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RESEARCH ARTICLE

THE EFFECT OF SYNBIOTIC ON CARCASS PERCENTAGE AND ABDOMINAL FAT PERCENTAGE OF NATIVE CHICKEN

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Abstract

The aim of this study was to evaluate the effect of synbiotic on carcass percentage and abdominal fat percentage of native chicken. This research used 120 birds of native chicken. Basal diet in this research formulated with metabolizable energy (ME) 3000 kcal/kg and crude protein 19%. Completely randomized design used in this research with 6 treatment and 4 replicates. The 6 treatments were P0: control (without synbiotic), P1: basal diet + 1.0% of synbiotic, P2: basal diet + 1.5% of synbiotic, P3: basal diet + 2.0% of synbiotic, P4:basal diet + 2.5% of synbioticand P5: basal diet + 3.0% of synbiotic. The parameters in this research were live weight, carcass percentage and abdominal fat percentage. Based on this research showed that the treatment of synbiotic significant different ($p<0.05$) on live weight, carcass percentage and abdominal fat percentage of native chicken. Conclusion of the research was the supplementation of synbiotic increased of liveweight and carcass percentageand reduced of abdominal fat percentage of native chicken.

Introduction:-

Native chicken was a type of Indonesian local chicken that has high adaptability to the environment, was not easily stressed and was resistant to disease[1]. Native chickens were widely cultivated by rural communities with the aim of being used for meat, eggs or as savings that can be sold at any time. The problem in native chicken farming until now was the native chickens have a low growth rate, so that it takes a long time to rearing. This condition mainly occurs in traditional rearing, where the nutritional requirements were not considered by the farmer.In intensive native chicken farming, the farmers cannot be separated from the used of antibiotic. [2] state that the use of antibiotics can inhibit the growth of pathogenic bacteria so that it can improve the intestinal villi which in the end the digestibility of the ration has increased. The use of antibiotics was also able to improve the livestock health, because antibiotics can inhibit or eradicate other microorganisms that were pathogenic.

On the other hand, utilization of antibiotics also has a negative impact on livestock and humans. The use of antibiotics can lead to resistance of antibiotics, caused allergies and residues at products of livestock, thereby endangering of human health [3]. Therefore, the use of antibiotics was currently prohibited in almost all countries in the world. So, need alternative utilization of feed additive like us synbiotic.

Synbiotics were a combination of prebiotics and probiotics. Thecommonly used of prebiotic was inulin. [4], inulin can increase the growth and activity of beneficial bacteria in the digestive tract and has a bifidogenic role that can

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inhibit the growth of pathogenic bacteria. One of which the local product of Indonesia to produce of inulin was gembili tuber which has an inulin content of 14.77% [5]. Probiotics were living microorganisms that provide benefits for the growth of beneficial bacteria and inhibit the growth of pathogenic bacteria [6]. One type of probiotic can be used was *Lactobacillus plantarum*. This probiotic can be growth at inulin media derived from gembili tubers [7].Based on the previous study synbiotic from combination of inulin exctracted from gembili tuber and *Lactobacillus plantarum* had positive impact on the growth of broiler chicken [8]. So, in this study was hope the combination of gembili tuber and *Lactobacillus plantarum* can be improvement of carcass percentage of native chicken. The aim of this study was to evaluate the effect of synbiotic on carcass percentage and abdominal fat percentage of native chicken.

Material and Methods:-

Preparation of synbiotic

Preparation of synbioticconducted by mixed of gembili tuber flour with *Lactobacillus plantarum*(1 x 10^9 cfu/ml)as much as 5%, then the mixture incubated for 4 days at temperature of 37ºC.

Treatments and collecting data

The materials used in this research were 120 birds of native chicken at 6 week of age, basal dietand synbiotic (combination of gembili tuber flour and *Lactobacillus plantarum*).Basal diet in this research formulated with metabolizable energy (ME) of 3000 kcal/kg and 19% of crude protein (CP) showed at Table 1. Treatments in this research were P0: control (without synbiotic), P1: basal diet + 1.0% of synbiotic, P2: basal diet + 1.5% of synbiotic, P3: basal diet + 2.0% of synbiotic, P4:basal diet + 2.5% of synbioticand P5: basal diet + 3.0% of synbiotic.

Table 1:- Basal diet.

Ingredient	Composition (%)
Corn	55.00
Rice bran	10.00
Soy bean meal	20.00
Fish meal	10.00
Coconut oil	3.00
Salt	1.00
Premix	1.00
Total	**100.00**
Chemical composition	
Crude protein (%)	19.17
Metabolizable energy (kcal/kg)	3074.22
Crude fat (%)	6.54
Crude fiber (%)	5.02

The treatment of supplementation synbiotic was given at native chickens 6-11weeks of age. Native chicken as much as 120 birds placed into 24 experimental cages. Native chickens were randomly divided into 6 treatments with 4 replications, where each replication consisted of 5 native chickens.Collection of data liveweight, carcass percentage and abdominal fat percentage conducted at the end of experiment. The native chickens were fasted before slaughtered and then weighed. Then the native chickens were slaughtered, scalded and eviscerated. After that the carcass and abdominal fat weighed.Carcass percentage and abdominal fat percentage calculated according [9].

