JURNAL PENELITIAN PROGRESSIF
Vol 5 No 1 (2026): SEPTEMBER 2025 - FEBRUARY 2026 | DOI: https://doi.org/ 10.61992/jpp.v5i1.315 | E-ISSN:2963-4369

THE EFFECT OF MORINGA OLEIFERA LEAF FLOUR SUBSTITUTION ON BROILER CHICKEN CARCASS PRODUCTION

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Abstract

Moringa leaves (*Moringa oleifera*) are plants that have high nutritional content, including protein, calcium, vitamin C, iron, and bioactive compounds such as flavonoids and phenolics that function as natural antioxidants. These contents make Moringa leaves potential as an alternative ingredient in poultry feed, especially broiler chickens, to support the immune system while improving carcass quality. This study aims to determine the effect of Moringa *oleifera* leaf flour substitution in rations on broiler chicken carcass production which will be carried out in Bueng Sidom Village, Blang Bintang District, Aceh Besar Regency using a Completely Randomized Design with four treatments and four replications. The treatments consisted of P0 (100% commercial ration), P1 (97% commercial ration + 3% moringa leaf flour), P2 (94% commercial ration + 6% moringa leaf flour), and P3 (91% commercial ration + 9% moringa leaf flour). The parameters observed included live weight, carcass weight, carcass percentage, and percentage of carcass parts such as thighs, wings, and breasts . Data were analyzed using SPSS 22. The results showed that substitution of moringa leaf flour up to 9% did not have a significant effect on all parameters observed statistically. However, descriptively there were variations in the trend of results in each treatment. P2 showed the best value for live weight and carcass weight, P1 for carcass and wing percentage, P0 for thigh percentage, and P3 for breast percentage. In conclusion, substitution of moringa leaf flour in broiler chicken rations did not have a significant effect on carcass performance, so the null hypothesis (H0) was accepted. Nevertheless, this study provides an initial overview of the potential of moringa leaves as a highly nutritious natural feed ingredient for broiler chickens.

Keywords : Moringa oleifera, Broiler Chicken, Carcass Production dan Leaf Flour Substitution.

INTRODUCTION

Moringa leaves are a plant that grows very easily in various regions and can be propagated vegetatively (by cuttings) or generatively (by seeds). As a legume, moringa leaves can be used as a good source of feed for livestock. This is because moringa leaves have been shown to be rich in β-carotene, protein, vitamin C, calcium, potassium, and are a good food source as a natural antioxidant due to the presence of various types of antioxidant compounds such as ascorbic acid, flavonoids, phenolics, carotenoids, selenium, and phenolics that can improve meat quality. (Krisnadi, 2015) .

Moringa leaves contain 17.2 mg of iron per 100 g; the water content in fresh leaves is 94.01%, in dry leaves 4.09%; protein 28.44%; fat 2.74%; ash content 7.95%; carbohydrates 57.01% and calcium around 1600-2200 mg. Because they are rich in protein, moringa leaves are suitable for use as supplementary feed for livestock, especially broiler chickens. Although moringa leaves contain anti-nutrients such as phytic acid,

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saponins, tannins, and phenols, processing them into flour has been shown to reduce these contents.(Tirajoh et al., 2020) .

Moringa leaves contain many essential nutrients, such as protein and amino acids, which are essential for muscle growth and development in chickens (Windoro *et al* ., 2020) . The fiber and phytochemical components in moringa leaves are believed to play a significant role in poultry performance, growth, and productivity (Santoso, Agus, 2011). Broiler carcasses are the body parts of a chicken without feathers, viscera, head, neck, and feet, and have high economic value. Carcass weight is determined by the size of the broiler, but the growth rate of broilers is influenced by the quality and quantity of feed consumed. Carcass percentage in broiler chickens can be determined by feed intake. A good carcass requires appropriate feeding.

Based on the above thoughts, the author is interested in conducting research on "The Effect of Moringa Leaf Flour Substitution (*Moringa oliefera*) on Broiler Chicken Carcass Production". Where in this study, the researcher wants to see the live weight, carcass weight, carcass percentage and its parts including: percentage of Thigh, percentage of Wing, and percentage of Breast which will be carried out in Bueng Sidom Village, Blang Bintang District, Aceh Besar Regency.

Formulation of the problem

What is the effect of substitution of Moringa leaf flour (*Moringa oliefera*) on broiler chicken carcass production?

Objective

The aim of this study was to determine the effect of substitution of Moringa leaf flour (*Moringa oliefera*) in rations on broiler chicken carcass production.

RESEARCH METHODS

Place and Time of Research

The research was conducted in Bueng Sidom Village, Blang Bintang District, Aceh Besar Regency for 4 weeks, starting from April to May 2025.

Research Tools and Materials

Research Tools

The equipment used is 2 wooden cages, each cage consists of 8 sections, so that the total is 16 sections. Each cage section measures 70 cm long, 50 cm wide, 60 cm high. New digital scales , 16 incandescent lamps (40 watts), 4 lamps, food and drinking water containers, knives, buckets, sanitation equipment and stationery, tarpaulins, calculators, digital cameras, grinders and newspapers.

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Materials

The materials used in this study include: 64 Day Old Chicken (DOC) broiler chickens, medicines (Vita Chicks, Trimezyns), commercial rations for the BR1 starter phase (1-3 weeks) and commercial rations for the BR2 finisher phase (3-4 weeks). The feed ingredients used are ready-made commercial feed and moringa leaf flour.

Research Design

The design used was a Completely Randomized Design (CRD) with 4 treatments and 4 replications. The research ration treatment consists of:

P0 = 100% Commercial Ration + 0% Moringa Leaf Flour
P1 = 97% Commercial Ration + 3% Moringa Leaf Flour
P2 = 94% Commercial Ration + 6% Moringa Leaf Flour
P3 = 91% Commercial Ration + 9% Moringa Leaf Flour

