

## **CORRELATION BETWEEN LIVE WEIGHT AND CARCASS WEIGHT AND GIBLET WEIGHT IN BROILER CHICKENS GIVEN WHITE TURMERIC EXTRACT**

**Wiesje Martha Horhoruw<sup>1</sup>, Arnold Ismael Kewilaa<sup>2</sup>**  
Pattimura University, Southwest Maluku Regency, Indonesia  
Email : wiesjehorhoruw@gmail.com

### **Abstract**

The objective of this research is to determine the correlation between live weight, carcass weight, and giblet weight in broiler chickens given 4% white turmeric extract. This study was conducted from July to September 2024 at the Poultry Unit of the Animal Husbandry Department, Faculty of Agriculture, Pattimura University Ambon. The materials used in this research were 60 Cobb strain broiler chickens. The feed provided consisted of BR1 and BR2 produced by PT. Malindo Feedmilk, vita stress, and Gumboro vaccine. The white turmeric extract administered was 40 ml from a total of 1000 ml of drinking water (4% white turmeric extract). The data analysis technique used in this study was simple linear regression statistical testing to examine the effect of the independent variable (live weight) on the dependent variable (carcass weight) of broiler chicken at a significance level ( $\alpha$ ) = 0.05. Data processing was performed using the SPSS computer program. The results showed that live weight had a very strong (0.992) and positive correlation with carcass weight in broiler chickens given 4% white turmeric extract, while live weight and giblet weight had a strong (0.711) and positive correlation.

**Keywords:** Broiler, live weight, carcass weight, giblet weight, correlation

### **Introduction**

The need for protein of animal origin is increasing, along with the increase in population and increasing public awareness of the importance of nutrients. Broiler chickens can be used as an alternative to fulfilling protein from livestock, because it has a very fast body weight growth. Broiler chickens are a type of chicken that is cultivated specifically for the purpose of meat consumption. Broiler chickens have the advantage of fast growth, have better genetic traits in each generation. Broiler chickens are the most common type of broiler chickens that are raised to produce meat in a short period of time, which can be harvested within 21 - 35 days (Heldini, 2015).

Several efforts have been made by farmers to increase the productivity of broiler chickens, namely through improving maintenance, cage and feed management including the addition of feed additives. Feed is one of the important factors in the broiler chicken business besides seeds. Feed from a financial point of view is also a factor that has the largest role in the production cost structure compared to other factors. The use of feed in broiler chicken production reaches around 60-70% of the total production cost. To support

the rapid growth rate of broiler chickens, feed additives are needed that are added to the feed material. In addition to the rapid growth rate, fat deposits tend to increase as we age. Because of the need to add feed additives in feed to reduce fat accumulation in the body (Jumiati & Aka, 2017).

Feed additives can be used to replace antibiotics, one of which is turmeric (Horhoruw & Rajab, 2019). The content of the active substance curcumin contained in turmeric functions as an antibacterial, appetite enhancer and digestibility of ration ingredients. The active substance curcumin given to broiler chickens affects the level of consumption, body weight gain and ration conversion value (Wahyuni & Rositawati Indrati, 2023). Curcumin and essential oils are one of the main components contained in the genus *Curcuma*. Curcuminoids function to increase appetite, with increased appetite it is hoped that production can increase. The content of essential oils is to destroy bacteria and contains anti-inflammatory or anti-inflammatory properties (Kristio, 2007).

In addition to yellow turmeric (*Curcuma domestica*), there is also a type of white turmeric (*Curcuma zedoaria*) which is a herbal plant that contains additives that have good potential when mixed in broiler chicken drinking water. White turmeric contains essential oils in the form of a thick liquid consisting of monoterpenes and sesquiterpenes (Windono et al., 2002).

The correlation between cut weight and carcass, giblets and abdominal fat in broiler chickens has been extensively studied, but the correlation between live weight and carcass weight and gible weight in broiler chickens with the administration of white turmeric extract has never been studied. (Horhoruw & Rajab, 2019), stated that the effect of giving white turmeric in broiler chicken drinking water was not significantly different from the cut weight, carcass, gible and abdominal fat, while the correlation between cut weight and carcass, gible and abdominal fat in broiler chickens with the administration of white turmeric extract has not been studied. The application of yellow turmeric, white turmeric and other herbal ingredients will have different effects on the growth of broiler chickens. It is hoped that the use of white turmeric extract with different levels in broiler chicken drinking water can provide different growth, so that the correlation between live weight, carcass weight, and gible weight in broiler chickens given white turmeric extract can be known.

## **Research Methods**

This research has been carried out from July to September 2024 at the Cage Unit of the Department of Animal Husbandry, Faculty of Agriculture, Pattimura University Ambon. The material used in this study was 60 cobb strain broiler chickens. The feed provided is BR1 and BR2 feed produced by PT. Malindo Feedmilk.Tbk, vita stress and gumboro vaccine. The white turmeric extract to be given is as much as 40 ml of the total 1000 ml of drinking water given (4% white turmeric extract).

