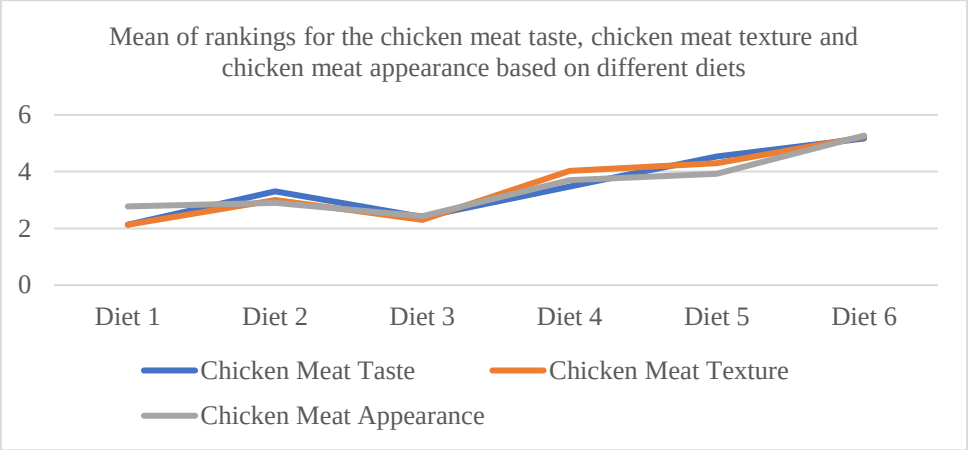

Figure 2. Friedman test results for chicken meat taste, texture and appearance based on different diets.

3.3 Post-Hoc Analysis: Pairwise comparisons

Based on Table 5 and Figure 3 below, significant differences in taste were found between most diets, except for the following comparisons:

(a) Diet 1 - Diet 3, Diet 2 - Diet 4, Diet 5 - Diet 6, and Diet 2 - Diet 3 showed no significant differences, indicating similar taste performance between these diet pairs.

(b) Diet 6 ranked highest in taste, followed closely by Diet 5. Although there was no significant difference between these two, they were the top performers in terms of taste.

Table 5. Pairwise comparison for chicken meat taste based on different diets[1]

Sample 1-Sample 2	Test Statistic	Sig.	Adj. Sig.[a]
Diet1_taste-Diet3_taste	-.267	.435	1.000
Diet1_taste-Diet2_taste	-1.167	.001	.010
Diet1_taste-Diet4_taste	-1.333	.000	.001
Diet1_taste-Diet5_taste	-2.400	.000	.000
Diet1_taste-Diet6_taste	-3.033	.000	.000
Diet3_taste-Diet2_taste	.900	.008	.126
Diet3_taste-Diet4_taste	-1.067	.002	.027
Diet3_taste-Diet5_taste	-2.133	.000	.000
Diet3_taste-Diet6_taste	-2.767	.000	.000
Diet2_taste-Diet4_taste	-.167	.626	1.000
Diet2_taste-Diet5_taste	-1.233	.000	.005
Diet2_taste-Diet6_taste	-1.867	.000	.000
Diet4_taste-Diet5_taste	-1.067	.002	.027
Diet4_taste-Diet6_taste	-1.700	.000	.000
Diet5_taste-Diet6_taste	-.633	.064	.956

[1]Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is $p<0.05$. Significance values have been adjusted by the Bonferroni correction for multiple tests.

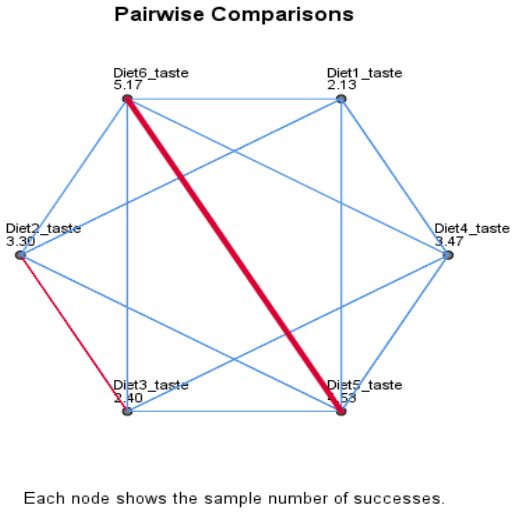

Figure 3. Pairwise Comparisons Diagram for chicken meat taste based on different diets.