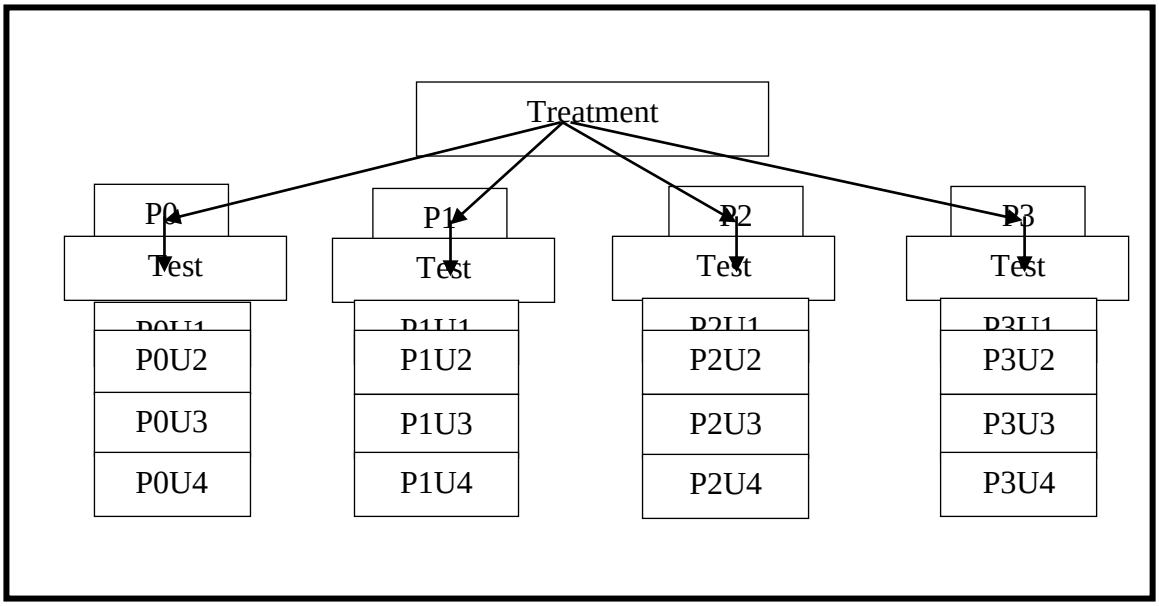

Figure 1. Completely Randomized Design (CRD) Chart

Research Procedures

Cage Preparation

Cage preparation was carried out before the study began, starting with cleaning the cage, liming and cleaning equipment such as food and drink containers, cleaning the cage by spraying a detergent solution disinfectant. Lighting and heating the cage used a 40- *watt* incandescent lamp placed on each floor level of the cage, with one lamp per floor level. In this study, four levels of cage floors were used and four lamps were required. The location of the cage was determined randomly and each cage unit was coded.

Preparation of Moringa Leaf Flour (TDK)

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Moringa leaves are obtained from Bueng Sidom Village, Blang Bintang District, Aceh Besar Regency, and in Seureumo Village, Lambeutong, Indrapuri District, Aceh Besar Regency, which are planted in residents' gardens. The Moringa leaves used are still dark green in color and have a hard and stiff texture on 3-6 strands from the shoots due to the high bioactive components, then the Moringa leaves are collected, separated from the twigs, then the Moringa leaves are dried by airing for 2-3 days, until the Moringa becomes brittle. Then the Moringa leaves are ground into flour using a grinder.
The procedure for making Moringa leaf flour can be seen in Figure 2.

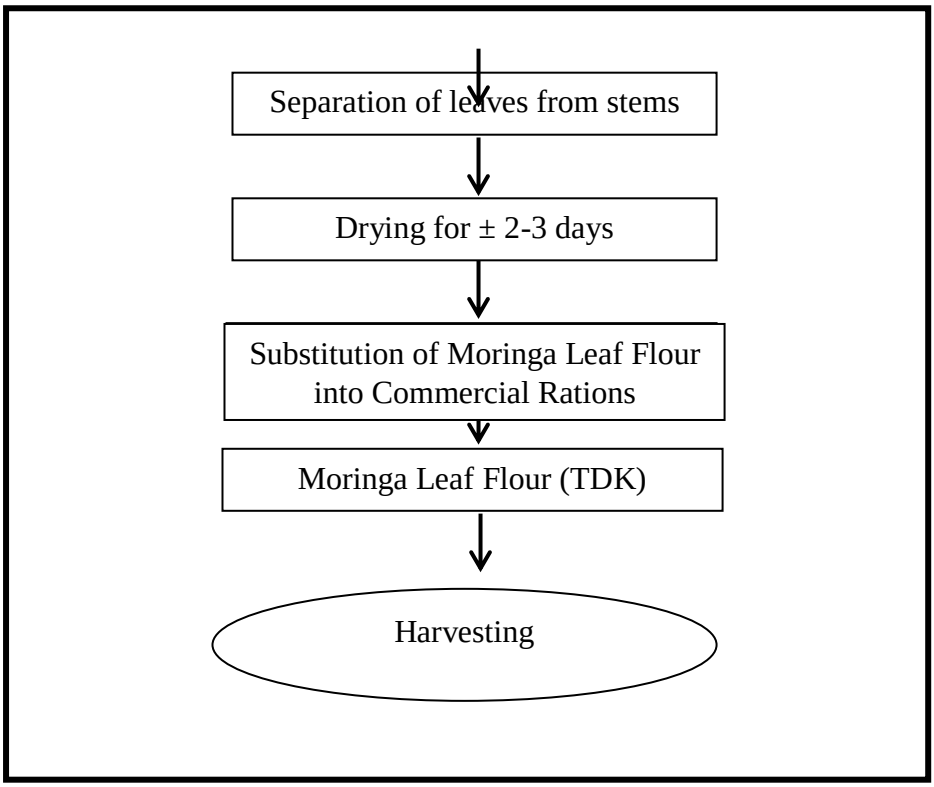

Figure 2. Scheme for Making Moringa Leaf Flour (TDK)

Provision of Rations and Drinking Water

Feeding is carried out based on the broiler chicken's age, referring to established broiler maintenance standards. If the feed (ration) runs out, the amount of feed added is always weighed to ensure accuracy. Feeding is carried out twice daily: in the morning at 8:00 AM and in the afternoon at 5:00 PM WIB. The chickens are provided with clean drinking water ad libitum. Upon arrival at the location, the chickens are also given vitamins (Vita Chicks) to promote growth, prevent vitamin deficiencies, relieve stress, and increase their immunity to disease.

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Preparation of Rations

The rations given to the livestock during the study were commercial rations mixed with moringa leaf meal. The ration formulation was created using a trial and error method. The nutrient content of commercial rations and moringa leaf flour used is listed in Tables 1 and 2 of the treatment and the nutrient content of the rations is listed in Tables 3, 4 and 5.