Parameter data was taken at the time of 5 weeks of age of chickens. The parameters measured in this study are as follows:

## Correlation Between Live Weight and Carcass Weight and Giblet Weight In Broiler Chickens Given White Turmeric Extract

- a. Live weight (grams) obtained from the results of weighing chicken after fasting for 6 hours (Setiadi, Nova, & Tantalo, 2013).
- b. The weight of the carcass (grams) was obtained from the results of weighing bloodless chickens, feathers, heads to the base of the neck, legs to the knees, and internal organs (Setiadi et al., 2013).
- c. The weight of the giblet (grams), obtained from the results of weighing the liver, heart, and gizzard simultaneously (Setiadi et al., 2013).

The Data Analysis Technique used in this study is a simple linear regression statistical test, which is to test the influence of free variables (live weight) on bound variables (carcass weight and broiler chicken giblet weight) with a real test level ( $\alpha$ )= 0.05. Data processing uses the SPSS computer program version 17 (Basuki, 2008). The equation of simple linear regression is as follows:

$$Y = a + bX$$

Information:

Y = bound variable

X = free variable

a = intercept

b = regression coefficient/slop

To determine the relationship between live weight and carcass weight and giblet weight in broiler chickens given white turmeric extract, correlation analysis was analyzed. The interpretation of the correlation coefficient obtained with guidelines according to (Sugiyono, 2013) is as follows:

Table 1. Correlation coefficient value criterion (r)

Correlation coefficient interval	Relationship level
0,00-0,199	Very low
0,20-0,399	Low
0,40-0,599	Keep
0,60-0,799	Strong
0,80-1,000	Very Strong

## Results and Discussion

### Life Weight

Broiler chickens need enough nutrients to support the growth process in body tissues. The growth of broiler chickens is affected by the quantity and quality of rations consumed, The high and low consumption of rations is influenced by the absorption of nutrients in the digestive tract. Good nutrient absorption will result in good growth and high body weight, but if the ration consumed by the livestock is small, it will cause absorption in the digestive tract to also be low so that the body weight becomes small

(Zahra, Suprijatna, & Sukanto, 2014). According to (Nugraha, Nissa, Nurbaeti, Amrullah, & Harjanti, 2017), factors that affect body weight gain are feed consumption, environment, seeds and feed quality. Body weight gain is very related to feed, which is related to feed consumption if feed consumption is disturbed, the growth of broiler chickens will also be disturbed. The average live weight in broiler chickens fed with 4% white turmeric extract was  $2469.92 \pm 175.87$  grams. The correlation and regression equation between live weight and carcass weight and giblet weight in broiler chickens given 4% white turmeric extract are shown in Table 2 below:

Table 2. Correlation and regression equation between live weight and carcass weight and giblet weight in broiler chickens.

Correlation between variables		Flattening	Correlation Value	Regression Equation	P-Value
Live Weight (%)	Weight+Carcass	$72.13 \pm 0.27$	0,992	$Y = 49,541 + 0,741$	0,000
Live Weight (%)	Weight+Giblet	$4.92 \pm 0.60$	0,711	$Y = 38,488 + 0.340$	0,000

### Correlation between Live Weight and Carcass Weight

Based on the results of the study, the average value of the percentage of broiler chicken carcasses raised for 35 days in this study was 72.13% with a range between 71.00-73.07%. The value of this carcass percentage is slightly lower than the results of the research of (Anggitasari, Osfar, & Irfan, 2016) which stated that the percentage of broiler chicken carcasses raised for 35 days was 73.2-75%; 75.05 –76.40 % (Horhoruw & Rajab, 2019); 65-75% (Salam, Fatahilah, Sunarti, & Isroli, 2017), while according to Sumarni (2015) stated that the average percentage of carcass weight was 69.76-73.39% and 76.72-77.76% which were cut at the age of 6 weeks and (Sulistiawati, 2024). Factors that affect the weight of broiler chicken carcasses are genetics, gender, physiology, age, body weight and ration nutrition. The quality and quantity of rations affect the weight of the carcass, the better the quality and the more ration consumption, the higher the weight of the carcass (Ikasari, 2017).

Based on the results of the study, the live weight had a significant effect on the weight of the carcass given 4% white turmeric extract in 1000 ml of drinking water.

The correlation value between live weight and carcass weight was 0.992. These results show that live weight and carcass weight correlate very strongly and positively. This result is in line with the opinion of (Horhoruw & Rajab, 2019), that the weight of the carcass of a chicken is positively correlated or has a close relationship with the live weight of the chicken when slaughtered, meaning that if the slaughter weight of the chicken is high, the weight of the carcass will also be high. (Resnawati, 2004) added that the weight of the resulting carcass is influenced by several factors, namely the condition

of the macroclimate and microclimate of the cage, age, gender, cut weight, body size and conformation, fat, quality and quantity of rations and strains maintained.

### Correlation between Life Weight and Giblet Weight

The gible is made up of a heart, a heart, and a gizzard. Ration consumption is one of the factors that can affect the weight of the gible. If the ration consumption is high, then the weight of the gible will also be high. When the ration enters the body, a metabolic process will occur. This metabolic process will affect the work activities of the gizzard, liver, and heart. Poultry will increase its metabolic ability to digest crude fiber, thereby increasing the size of the gizzard, liver, and heart (Hetland, Svihus, & Choct, 2005).

