



Research Paper

Effect of Herbal Feed additive on Weight of Internal Organ , Abdominal Fat and Carcass of Broiler Chickens

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ABSTRACT : The use of antibiotic in poultry diets have prohibited because there will be chemical residues in the poultry product that are harmful to humans who consume it and in poultry diets due to the ontogeny of microbial resistance, therefore, alternative substances for growth enhancers were necessary to be made and applied. Numerous mixtures of medicinal plants which are commercially available for the poultry industry claim to have bio-functional advantages regarding growth performance and immuno competence, Turmeric (*Curcuma domestica*) and ginger (*zingiber officinole*) can be used as natural antibiotics because they have the ability to suppress pathogenic microbes, provide immunity and endurance, improve production performance and as an appetizer. The method used in this study is an experimental method, using T test with compare 2 treatments such as T1 is control (without feed additive) and T2 (using feed additive) and each treatment using 10 replications. Producing of herbal feed additives by mixing turmeric, ginger, betel leaf and water in a ratio of 1:1:1:2, then mashed and squeezed, herbal feed additive given to drinking water by mixing the juice with water in a ratio of 1: 60. The results of research showed that the provision of herbal additives to poultry resulted in the percentage of gizzard weight, intestinal length, and abdominal fat which was significantly lower than the control, but not significantly different in the percentage of liver weight and carcass percentage, so it can be concluded that the addition of herbal additive feeds in ration of broilers is save and better which is characterized by best characteristics of internal organs and lower abdominal fat weight.

KEYWORDS: Feed aditive, herbal, carcass, intestinal organ, broiler

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I. INTRODUCTION

The substantial role of phytogetic and medicinal compounds derived from plants in human nutrition for increasing appetite due to their functions as essence and odor, the herbal additives could also be applied in livestock feeding for animal well-being and growth improvement [1]. The use of antibiotic in poultry diets have prohibited because there will be chemical residues in the poultry product that are harmful to humans who consume it. Antibiotics usage in poultry diets due to the ontogeny of microbial resistance, therefore, alternative substances for growth enhancers were necessary to be made and applied [2]. Numerous mixtures of medicinal plants which are commercially available for the poultry industry claim to have bio-functional advantages regarding growth performance and immunocompetence, the effects of four evaluated herbal additives on productive traits were not significantly different in comparison with antibiotic treatment to body weight and feed conversion ratio, suggesting that the use of antibiotics as a growth promoter can be replaced by any of these additives [3].

Turmeric (*Curcuma domestica*) and ginger (*zingiber officinole*) can be used as natural antibiotics because they have the ability to suppress pathogenic microbes, provide immunity and endurance, improve production performance and as an appetizer. Turmeric contains substances curcumin which has efficacy as antibacterial and can stimulate the walls gallbladder to excrete fluid bile so that it can facilitate fat metabolism. Ginger apart contains essential oils also contains two very important digestive enzymes, namely proteases and lipases. Protease works breaks down proteins and lipases function break down fat [4]. The use betel leaf in broiler diets is suspected because the effectiveness of the compounds contained in the betel leaf can increase carcass weight and reduce the number of broiler gastrointestinal bacteria, because the effectiveness of the

compounds contained in the betel leaf as an antioxidant, anti septic, natural and antibacterial antibiotic, causing maximum nutrient absorption will cause the efficiency of the ration also maximal so that it will affect the weight of carcasses [5]. The combination of Turmeric (*Curcuma Domestica*), ginger (*zingiber officinole*) and betel leaf (*Piper Betel L.*) as feed additives in broilers complements the content of substances that are useful as natural antibiotics.

II. MATERIALS AND METHODS

The materials used in this study were turmeric, ginger, betel leaf and broiler one day old (DOC, day old chick) as many 80 DOC. Chickens are placed in 20 small cage boxes and 1 box consists of 4 chickens equipped with lights, equipment for feeding and drinking. The feed used was commercial feed from the factory with a crude protein content of 22%, metabolism energy 3100 kcal/kg, maximum crude fiber 5%, calcium 0.9% and phosphorus 0.6%. The feed used consisted of corn meal, bran, soybean meal, coconut meal, meat and bone meal, canola leaf flour, calcium, phosphorus, vitamins, trace minerals and anti-oxidants.

The method used in this study is an experimental method, using T test with compare 2 treatments such as T1 is control (without additive feed) and T2 (using additive feed) and each treatment using 10 replications.

Implementation

The produce herbal feed additives by mixing turmeric, ginger, betel leaf and water in a ratio of 1:1:1:2, then mashed and squeezed, herbal additive feed given to drinking water by mixing the juice with water in a ratio of 1: 60. The control T1 was given chemical antibiotics from the poultry shop 2 times a week and T2 given herbal aditif feed every morning and and chickens are reared for 30 days. Research variable in the research included carcass weight, gizzard weight percentage, liver weight percentage, small intestine length percentage, abdominal fat percentage, Observations were carried out after harvesting chickens at the age of 30 days.