Based on Table 6 and Figure 4 below, significant differences in texture were found between most diets, except for the following:

(a) Diet 1 - Diet 2, Diet 5 - Diet 6, Diet 2 - Diet 3, Diet 4 - Diet 5, and Diet 1 - Diet 3 showed no significant differences, suggesting these diets performed similarly in terms of texture.

(b) Diet 6 consistently ranked high in texture, followed closely by Diet 5, while Diets 2 and 3 had comparable, lower performances.

Table 6. Pairwise comparison for chicken meat texture based on different diets[1]

Sample 1-Sample 2	Test Statistic	Sig.	Adj. Sig.[a]
Diet1_texture-Diet3_texture	-.167	.626	1.000
Diet1_texture-Diet2_texture	-.867	.011	.168
Diet1_texture-Diet4_texture	-1.900	.000	.000
Diet1_texture-Diet5_texture	-2.167	.000	.000
Diet1_texture-Diet6_texture	-3.100	.000	.000
Diet3_texture-Diet2_texture	.700	.040	.606
Diet3_texture-Diet4_texture	-1.733	.000	.000
Diet3_texture-Diet5_texture	-2.000	.000	.000
Diet3_texture-Diet6_texture	-2.933	.000	.000
Diet2_texture-Diet4_texture	-1.033	.002	.037
Diet2_texture-Diet5_texture	-1.300	.000	.002
Diet2_texture-Diet6_texture	-2.233	.000	.000
Diet4_texture-Diet5_texture	-.267	.435	1.000
Diet4_texture-Diet6_texture	-1.200	.000	.007
Diet5_texture-Diet6_texture	-.933	.006	.094

[1]Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is $p<0.05$. Significance values have been adjusted by the Bonferroni correction for multiple tests.

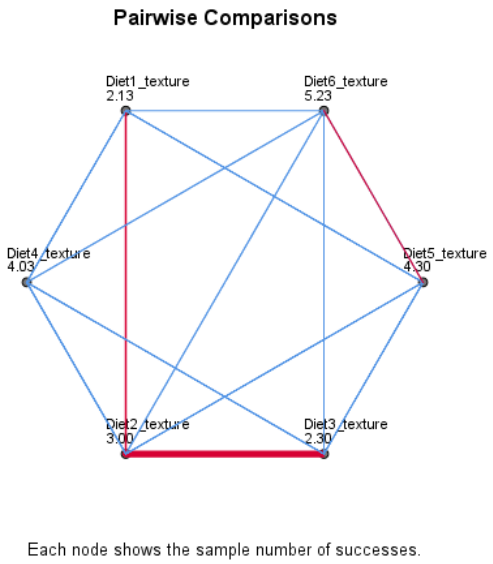

Figure 4. Pairwise Comparisons Diagram for chicken meat texture based on different diets.

Based on Table 7 and Figure 5 below, significant differences in appearance were found between most diets, except for the following:

(a) Diet 2 - Diet 4, Diet 1 - Diet 4, Diet 1 - Diet 3, Diet 2 - Diet 3, and Diet 4 - Diet 5 were not significantly different, indicating similar performance in appearance.

(b) Diet 6 was among the top performers for appearance, whereas Diets 1, 2, and 4 had comparable impacts on appearance.

Table 7. Pairwise comparison for chicken meat appearance based on different diets[1]

Sample 1-Sample 2	Test Statistic	Sig.	Adj. Sig.[a]
Diet3_appearance-Diet1_ appearance	.333	.329	1.000
Diet3_appearance-Diet2_ appearance	.467	.172	1.000
Diet3_appearance-Diet4_appearance	-1.267	.000	.003
Diet3_appearance-Diet5_appearance	-1.500	.000	.000
Diet3_appearance-Diet6_appearance	-2.833	.000	.000
Diet1_appearance-Diet2_appearance	-.133	.696	1.000
Diet1_appearance-Diet4_appearance	-.933	.006	.094
Diet1_appearance-Diet5_appearance	-1.167	.001	.010
Diet1_appearance-Diet6_appearance	-2.500	.000	.000
Diet2_appearance-Diet4_appearance	-.800	.019	.288
Diet2_appearance-Diet5_appearance	-1.033	.002	.037
Diet2_appearance-Diet6_appearance	-2.367	.000	.000
Diet4_appearance-Diet5_appearance	-.233	.495	1.000
Diet4_appearance-Diet6_appearance	-1.567	.000	.000
Diet5_appearance-Diet6_appearance	-1.333	.000	.001

[1]Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is $p<0.05$. Significance values have been adjusted by the Bonferroni correction for multiple tests.