Table 1 Nutrient Content of Commercial Rations

Food Substances	Rations for Starter Phase (BR 1)	Rations for Finisher Phase (BR 2)
Water content (%)	12	12
Crude Protein (%)	21	19
Fat (%)	5	5
Crude Grain (%)	5	5
Ash (%)	7	7
Calcium (%)	0.95	0.95
Phosphorus (%)	0.5	0.5
EM (kcal/kg)	3000	3100

Table 2 Nutritional Content of Moringa Leaf Flour

Nutritional Content (%)	Percentage (%)
Water	10.56
BETN 38.49	
Crude Protein	30.3
Crude Fat	6.13
Crude Fiber 12.48	
Ash 12.6	
Ca 2.66	
P 0.95	

Source: Proximate Analysis Results at the Animal Feed Chemistry Laboratory, University Hasanuddin (Panjaitan, 2023)

Table 3 Composition of Treatment Rations

Treatment Feed	P0	P1	P2	P3
Commercial Rations	100	97	94	91
Moringa Leaf Flour	0	3	6	9
Amount	100	100	100	100

Table 4 Nutritional Content of Rations for the Starter Phase

Food Substances	P0	P1(3%)	P2(6%)	P3(9%)
Water content (%)	12	11.95	11.91	11.87
Crude Protein (%)	21	21.28	21.55	21.83
Fat (%)	5	13.04	5.06	5.1
Crude Fiber (%)	5	5.22	5.44	5.67
Ash (%)	7	7.16	7.33	7.5

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Calcium (%)	0.95	0.99	1.04	1.09
Phosphorus (%)	0.5	0.50	0.52	0.53
EM (kcal/kg)	3000	2,911	2,823	2,734

Caption: Multiplication results of Tables 2, 3 and 4

Table 5 Nutritional Content of Rations for the Finisher Phase

Food Substances	P0	P1(3%)	P2(6%)	P3(9%)
Water content (%)	12	11.95	11.91	11.87
Crude Protein (%)	19	19.33	19.67	20.01
Fat (%)	5	13.04	5.06	5.1
Crude Fiber (%)	5	5.22	5.44	5.67
Ash (%)	7	7.16	7.33	7.5
Calcium (%)	0.95	0.99	1.04	1.09
Phosphorus (%)	0.5	0.50	0.52	0.53
EM (kcal/kg)	3100	3,008	2,917	2,825

Caption: Multiplication results of Tables 2, 3 and 4

Carcass Cutting and Sampling

This research was conducted over four weeks of broiler chicken rearing. After four weeks of rearing, the slaughtering process began. Before slaughter, the chickens were fasted for six hours and then weighed to determine slaughter weight. One chicken with a body weight close to the average for slaughter was taken from each treatment as a sample.

Observed parameters

The parameters observed were Live Weight, Carcass Weight, Carcass Percentage, Thigh Percentage, Wing Percentage, Breast Percentage.

Live Weight

Live weight is the weight of the chicken's body that is weighed after the chicken has fasted for 6 hours.

$$\text{BH} = \text{Bobot Akhir} - \text{Bobot Awal}$$

Carcass Weight

Carcass weight is obtained by weighing the chicken after slaughter and subtracting the weight of the head, neck, feet, and viscera (internal organs). Carcass weight is expressed in grams per chicken.

Carcass Percentage

Carcass percentage (%) is obtained by dividing carcass weight (grams) by live weight (grams) multiplied by 100%.

$$\text{Carcass Percentage (\%)} = \frac{Bobot\ Karkas\ (gram)}{Bobot\ Hidup} \times 100\%$$

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Thigh Percentage

The percentage of chicken thighs can be calculated by comparing the weight of the thigh with the weight of the carcass, then multiplying by 100%.

$$\text{Thigh Percentage (\%)} = \frac{Bobot\ Paha}{Bobot\ karkas} \times 100\%$$

Wing Percentage

The percentage of chicken wings can be calculated by comparing the wing weight with the carcass weight, then multiplying by 100%.

$$\text{Wing Percentage (\%)} = \frac{Bobot\ Sayap}{Bobot\ karkas} \times 100\%$$

Chest Percentage

The percentage of chicken breast can be calculated by comparing the breast weight with the carcass weight, then multiplying by 100%.

$$\text{Chest Percentage (\%)} = \frac{Bobot\ Dada}{Bobot\ karkas} \times 100\%$$

Data Design and Analysis

The data obtained were analyzed using a Completely Randomized Design (CRD). The mathematical model of the experimental design follows the Steel and Torrie model as follows:

$$\boldsymbol{Yij = \mu + \alpha i + \varepsilon ij}$$

Where :

Yij = Observation value of treatment i with replication j
μ = Average of observations
α_i = Effect of treatment i
ε_{ij} = Error / treatment error from the i-th treatment and i-th replication
i = 1,2,3,4 (Treatment)
j = 1,2,3,4 (Repeat)

Data Analysis

The data obtained in the form of live weight, carcass weight, carcass percentage, thigh percentage, wing percentage and breast percentage were tabulated in a table analyzed using one-way ANOVA (analysis of variance) using the SPSS 22 application. If there was a significant effect, further testing was carried out using the Duncan test . (Dewi, 2017)

RESULTS AND DISCUSSION

Carcass Weight

Carcass weight is obtained by weighing the chicken after slaughter and subtracting the weight of the head, neck, feet, and viscera (internal organs). Carcass weight is expressed in grams per chicken.

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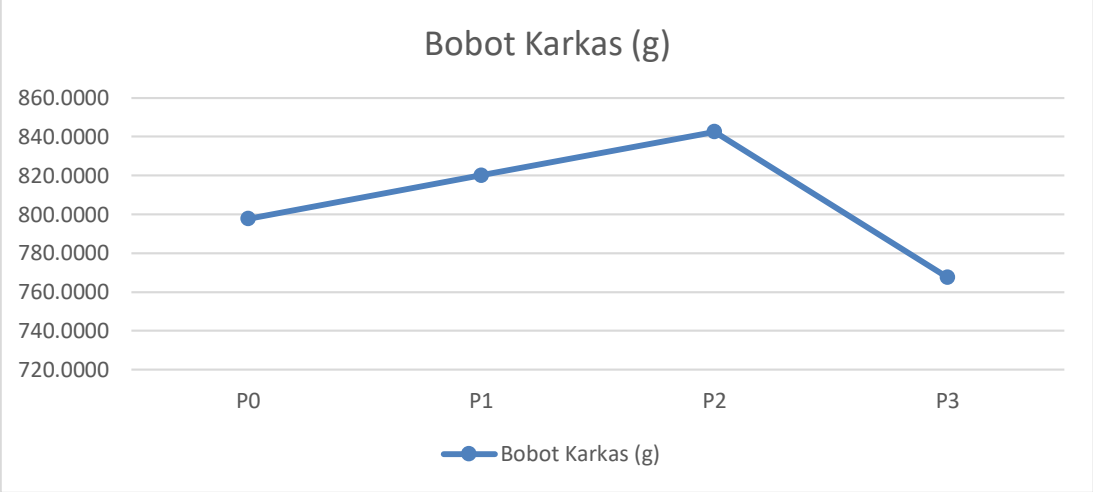
Table 6 . Average Broiler Chicken Carcass Weight