Based on the results of the study, the average value of the percentage of broiler chicken gible raised for 35 days in this study was 4.92% with a range between 4.53-5.79%. Based on the regression test, it was shown that live weight had a significant effect on the weight of the gibles given 4% white turmeric extract in 1000 ml of drinking water. The correlation value between live weight and gible weight is 0.711, meaning that live weight is strongly and positively correlated. This result is in line with the opinion of (Horhoruw & Rajab, 2019) The weight of the gible is positively correlated with the weight of life, where the higher the weight of life, the weight of the gible is also higher.

### Conclusion

Based on the results of the study, it can be concluded as follows:

1. The live weight had a significant effect on the carcass weight given 4% white turmeric extract, with the correlation value between live weight and carcass weight was 0.992, meaning that the live weight and carcass weight were correlated very strongly and positively.
2. Live weight had a significant effect on the weight of the gible given 4% white turmeric extract, with the correlation value between live weight and gible weight being 0.711, meaning that the live weight and the weight of the gible were strongly and positively correlated.

### Bibliography

- Anggitasari, S., Osfar, S., & Irfan, H. D. (2016). Effect of some kinds of commercial feed on quantitative and qualitative production performance of broiler chicken. *Buletin Peternakan*, 40(3), 187–196.
- Basuki, Sulisty. (2008). Metode penelitian, Jakarta: Penaku. *Departemen Agama*.
- Heldini, A. P. (2015). Pengaruh penambahan minyak ikan tuna dalam ransum basal terhadap performan ayam broiler. *Journal of Rural and Development*, 6(1).
- Hetland, H., Svihus, Birger, & Choct, Mingan. (2005). Role of insoluble fiber on gizzard activity in layers. *Journal of Applied Poultry Research*, 14(1), 38–46.
- Horhoruw, Wiesje M., & Rajab, Rajab. (2019). Bobot potong, karkas, gible dan lemak abdominal ayam broiler yang diberi gula merah dan kunyit dalam air minum sebagai feed additive. *Agrinimal Jurnal Ilmu Ternak Dan Tanaman*, 7(2), 53–58.

- Ikasari, A. T. (2017). Effect of Probiotic to Percentage of Carcass and Carcass Fat in Broiler. *Faculty of Science and Technology. Universitas Islam Negeri Alauddin. Makassar*.
- Jumiati, Sri, & Aka, R. (2017). Bobot potong, karkas, giblet dan lemak abdominal ayam broiler yang temulawak (*Curcumanthorrhiza, roxb*) dalam pakan. *Jurnal Ilmu Dan Teknologi Peternakan Tropis*, 4(3), 11–19.
- Nugraha, Y. A., Nissa, K., Nurbaeti, N., Amrullah, F. M., & Harjanti, D. W. (2017). Body weight gain and feed conversion rate for broilers reared using herbal disinfectants. *JHIP*, 27(2), 19–24.
- Resnawati, Heti. (2004). Bobot potongan karkas dan lemak abdomen ayam ras pedaging yang diberi ransum mengandung tepung cacing tanah (*Lumbricus rubellus*). *Seminar Nasional Teknologi Peternakan Dan Veteriner, Pusat Penelitian Dan Pengembangan Peternakan, Bogor*.
- Salam, S., Fatahilah, A., Sunarti, D., & Isroli, Isroli. (2017). Berat karkas dan lemak abdominal ayam broiler yang diberi tepung jintan hitam (*Nigella sativa*) dalam ransum selama musim panas. *Sains Peternakan: Jurnal Penelitian Ilmu Peternakan*, 11(2), 84–90.
- Setiadi, D., Nova, K., & Tantalo, S. (2013). The comparison of live weight, carcass, giblet, and abdominal fat of roosters medium type with different strain that given commercial broiler ration. *Jurnal Ilmiah Peternakan Terpadu*, 1(2).
- Sugiyono. (2013). *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*. (Bandung: Alfabeta).
- Sulistiawati, D. (2024). Effects of dietary seaweed and carrageenan waste on performance and carcass quality of broiler. *IOP Conference Series: Earth and Environmental Science*, 1355(1), 12036. IOP Publishing.
- Wahyuni, Nur Maulida, & Rositawati Indrati, Eko Widodo. (2023). Effect of Acidifier and Turmeric (*Curcuma domestica*) in Feed on Broiler Production Performance. *Population (Bird)*, 10, 100.
- Zahra, A. A., Suprijatna, E., & Sukanto, B. (2014). Pengaruh pemberian pakan sorgum dan kulit pisang yang telah dihidrolisis dengan NaOH terhadap profil lemak darah ayam broiler. *Agromedia*, 32(1), 74–80.

---

**Copyright holders:**

Wiesje Martha Horhoruw<sup>1</sup>, Arnold Ismael Kewilaa<sup>2</sup> (2024)

**First publication rights:**

Advances in Social Humanities Research

**This article is licensed under:**