III. RESULTS AND DISCUSSION

The results of research on the provision of herbal additive feeds to broilers for carcasses and organs can be seen in Table 1 and diagram 1 below.

Table 1. Weight of Internal Organ Gizzard, Liver, Abdominal Fat and Carcass and length of Small intestine of broilers.

parameters	Treatment			
	Feed additive (T2)		Control (T1) (without feed additive)	
	Weight	% body weight	Weight	% body Weight
Gizzard (g)	36,22	1,70 ± 0,243 ^a	43,2	2,246 ± 0,211 ^b
Liver (g)	42,11	2,01 ± 0,285 ^a	41,86	2,172 ± 0,314 ^a
Small intestinal Lenght (cm)	167,3	0,79 ± 0,099 ^a	203,6	1,06 ± 0,133 ^b
Abdominal fat (g)	10,95	1,03 ± 0,182 ^a	15,69	1,66 ± 0,488 ^b
Carcass (g)	1610	75,63 ± 1,273 ^a	1430	73,92 ± 5,141 ^b

Note: Different superscripts in the same row showed significant different at P<0,05.

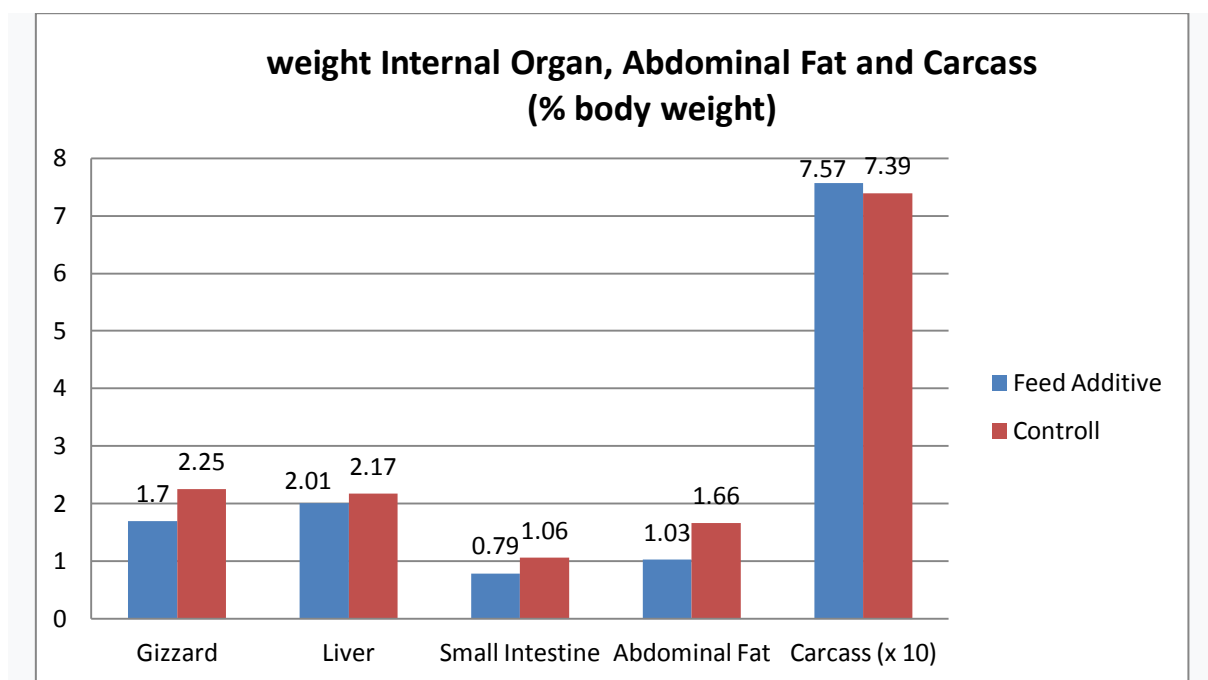


Diagram 1. Weight Internal Organ, Abdominal Fat and Carcass (% body weight)

3.1. Gizzard Weight Percentage

Gizzard is a poultry digestive part that functions to carry out the mechanical digestion process by reducing the size of food particles. The effect of giving herbal feed additives (turmeric, ginger and betel leaf) on gizzard weight can be seen in Table 1. Based on the results of the research showed that the treatment of herbal feed additives in broiler chickens showed a significant difference ($P>0.05$) to the percentage of gizzard weight.

The results of the t test showed that the percentage of gizzard weight in broilers treated with herbal feed additives was significantly lower. This is because the curcumin and essential oils contained in the herbal additive feed strengthen the gizzard so that it works more effectively and is not heavy. essential oils that are anti-inflammatory (anti-inflammatory), increase appetite, strengthen the stomach [6]. The range of gizzard percentages in this study was 1.70 - 2.25 percent of live weight, this figure is in the normal range. According to [6] stated that the percentage of broiler gizzard weight ranged from 1.5-2.4% of the live weight of broiler chickens. This reflects that the percentage of gizzard weight is in line with previous research studies.