Treatment	Carcass Weight (Gram)
P0	797.7000 ± 84.20
P1	820.1250 ± 74.40
P2	842.5750 ± 160.63
P3	767.5000 ± 78.89

Note: There was no significant difference between treatments (P>0.05)

Based on the ANOVA test, the addition of moringa leaf flour to broiler chicken feed showed no significant effect (P>0.05) on carcass weight gain. The graph generated from the above data is as follows.

Graph 1 . Average Broiler Chicken Carcass Weight



From the graph above, it can be seen that the increase in values appears stable from P0, P1, and P2 appears to continue to increase, but in contrast to the value of the increase in carcass weight from P3 where the value obtained was only 767.50 grams, which is the lowest value of all treatments. When viewed from the graphic display presented, the data obtained on carcass weight does not appear much different from the graphic display for Live Weight.

This is due to the presence of anti-nutritional substances contained in Moringa leaves, namely tannins and saponins. Tannins, in addition to binding proteins and amino acids, also bind to other macromolecular compounds such as carbohydrates, especially starch and cellulose, minerals Ca, P, Fe and Mg, and vitamin B12. Tannins, when in the digestive tract, can coat the mucosal walls of the digestive tract, causing reduced absorption of ration nutrients. Saponins reduce the permeability of small intestinal mucosal cells, resulting in inhibition of active nutrient transport and disrupted uptake or absorption of nutrients in the digestive tract. Poultry are more sensitive to saponins than other monogastric livestock. Saponins affect the body's biological processes and nutrient metabolism by inhibiting the productivity of enzymes such as chemotrypsin, thereby inhibiting livestock productivity and growth.

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From the data results above, this is in line with other research, where the carcass weight produced from a chicken will be proportional to the live weight with the average weight of the chicken carcass ranging between 65-75% of the live weight.(Amrullah, 2004).

Carcass Percentage

Carcass percentage (%) is obtained by dividing the carcass weight (grams) by the live weight (grams) multiplied by 100%. The average carcass percentage of broiler chickens in the study is presented in the following table.

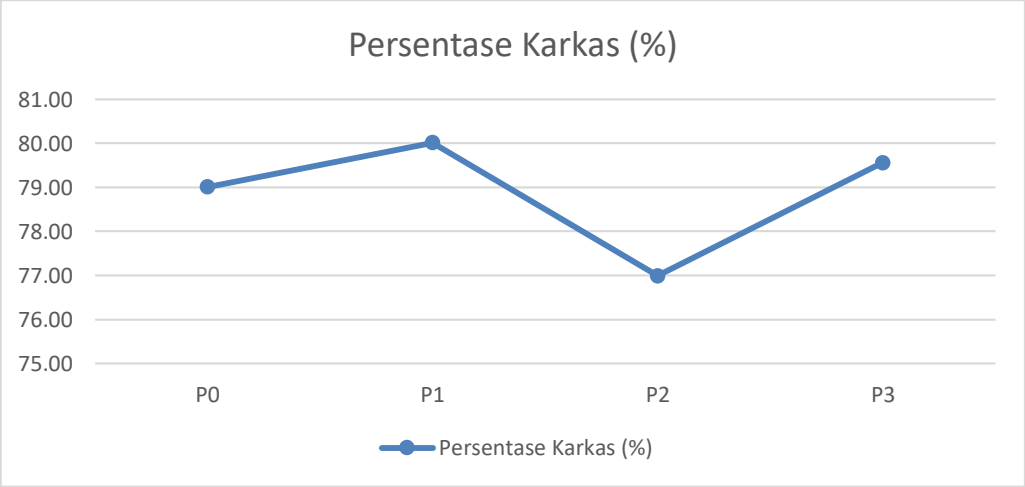
Table 7 . Average Percentage of Broiler Chicken Carcasses

Treatment	Carcass Percentage (%)
P0	79.01 ± 1.84
P1	80.01 ± 4.82
P2	76.99 ± 2.84
P3	79.56 ± 5.03

Note: There was no significant difference between treatments (P>0.05)

Based on the ANOVA test, the addition of moringa leaf flour to broiler chicken feed showed no significant effect (P>0.05) on the percentage of broiler carcasses . The graph generated from the above data is as follows.

Graph 2 Average Percentage of Broiler Chicken Carcasses



From the graph above, it can be seen that P1 has the highest value compared to the others, while the lowest percentage value is actually found in P2. However, for P0 and P3, the percentage levels of both are not much different. This is caused by the presence of anti-nutrients in Moringa leaves which make the ration unpalatable due to the bitter taste produced by the tannins in Moringa leaves and also interfere with the process of nutrient absorption in the digestive tract, resulting in nutrient deficiencies in chickens which ultimately will result in low slaughter weight and will affect the percentage of carcass.

Based on the results of several researchers, one indicator for measuring the success of

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broiler chicken farming is carcass weight gain. According to(Dona, 2022)Carcass percentage is the most important factor in assessing livestock production, as production is closely related to live weight, where higher live weight tends to increase carcass weight. Ration quality is one of the factors that influence final live weight and carcass weight percentage.(Irfan, 2022).

Thigh Percentage

The thigh percentage can be calculated by comparing the thigh weight to the carcass weight, then multiplying by 100%. The average thigh percentage of broiler chickens in the study is presented in the following table.