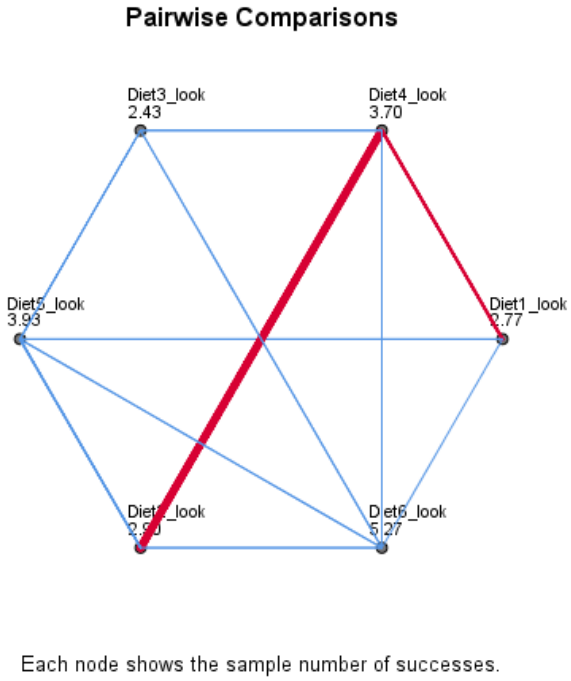

Figure 5. Pairwise Comparisons Diagram for chicken meat appearance based on different diets.

Diet 6 consistently ranked among the top performers across taste, texture, and appearance, showing significant improvements in meat quality attributes compared to other diets. The lack of a significant difference between Diet 5 and Diet 6 in taste and texture suggests that Diet 5 is nearly as effective as Diet 6 in these areas. Diet 5 demonstrated strong performance, particularly in taste and texture, making it a valuable option when considering these sensory enhancements.

Diets 2 and 3 exhibited similar performance in taste and texture, with no significant differences between them, indicating neither diet offers distinct advantages over the other. Diets 1 and 4 frequently showed comparable performance with other lower-ranked diets, particularly in texture and appearance, suggesting that these diets do not significantly enhance meat quality attributes compared to higher-performing diets like Diets 5 and 6.

3.4 Discussion

The study aimed to evaluate the impact of various poultry diets on meat quality attributes, including taste, texture, and appearance. The findings highlighted significant

variations in meat quality based on different diet formulations, supporting existing literature that underscores the crucial role of diet in enhancing poultry meat characteristics.

The results align with prior research, demonstrating that specific feed components such as high-quality proteins (e.g., Black Soldier Fly Larvae) and dietary oils significantly enhance sensory attributes of meat. This is consistent with studies by Shaviklo *et al.* (2021) and Ayed *et al.* (2015), which highlighted the benefits of protein- and fat-rich diets. Additionally, the study's findings on innovative additives like *Trichanthera gigantea* and SK Gold Yellow Pigment enhancing sensory qualities align with research by Libatique (2021) and Zdanowska-Sąsiadek (2016), which recognized the role of these ingredients in improving taste, appearance, and overall meat quality.

4. Conclusions

The study confirms that diet formulations significantly influence poultry meat quality, particularly enhancing taste, texture, and appearance when appropriate feed components are utilized. Diet 6 consistently emerged as the top performer across all sensory attributes, providing significant improvements in meat quality. Diet 5 closely followed, particularly excelling in taste and texture, making it a nearly equally effective and viable alternative. Producers should prioritize Diet 6 or Diet 5 for consistent enhancements across all quality attributes, making them the most suitable options for improving overall chicken meat quality.

Diets 2, 3, and 4 demonstrated similar performance across many comparisons, particularly in texture and appearance, without providing significant enhancements, indicating limited differentiation among these diets. These diets may be considered secondary options unless specific factors such as cost or availability dictate their use. Diet 1 ranked lowest overall, indicating a need for reformulation to improve its impact on meat quality.

While the findings align broadly with existing literature, the observed variations highlight the complexities of diet formulations and the need for ongoing research to optimize feeding strategies. This study emphasizes the potential of targeted feed additives to enhance meat quality, ultimately contributing to better consumer acceptance and increased marketability of poultry products.

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