

The Percentage Of Internal Organ Weight Of Broiler Chickens Fed Containing Corn Leaf Flour With Different Levels

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Abstract

This research aims to determine whether feeding corn leaf meal at different levels can increase the percentage of internal organ weight in broiler chickens. This study used a completely randomized design (CRD), consisting of 5 treatments and 5 replicates. The analysis used was Analysis of Variance, and if there was a significant effect, it was followed by Duncan's multiple range test. Experiments were given as follows: P0 (100% commercial feed) (Control), P1 (feed with 5% corn leaf flour), P2 (feed with 10% corn leaf flour), P3 (feed with 15% corn leaf flour), P4 (feed with 20% corn leaf flour). The results showed that the addition of corn leaf meal in the diet had no significant effect ($P>0.05$) on the percentage of liver, heart, and stomach in broiler chickens. The addition of corn leaf meal in the feed at levels of 5-20% had no significant effect, but it could increase the weight of internal organs in broiler chickens.

Keyword: *Broiler Chicken, Corn Leaf Flour, Weight and Percentage of Internal Organs.*

INTRODUCTION

The advantage of animal protein is that it has a more complete composition of essential amino acids than vegetable protein. Broiler chicken meat contains high nutritional value with a soft aroma and texture and is relatively cheap and contains complete essential amino acids. Broiler chickens have larger and fatty body characteristics, fast growth, and the meat produced has a high protein content. The nutritional content in chicken meat includes carbohydrates,



proteins, fats, minerals, and other substances that are useful for the body (Septinova *et al.* 2016).

Feed for broiler chickens is an important element to support health, growth and energy supply so that the metabolic process can run properly. Therefore, to increase productivity in broiler chickens and reduce feed costs, it is necessary to carry out efficiency through good feed management so that the profits produced can be maximized (Sari *et al.*, 2017).

The internal organs (non-carasses) in broiler chickens are part of the poultry digestive system that functions to change the nutrients that enter through the feed used for productivity. The internal organs of broiler chickens are part of the digestive organs and several organs such as liver, bile and pancreas which are the most important parts to help the productivity process in the body.

The use of corn leaves harvested at a young age is still relatively low compared to the use of corn leaves harvested at an old age (straw). This is due to a lack of information about the nutritional content of young corn leaves. Corn leaves are a by-product of the 45-day-old corn plant containing 13.73% crude protein, 4.85% crude fat, 27.83% crude fiber, and 9.29% ash content in % BK (Hafsha *et al.* 2023).

The use of corn leaves in broiler chicken feed is expected to increase the usability and digestibility of feed nutrients because of the ability of enzymes secreted by cellulotic microbes introduced to spur the fermentation process of feed outside the body in decomposition of hydrolytic macromolecules of complex feed nutrients into simpler molecules and ready to be digested and absorbed in the small intestine as metabolic materials for broiler chickens to meet basic life needs, production and growth.

METHOD

This research was conducted from May to July. Location of the research was in Tamboo Village, Tilongkabila District, Bone Bolango Regency, Gorontalo Province. This research used a completely randomized design (CRD), consisting of 5 treatments and 5 replicates. The analysis used was Analysis of Variance. If there was a significant effect, it would be followed by Duncan's multiple range test.

Samples used were 25 broiler chickens aged 35 days. Feed used was corn leaf flour obtained from processing young corn leaves harvested at 45 days of age, Lohman MB-202 strain broiler chickens from PT. Japfa Comfeed Indonesia, and Gold Coin concentrate feed from PT. Gold Coin Indonesia. Vitamins and antibiotics will be dissolved in drinking water. The variables observed were the percentage of liver weight, percentage of heart weight, and percentage of



stomach weight. The data obtained were presented in tabular form, analyzed statistically, and then discussed descriptively with reference to relevant literature.

RESULTS AND DISCUSSION

Results of research on the percentage of organ weight in broiler chickens fed corn flour at different levels, including liver, stomach, and heart weight, are presented in Table 1.

Table 1. The average weight and percentage of internal organs of broiler chickens that were fed contained corn leaf flour with different levels

Variable	Plan									
	P0		P1		P2		P3		P4	
	(gr)	(%)	(gr)	(%)	(gr)	(%)	(gr)	(%)	(gr)	(%)
Weight of Liver	36.8	2.03	29.75	1.68	29	1.72	27.25	1.66	29.25	1.70
Weight of Heart	7.4	0.40	7.6	0.42	7.68	0.46	8.2	0.49	7.6	0.44
Weight of Gizzard	32.2	1.77	47.8	2.66	43	2.57	42.6	2.59	42.3	2.46

Percentage of Heart Weight

Table 1. The highest percentage of broiler chicken liver weight was found in the P0 treatment at 2.03%, followed by P2 at 1.72%, then P4 at 1.70%, then P1 at 1.68%, and the lowest weight was found in the P3 treatment at 1.66%. The average percentage in this study was lower than the findings (Nilawati et al. 2023), which found a broiler chicken liver percentage of 2.03–2.10%. The average liver percentage results obtained showed variations between treatments, but statistically there was no significant effect ($P>0.05$) on the percentage of broiler chicken liver weight.

At P0, there was a significant increase in liver weight percentage. This indicates that the use of corn leaf flour up to 20% in broiler chicken feed has no negative effects and can be applied in broiler chicken feed production. Another possibility is that the crude fiber content is almost identical, making the feed easier to digest. With increased consumption of these toxic substances, the liver will work harder to increase bile production and secretion to neutralize the toxins that enter. As a result, the liver will become larger. By (Asli et al. 2012), it is mentioned that an increase in dietary fiber (e.g., cellulose) can reduce liver weight.