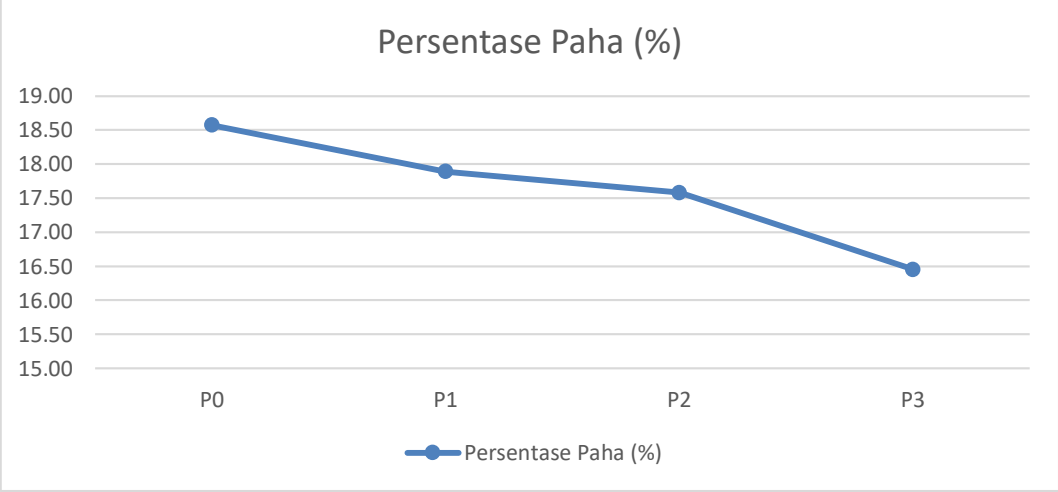
Table 6 Average Percentage of Broiler Chicken Thighs

Treatment	Thigh Percentage (%)
P0	18.57 ± 3.31
P1	17.89 ± 3.53
P2	17.58 ± 1.41
P3	16.45 ± 2.87

Note: There was no significant difference between treatments (P>0.05)

Based on the ANOVA test, the results showed that the addition of moringa leaf flour to broiler chicken feed did not show a significant effect (P>0.05) on increasing the percentage of broiler chicken thighs. The graph generated from the above data is as follows.

Graph 4. Average Percentage of Broiler Chicken Thighs



The graph showing the increase in thigh percentage above shows that P0 had the highest value compared to the other treatments, then began to decline in P1 and P2. Meanwhile, the lowest thigh percentage was in P3. This is due to the lower slaughter weight due to impaired nutrient absorption due to the presence of anti-nutrients in the ration. Sun-drying the moringa leaf flour does not remove anti-nutrients, but only reduces their levels.

From the data results above, this is in line with the results of(Dami, 2024), where statistically there was no real difference in the percentage of thigh weight in the study

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because the thigh weight tended to decrease after giving *Moringa oleifera* leaf extract through drinking water, this is also thought not to affect the percentage of bone.(Rahmawati, 2020)stated that the growth period of poultry begins with rapid bone formation. However, as growth progresses, the rate of bone formation decreases, causing muscle growth and fat deposition to increase. This is consistent with the opinion of(Pratiwi, 2019)that the administration of moringa leaf flour did not affect the weight of the tibia bones and muscles, the length and diameter of the tibia bones.(Massolo, 2016)stated that the small amount of meat deposit in the carcass parts is greatly influenced by the large percentage of bone.

Wing Percentage

The wing percentage in chickens can be calculated by comparing the wing weight to the carcass weight, then multiplying by 100%. The average wing percentage in broiler chickens in the study is presented in the following table.

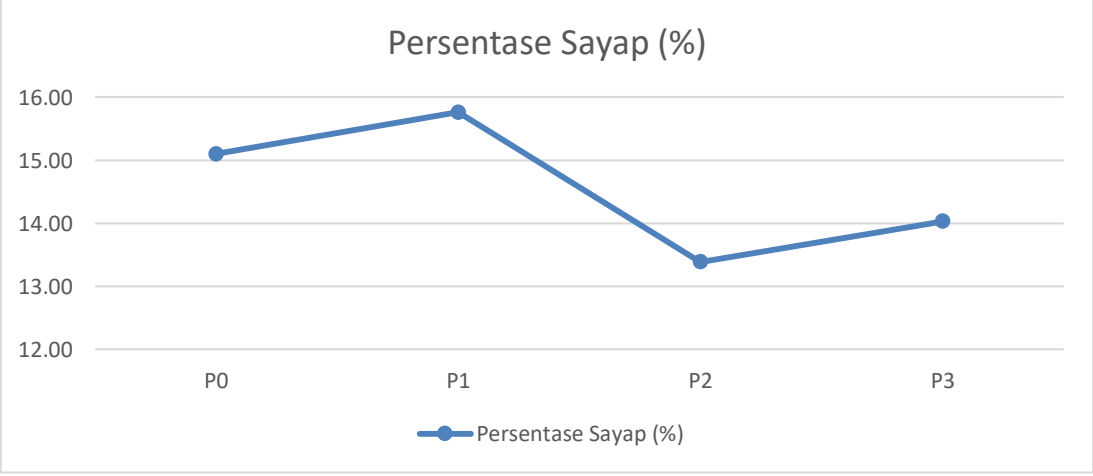
Table 7 Average Percentage of Broiler Chicken Wings

Treatment	Wing Percentage (%)
P0	15.10 ± 3.23
P1	15.76 ± 3.55
P2	13.39 ± 0.38
P3	14.03 ± 3.84

Note: There was no significant difference between treatments (P>0.05)

Based on the ANOVA test, the results showed that the addition of moringa leaf flour to broiler chicken feed did not significantly affect the percentage of broiler wings (P>0.05). The graph generated from the above data is as follows.

Chart3Average Percentage of Broiler Chicken Wings



From the graphical display above, it can be seen that this graph is almost the same as the carcass percentage graph, where both have the highest value at P1, and the lowest percentage value also occurs at P2. For P0 and P3, the percentage levels of both are not much different, where P0 is in the second highest position and P3 is in the third highest position.

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Based on the results of the research(Dami, 2024)The results of the diversity analysis showed that the treatment of Moringa oleifera leaf extract, through drinking water, had no significant effect (P>0.05) on the percentage of wing weight, allegedly due to the presence of anti-nutritional substances contained in Moringa leaves such as tannins and saponins. According to (Prabowo, 2023)The presence of tannins in poultry rations can stunt the growth of broiler chickens, as tannins bind and reduce protein digestibility. Antinutritional compounds in moringa leaves can inhibit the absorption of nutrients entering the digestive tract.

According to(Antarani, 2020)that food substances in the form of protein and energy as well as minerals are used for the formation of bones, flesh and feathers which are based on the size and structure of the wing feathers. The high and low percentage of wings is also based on bone growth, the higher the weight of the wing bones, the higher the percentage of wings, and vice versa, the lower the weight of the wing bones, the lower the percentage of wings.(Ismawati, 2022).