3.2. Liver Weight Percentage

of the functions of the liver is as an antidote so that the percentage of liver weight reflects the safety of the ration or feed additive given to broiler chickens. The effect of giving herbal feed additives (turmeric, ginger and betel leaf) on liver weight can be seen in Table 1 where there is no significant difference ($P>0.05$) in the percentage of liver weight in broilers fed with additive feed and control.

The percentage of liver weight that did not significant between the feed additive and control treatments in this treatment indicated that the provision of herbal additive feed in the form of a mixture of ginger, turmeric and betel leaf in broilers was safe so that the liver did not enlarge because the herbal additive feed did not cause toxic or toxic effects so that the liver does not extra work because the liver function as a detoxification of toxins. Enlargement or swelling of the liver can be caused by toxins carried by food [7] et al. (2017).

The average percentage of liver weight in this research was 2.01 percent in the feed additive and 2.17 in the control. The average liver weight in the results of this study was in the normal range. This range is in accordance with the opinion of [8] who said that the percentage of liver weight ranged from 1.7-2.3% of body weight. The percentage of liver weight in this reseaech is also in line with previous research conducted by [9], which is in general liver weight is in the normal range of 2-2.5%.

3.3. Small intestine length

The small intestine is one of the digestive organs in poultry that functions to complete the reshuffle of food with the help of several enzymes produced by the pancreas, besides that the small intestine also absorbs the digestive products to be flowed into the blood vessels. The effect of feding herbal feed additives (turmeric, ginger and betel leaf) on intestinal length as shown in Table 1. The results showed that the length of the small

intestine in the boiler that received additive feed treatment was significantly ($P < 0,05$) smaller than the control. This is because herbal feed additives function as antibiotics that inhibit the development of harmful bacteria and improve the function of the digestive tract including the intestine so that the work of the intestine is not heavy. According to Agnes [10] that turmeric is in charge of launching metabolism and improving the function of the digestive tract.

The average value of the relative length of the small intestine per 100 g of body weight in this study was 7.88 cm in the feed additive and 10.55 in the control. The value of bowel length in this study was lower than in previous studies. This is because the increase in body weight of chickens in this study was also far above normal body weight gain, according to [11] the average length of broiler intestines ranged from 17.13-19.80cm/100g body weight.

3.4. Abdominal Fat Percentage

Abdominal fat has a correlation with total carcass fat, the lower the abdominal fat content, the lower the carcass fat content in broiler chickens. The average percentage of abdominal fat in this study was 1.03 to 1.06. The results of this study are in the normal range, according to Becker et al. (1979), abdominal fat content ranged from 0.78 to 3.78%. The results of the T-test analysis showed that the average percentage of abdominal fat in broiler chickens fed with herbal additives was significantly lower ($P < 0.05$) compared to broilers not fed with herbal additives (control).

The essential oil contained in the herbal additive feed can reduce the abdominal leak content in broilers, this is because the active substance in the form of curcuminoids in the herbal ingredients produced by turmeric and ginger can increase the production and secretion of bile so as to break down fat and reduce fat deposits. Curcumin in the body will stimulate the gallbladder to actively secrete bile which will later help break down fat [12].

The combination of curcumin and essential oils in herbal ingredients can reduce fat formation, herbal ingredients containing bioactive substances in the form of curcumin and essential oils can reduce abdominal fat in broilers because they can stimulate the gallbladder wall and neutralize acidic conditions in the intestinal tract and reduce fat emulsification so that fat formation reduced [2]).

3.5. Carcass Weight Percentage

Carcass percentage was related to live weight, the average carcass percentage in broilers aged 30 days ranged from 73.92 – 75. 62. The results of this study were in line with the results of research by Anggitasari et al (2016), namely the percentage of carcasses at 5 weeks of age was 73.2 -75%. The results of the analysis using the T test showed that the percentage of carcasses in broilers fed with herbal additives was not significantly different ($P > 0.05$) with broilers not fed with herbal additives (control).

Feeding herbal additives has not been able to increase the percentage of carcass weight, this is presumably because there are other parts that are not included in the carcass which are also higher such as head, legs and feathers so that the percentage of carcass weight is not significantly different from the control. The percentage of broiler carcass is the ratio between carcass weight and slaughter weight multiplied by 100%, while carcass is the body part of chickens after halal slaughter, blood removal, removal of feathers and removal of offal, without head, neck and legs [13]. The results of this study are in line with Al Hadi et al (2021) that the provision of drinking water with a solution of turmeric and betel leaf or a combination of the two has no significant effect ($P > 0.05$) on the carcass weight of broiler chickens [13].

IV. CONCLUSION

Feeding herbal feed additives in the form of a mixture of turmeric, ginger and betel leaf in drinking water in broilers ration is characterized by normal liver weight and better because it can relieve the work of the digestive organs which is characterized by lower gizzard weight and small intestine length and lower of fat content.

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