The percentage of broiler chicken liver weight in the P3 is lower, indicating that the performance of broiler chicken liver in the P3 is lighter in inhibiting toxins entering the liver. The decrease in broiler chicken liver weight in this study is still within normal limits, so the use of corn

leaf flour is still considered safe as a feed supplement for broiler chickens. The addition of corn leaf flour in this ration can have a positive effect on the liver, such as improving liver quality. The liver's work activity is not too difficult, so there is no swelling of the liver. This is in accordance with research (Salam et al. 2014) which states that liver weight will increase due to the high work of liver cells in filtering toxins (poisons) in the blood.

Corn leaves contain antioxidant compounds that can help protect liver cells from damage caused by free radicals, and corn leaves can affect nutrient metabolism in broiler chickens. The proteins produced by the liver are in the form of blood proteins, enzymes, hormones, clotting factors, and immune factors. In addition, the liver also functions as an endocrine and exocrine gland. (Zaefarian et al. 2019).

However, in the results of this research, crude fiber was given at a level of up to 20%, which was still tolerable by broiler chickens and did not show any effect on the percentage of broiler chicken liver. This is in line with the opinion (Han et al. 2023) which states that an increase in crude fiber concentration can reduce liver weight and liver fat concentration.

Heart Weight Percentage

The highest percentage of heart weight was found in the P3 (0.49%), followed by P2 (0.48%), P4 (0.44%), P1 (0.42%), and the lowest heart weight in P0 (0.40%). This study is not much different from the findings of the study (Kurniawan et al. 2021), namely an average heart percentage of 0.40–0.50%.

The average percentage of heart weight obtained from the results of all experiments shows that the addition of corn leaf flour to the feed had no significant effect ($P > 0.05$). Although the percentage of heart weight in each experiment tended to be higher than that of the control group, it was still within normal limits.

The highest percentage of heart weight in broiler chickens was found in the P3 treatment, this was due to the addition of corn leaf meal in the ration up to a level of 20%. This corn leaf meal does not contain toxins and anti-nutrients, so it does not cause excessive contraction of the heart muscle which can interfere with heart function. These anti-nutrients are tannins, which function as compounds that bind proteins and minerals and absorb nutrients that enter the livestock's body. This is consistent with the results (Hatta et al. 2020), showing that heart and liver weight were not affected by the experimental diet. The more the weight of the heart, the smoother the blood flow into and out of the heart, and this will have an impact on metabolism in livestock (Bintang et al. 2020).

This difference in heart weight is believed to be related to an increase in crude fiber in the feed after the addition of corn leaf meal. This indicates that the ration given did not cause metabolic disorders that affected the size and condition of the heart. This is consistent with the opinion (Kurniawan et al. 2021) which states that hearts infected with disease and toxins usually experience changes in heart size.

Percentage Weight Gizzard

The results showed that the use of corn leaf flour as a feed supplement had no significant effect ($P > 0.05$) on the percentage of broiler chicken stomach weight. The highest average stomach percentage occurred in the P1 (2.66%), followed by P3 (2.59%), P2 (2.57%), P4 (2.46%), and the lowest percentage in P0 (1.77%). The average obtained in this study was not much different from the findings of a study (Jumiati et al. 2017), which stated that the average percentage of broiler chicken gizzards ranged from $1.26 \pm 0.05\%$ to $1.46 \pm 0.25\%$ of live weight.

The average gizzard percentage varied between treatments. The variation in gizzard weight is believed to be related to the increase in crude fiber in the feed after the addition of corn leaf meal. The highest result was obtained in the P1 treatment with a 5% corn leaf meal level, due to the increase in crude fiber in the ration that triggered gizzard development, and the change in fiber is believed to have a small effect. In addition, P1 was also designed to provide a more optimal proportion of fiber that was easier for broiler chickens to digest compared to P4, which had too high a fiber content, thereby reducing feed consumption and potential nutrient absorption in the gizzard. Diets containing a lot of fiber will cause many changes in the size of internal organs, making them heavier and thicker (Mistiani et al. 2020).

In this study, the feed given in each treatment was in the form of crumbles and additional corn leaf meal. Thus, the physical size of the feed in each treatment was not significantly different. This resulted in no difference in stomach performance in digesting feed in each treatment. This is consistent with the opinion of (Desbruslais et al. 2021), which states that when the stomach is stimulated by the presence of coarse fiber, the proventriculus can respond by increasing the secretion of other organs. This can help further degrade nutrients, thereby increasing the availability of more balanced absorption. There was also a finding (Svihus, 2011), stating that the fiber content in the gizzard is generally higher than the fiber content in the intestine, indicating that the fiber components in feed are physically more difficult to grind. Without teeth, poultry rely on the gizzard to grind digesta.

Gizzard is an organ that functions to grind large feed particles into smaller sizes before entering the duodenum and other intestines. Gizzard responds to high coarse fiber in the ration.

The presence of high fiber can affect the digestibility of foodstuffs and can affect the organs in digestion (Kiranastuti. 2022).

CONCLUSION

Using corn leaf flour as a feed supplement for broiler chickens can affect the percentage of internal organ weight but does not have a significant effect. The best level in this study was the giving of corn leaf flour at a level of 5% to 10%. The average percentage of liver weight ranged from 1.66% to 170%. The average percentage of heart weight ranged from 0.40% to 0.49%. The average percentage of gizzard weight ranged from 1.77% to 2.66%.

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