Chest Percentage

To calculate the percentage of chicken carcass weight, compare the breast weight with the carcass weight, then multiply by 100%. The average breast weight percentage of broiler chickens in the study is presented in the following table.

Table 10 . Average Percentage of Broiler Chicken Breasts

Treatment	Chest Percentage (%)
P0	31.18 ± 7.13
P1	32.41 ± 6.21
P2	27.58 ± 2.20
P3	34.51 ± 6.80

Note: There was no significant difference between treatments (P>0.05)

Based on the ANOVA test, the results showed that the addition of moringa leaf flour to broiler chicken feed did not show a significant effect (P>0.05) on increasing breast percentage in broiler chickens. The graph generated from the above data is as follows.

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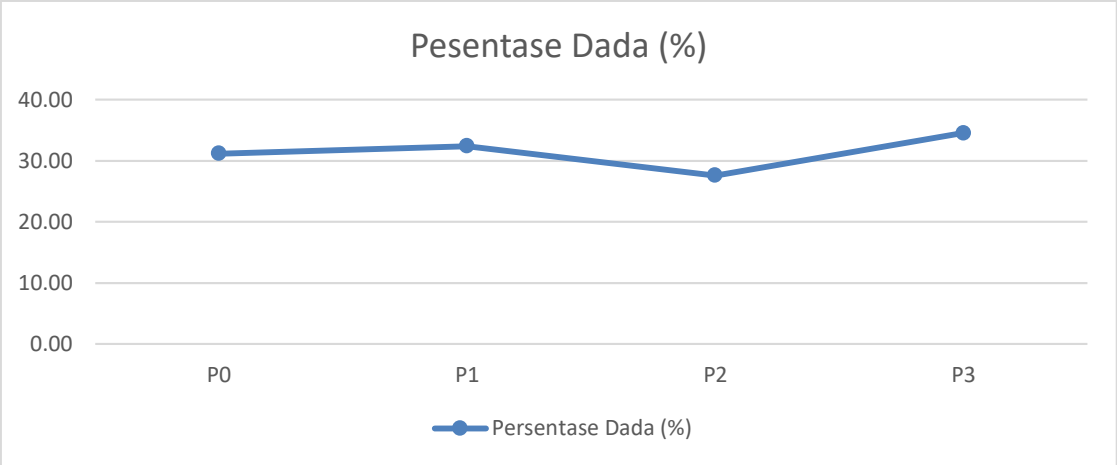
Graph 4 Average Percentage of Broiler Chicken Breast



This graph shows that the data from P0 to P3 appear stable. However, the highest value is found in P3, with a value of 34.51. The lowest value is found in P2, with a value of 27.58. Broiler chickens fed rations and moringa leaf meal at 4 weeks (28 days) of rearing age experienced relatively similar growth and development of the breast. During the growth period, broiler chickens begin with rapid bone growth. As the rate of bone growth begins to decline, the rate of muscle growth and fat deposition increases. This results in no significant differences in meat and skin percentages in broiler chickens slaughtered at 28 days of age. Breast carcass growth is slower than general growth. The breast carcass cut of poultry is a thick meaty area with a small bone percentage, so at younger ages, breast meat growth is still small and increases with age.

According to(Juniarti, 2019)The breast part of the broiler chicken carcass is greatly influenced by ration factors.(RohayaniI, 2015)reported that moringa leaves contain 27% protein.(Pribady, 2008)He added that breast growth is slower than overall growth. The breast portion of poultry is a thick, fleshy area with a low bone content, so the breast-to-bone ratio is still low at a younger age and increases with age. The breast percentage increases as bone growth slows and muscle growth increases.(Dami, 2024)also confirmed that a solution of moringa leaf extract in drinking water can increase the percentage of breast weight in broiler chickens.

CONCLUSION AND SUGGESTIONS

Conclusion

Based on the results of the study above, it can be concluded that the provision of Moringa leaf flour into the feed has no significant effect on Live Weight, Carcass Weight, Carcass Percentage, Thigh Percentage, Wing Percentage, Breast Percentage. Parameters of live weight, carcass weight can be seen the best treatment is the provision of 94% Commercial Ration + 6% Moringa Leaf Flour (P2), while for Carcass Percentage, and Wing Percentage the best results obtained are P1 which is 97% Commercial Ration + 3% Moringa Leaf Flour. For the Thigh Percentage the highest value is in the treatment of 100% Commercial Ration + 0% Moringa Leaf Flour or P0 and for the Breast Percentage the highest value is

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Vol 5 No 1 (2026): SEPTEMBER 2025 - FEBRUARY 2026 | DOI: https://doi.org/ 10.61992/jpp.v5i1.315 | E-ISSN:2963-4369

in P3. Therefore, from these results the hypothesis that can be accepted is H0 . Substitution of Moringa leaf flour (*Moringa oleifera*) does not affect the live weight, carcass weight, carcass percentage and percentage of carcass parts (thigh, breast and wings) of broiler chickens.

Suggestions

According to the researchers, each treatment had its own highest value among the various treatments. Therefore, future researchers can try similar experiments using different ration formulations.

BIBLIOGRAPHY

Aderinola, OA, Rafiu, TA, Akinwumi, AO, Alabi, TA, & Adeagbo, OA (2013). Utilization Of Moringa Oleifera Leaf As Feed Supplement In Broiler Diet. *International Journal Of Food, Agriculture And Veterinary Science* , *3* (3), 94–102.

Alanshari, N.A. (2021). *The Effect of Giving Black Soldier Fly (Hermetia Illucens) Maggot Flour on Kmpung Chicken Carcasses* .

Amrullah, IK (2004). *Broiler Chicken Nutrition.* Bogor: Gunungbudi Institute.

Analisa, L. (2007). The Effect of Using Moringa Oleifera Leaf Flour in Feed on Internal Organ Weight, Blood Glucose and Blood Cholesterol of Broiler Chickens. *Faculty of Animal Husbandry, Brawijaya University, Malang* .

Antarani, IE (2020). Carcass Performance of Broiler Chickens with Simple Processing of Partial Corn Substitution with Coffee Husk (Coffea Sp) at Different Levels. *Zootec* .

Banjo, O. S. (2012). Growth And Performance As Affected By Inclusion Of Moringa Oleifera Leaf Meal In Broiler Chicks Diet. *Growth* , *2* (9), 35–38.

Budiansyah, A. (2010). Performance of Broiler Chickens Given a Ration Containing Fermented Coconut Meal with Tape Yeast as a Partial Replacement for Commercial Rations. *Scientific Journal of Animal Husbandry Sciences* , *13* (5), 260–268. https://Doi.Org/10.22437/Jiiip.V0i0.43

Cwayita, W. (2014). *Effects Of Feeding Moringa Oleifera Leaf Meal As An Additive On Growth Performance Of Chicken, Physico-Chemical Shelf-Life Indicators, Fatty Acids Profiles And Lipid Oxidation Of Broiler Meat* . Masters Thesis Faculty Of Science And Agriculture, University Of Fort Hare ….

Dami, YA (2024). The Effect of Giving Moringa Leaf Extract (Moringa Oleifera) in Drinking Water on Primal Cut in Broiler Chicken. *Integrated Animal Husbandry Scientific Journal* .

Daud, M. (2025). Performance of Broilers Given Probiotics and Prebiotics in the Ration. *Journal of Animal Science* .

Dewi, SK (2017). Reducing Oxalate Levels in Taro Tubers by Adding Activated Charcoal to the Steaming Method. *Journal of Food Technology Applications* .

Dewi, T., Bidura, I., & Candrawati, D. (2014). The Effect of Giving Moringa (Moringa Oleifera) and White Onion (Allium Sativa) Leaf Extract Through Drinking Water on the Performance of Broilers Aged 2-6 Weeks. *Tropical Animal Husbandry Journal* , *2* (3), 461–475.

Dona, MY (2022). The Effect of Adding Papaya Leaf Flour (Carica Papaya L.) to Rations on the Production and Income Over Feed Cost (IOFC) of Super Kampung Chickens. *Journal of Animal Husbandry Inspiration* .

JURNAL PENELITIAN PROGRESSIF
Vol 5 No 1 (2026): SEPTEMBER 2025 - FEBRUARY 2026 | DOI: https://doi.org/ 10.61992/jpp.v5i1.315 | E-ISSN:2963-4369

Fijana, MF, Suprijatna, E., & Atmomarsono, U. (2012). The Effect of Daytime Feeding Proportion and Nighttime Lighting on Broiler Chicken Carcass Production. *Animal Agriculture Journal* , *1* (1), 697–710. Http://Ejournal-S1.Undip.Ac.Id/Index.Php/Aaj

Haril, JD, Tonga, Y., & Kaca, IN (2018). Effect of Adding Moringa Oleifera Leaf Flour to Commercial Rations on Carcass Weight, Carcass Percentage, and Non-Carcass Percentage of Broiler Chickens. *Gema Agro* , *23* (1), 53. https://Doi.Org/10.22225/Ga.23.1.659.53-58

Irfan, A. (2022). The Effect of Andaliman Supplementation in Rations on Live Weight, Carcass Percentage and Parts. *Kuantan Singingi Islamic University* .

Ismawati, S. (2022). The Effect of Cage Density in Closed Houses on the Percentage of Carcass Cuts in Broilers Aged 14-28 Days.

Isnan, W., & M., N. (2017). Various Benefits of Moringa Plants (Moringa Oleifera Lamk.) for the Community Wahyudi Isnan and Nurhaedah M. *Eboni Technical Info* , *14 No* , 63–75.

Itwanto. (2024). Heritability Value of Commercial Carcass Cut Weight in Kerinci Ducks. *Αγαη* , *15* (1), 37–48.

Juniarti, NR (2019). The Effect of Seaweed Flour Supplementation in Broiler Chicken Rations on Fat and Cholesterol Levels. *Journal of Biology Studies, Research, and Teaching* .

Jumiati, S., & Aka, R. (2017). Slaughter Weight, Carcass, Giblet, and Abdominal Fat of Broiler Chickens Supplemented with Curcuma (Curcumaxanthorrhiza, Roxb) in Feed. *Journal of Tropical Animal Science and Technology* , *4* (3), 11–19.

Kantja, IN, Nopriani, U., & Pangli Marien. (2022). Nutritional Content Test of Moringa Leaf Flour (Moringa Oleifera L.) as Animal Feed. *Animal Science Cluster Research Journal* , *1* (2014), 1.

Krisnadi, AD (2015). Super Nutritional Moringa. *Blora: Indonesian Moringa Plant Information and Development Center* .

Mahmud, M. (2022). Quality of Balinese Beef in Longissimus Dorsi (Ld) Muscle Marinated in Liquid Smoke Flour and Moringa Flour. *Hasanuddin University* .

Massolo, RA (2016). Percentage of Carcass and Abdominal Fat of Broilers Given Inulin Prebiotic from Dahlia Flower Bulbs (Dahlia Variabillis). *Animal Nutrition and Feed Bulletin* .

Moyo, B., Masika, P. J., Hugo, A., & Muchenje, V. (2011). Nutritional Characterization Of Moringa (Moringa Oleifera Lam.) Leaves. *African Journal Of Biotechnology* , *10* (60), 12925–12933.

Murtidjo, BA (2000). *Guidelines for Mixing Poultry Feed* . Kanisius.

Panjaitan, SMA (2023). *Thesis: The Use of Moringa Leaves (Moringa Oleifera) in Feed Rations on Broiler Carcass Characteristics* . Lampung State Polytechnic.

Pola, A., Astiti, NMAGR, & Sutapa, IG (2021). Physical Composition of Super Free-Range Chicken Carcasses Fed with Fermented Gaplek Flour. *Gema Agro* , *26* (1), 33–37.

Prabowo, KA (2023). The Effect of Using Moringa Oleifera Leaf Flour in Rations on Cholesterol and Fat Levels in Broiler Chicken Meat. *Cassowary* .

Pratiwi, HP (2019). Muscle and Tibia Bone Weight of Pengging Ducks (Anas Platyrhyncos Domesticus L.) After Supplementation of Moringa Leaf Flour (Moringa Oleifera Lam.) in Feed. *Journal of Tropical Biology* .

Pribady, WA (2008). Carcass Production of Geese (Anser Cygnoides) at Various Slaughtering Ages.

JURNAL PENELITIAN PROGRESSIF
Vol 5 No 1 (2026): SEPTEMBER 2025 - FEBRUARY 2026 | DOI: https://doi.org/ 10.61992/jpp.v5i1.315 | E-ISSN:2963-4369

Putri Karisma Lestari1, IS and YLA (2021). *The Effect of Cassava Leaf Flour (Manihot Utilissima) Substitution in Feed Rations on Live Weight, Carcass Percentage , and Abdominal Fat of Broilers* . *27* (15), 191–194.

Rahmawati, DE (2020). Carcass Weight and Carcass Parts of Male Laying Hens (Gallus Gallus Domesticus L.) After Giving Moringa Leaf Flour (Moringa Oleifera Lam.) as Feed Additive. *Journal of Tropical Biology* .

Risnajati, D. (2012). Comparison of Final Weight, Carcass Weight, and Carcass Percentage of Various Broiler Strains. *Animal Science: Journal of Animal Science Research* , *10* (1), 11–14.

Rohyani, IS (2015). Phytochemical Content of Some Local Plant Species Frequently Used as Raw Materials for Traditional Medicine in Lombok Island. *Proceedings of the National Seminar of the Indonesian Biodiversity Society.*

Rossida, et al. (2019). The Effect of Moringa Leaf Flour (Moringa Oleifera) Supplement in Feed on the Protein and Cholesterol Content of Pengging Duck Eggs (Anas Platyrhyncos Domesticus L.). *Journal of Tropical Biology* , *2* (2), 41–47. Cybex.Pertanian.Go.Id/Mobile/Artikel/71079

Safitri, Erma; Plumerastuti, H. (2010). *Broiler Chickens - Aspects of Reproductive Physiology & Pathology. Airlangga University Press, 2023. 18* (2), 39–46.

Santoso, Agus, M. (2011). Dietary Fiber and Its Benefits for Health. *Magistra* , *75* , 35–40. https://Fmipa.Umri.Ac.Id/Wp-Content/Uploads/2016/09/Pinki-A-Serat-Dan-Manfaatnya-Bg-Kesehatan-74-129-1-Sm.Pdf

Sari, M. (2020). Substitution of Basal Ration with Moringa Leaf Flour (Moringa Oleifera) on Carcass Quality and Abdominal Fat of Broilers. *Uin Sultan Syarif Kasim Riau* .

Sarjono, HT (2008). The Effect of Using Moringa Leaf Flour (Moringa Oleifera, Lam) in Feed on Carcass Percentage, Breast Meat Deposition Percentage, Abdominal Fat Percentage and Cholesterol in Broiler Chicken Meat. *Thesis, Faculty of Animal Husbandry, Brawijaya University, Malang* .

Septiana, T., Tantalo, S., Erwanto, E., & Liman, L. (2024). The Effect of Adding Moringa Oleifera Leaf Flour to Rations on Dry Matter and Organic Matter Consumption and Dry Matter and Organic Matter Digestibility of Boer Crossbred Goats. *Journal of Animal Research and Innovation* , *8* (3), 538–546.

Shinta, W. (2019). *The Use of Several Commercial Rations on Muscovy Duck (Cairina Moschata) Carcasses and Carcass Cuts* . Andalas University.

Siregar, DZ (2011). *Carcass Percentage and Internal Organ Growth of Broiler Chickens at Different Feeding Frequencies and Times.*

Sjofjan, O. (2008). The Effect of Using Moringa Oleifera Leaf Flour in Feed on the Performance of Broiler Chicken Production. *National Seminar on Animal Husbandry and Veterinary Technology* , 649–656.

Soeparno. (2015). *Meat Science and Technology* . Gadjah Mada University Press.

Sudarta. (2022). *The Effect of Using Black Garlic Flour in Rations on Carcass Weight and Abdominal Fat of Broiler Chickens* . *16* (1), 1–23.

Tesfaye, E., Animut, G., Urge, M., & Dessie, T. (2013). Moringa Olifera Leaf Meal As An Alternative Protein Feed Ingredient In Broiler Ration. *International Journal Of Poultry Science* , *12* (5), 289–297.

Tirajoh, S., Tiro, BMW, Palobo, F., & Lestari, RHS (2020). Utilization of Moringa Oleifera Leaves on the Growth Quality of Superior Native Chickens of the Indonesian Agricultural Research and Development Agency in Jayapura, Papua. *Journal of Tropical Animal and Veterinary Science* , *10* (2), 119.

https://Doi.Org/10.46549/Jipvet.V10i2.113

Umam, MK, Prayogi, HS, & Nurgiartiningsih, A. (2014). The Performance of Broiler Rearing in Stage Floor and Double Floor Systems. *Journal of Animal Husbandry Sciences* , *24* (3), 79–87. http://Jiip.Ub.Ac.Id/

Wicaksono, WS, & Kalsum, U. (2023). Effectiveness of Moringa Leaves (Moringa Oleifera) as Feed Additive for Poultry Feed (Article Review). *Research Journal, Faculty of Animal Husbandry* , *6* (1), 115–122.

Widia, S. (2022). *The Effect of Noni Fruit Water (Morinda Citrifolia Linn) on Live Weight, Carcass Percentage and Abdominal Fat of Broilers* . Kuantan Singingi Islamic University.

Windoro, DPJ, Kasiyati, K., Djaelani, MA, & Sunarno, S. (2020). The Effect of Moringa Oleifera Lam. Leaf Flour Addition in Feed on the Weight of Several Internal Organs and Abdominal Fat of Pengging Ducks (Anas Platyrhyncos). *Anatomy and Physiology Bulletin* , *5* (2), 109–118. https://Doi.Org/10.14710/Baf.5.2.2020.109-118

Wulandari, SY (2021). *Substitution of Moringa Leaf Flour (Moringa Oleifera Lam) in Basal Rations for Plasma Metabolites in Broiler Chickens* . http://Repository.Uin-Suska.Ac.Id/40222/

Zaenab, A., Bakrie, B., & Ramadhan, T. (2005). The Effect of Giving Chicken Herbal Medicine on the Quality of Native Chicken Carcasses. *The Effect of Giving Chicken Herbal Medicine on the Quality of Native Chicken Carcasses. Research Report of the Jakarta Agricultural Technology Assessment Center, Jakarta* .

Zs, EW (2024). Administration of Mangosteen Peel Powder (Garcinia Mangostana L.) in Drinking Water of Broiler Chickens Exposed to Heat Stress. *Lampung State Polytechnic* .

Zulkifli Mahmud, et al. (2024). The Effect of Adding Moringa Leaf Flour (*Moringa Oleifera*) to Broiler Chicken Feed (Gallus Domesticus) on Carcass Weight and Percentage . *0* , 1–6.