Statistical analysis

The research used completely randomized design (CRD) consist of 6 treatments with 4 replications. Data were analysis used of ANOVA and continued by test of Duncan's multiple range test.

Result:-

Data of live weight, carcass percentage and abdominal fat percentage of native chicken presented at Table 2. Based on the research showed that the treatments of synbiotichad significanteffect ($p<0.05$) on live weight, carcass percentage and abdominal fat percentage of native chicken.

Table 2:- Average of live weight, carcass percentage and abdominal fat percentage of broiler.

Parameters	Treatments					
	P0	P1	P2	P3	P4	P5
Live weight (g)	666.25^{b}	796.25^{a}	751.25^{a}	761.50^{a}	791.00^{a}	728.75^{ab}
Carcass percentage (%)	56.94^{b}	59.98^{ab}	59.76^{ab}	60.96^{a}	58.09^{ab}	60.85^{ab}
Abdominal fat percentage (%)	0.47^{a}	0.13^{c}	0.30^{b}	0.15^{c}	0.19^{c}	0.16^{c}

Different superscript in the same rowwas significant different ($p<0.05$)

Live weight

Based on the Table 2 showed that the treatments of synbiotic had a significant effect ($p<0.05$) on live weight. The treatment of synbiotics as much as 1% (P1) had the highest of live weight of native chickens of 796.25 g, then followed by the treatment of P4 of 791.00 g, P3 of 761.50 g, P2 of 751.25 g and P5 of 728.75 g. The lowest of live weight was found in P0 of 666.25 g. The research showed that the treatment of synbiotics was able to increase the live weight of native chickens. This was line with the research of [10] reported that the supplementation of synbiotics had a significant effect on the live weight of broiler chickens. [11] reported that the use of probiotics also had a significant effect on the final weight of kampung super chicken. However, this research was contrast with [12] that the broiler chickens that received supplementation of prebiotic, probiotic and synbiotic not different at resulted of live weight.

Data of the research showed that the treatments of synbioticsincreased ($p<0.05$) the live weight of native chickens compared to controls. [8] reported that the used of synbiotics in broiler chickens was able to improve the balance of beneficial bacteria in the digestive tract. Supplementation of synbiotics will be stimulate the growth of beneficial bacteria and activate digestive enzymes in the digestive tract so the absorption of nutrient process becomes better [13,14].[15] reported that the administration of synbiotics was able to improve the growth performance of broiler chickens.

Carcass percentage

Average of data carcass percentage presented at Table 2. The treatments of synbiotic had significant effect ($p <0.05$) on the carcass percentage of native chicken. This indicate that administration of synbiotics was able to increase the carcass percentage of native chicken. This was linearly with [16] that broiler chickens given synbiotics were significantly able to produce a higher of carcass percentage compared than the controls. The results of this research were also similarly with [17] that there was interaction between supplementation of probiotics and prebiotics on carcass percentage of broiler chicken. In contrast with [18], synbiotic treatment had no significant effect on the carcass percentage of broiler chicken.

The treatment of sinbiotics as much as 2% (P3) had the highest of carcass percentage of native chicken of 60.96%, which was then followed by treatment of P5 of 60.85%, P1 of 59.98%, P2 of 59.76% and P4 of 58.09%. The lowest of carcass percentage was found in the P0 treatment of 56.94%. The results were supported by liveweight data of native chickens that received of synbiotic also higher compared than controls. [19] reported that the used of synbiotics in broiler chicken was able to improve the growth performance. The increased of carcass percentage due to treatments of synbiotics affected by the inhibition of the growth of pathogenic bacteria in the intestinal tract and an increase of utilization of feed nutrients, especially protein and energy [20]. This was because the provision of probiotics will be increased the availability of protein so that it can be absorbed better [17]. Supplementation of synbiotics increased the microflora balance and function of digestive tract, this was influenceof increased nutrient absorption so that the nutrients for muscle production becomes more available[16,21].

Abdominal fat percentage

Data of abdominal fat percentage (Table 2) showed that the treatment with synbiotics had a significant effect ($p<0.05$) on the abdominal fat percentage of native chickens. The treatment without synbiotics (P0) had the highest of abdominal fat percentage of native chickens of 0.47%. The results of the abdominal fat percentage were then followed by P2 of 0.30%, P4 of 0.19%, P5 of 0.16%, and P3 of 0.15%. The lowest abdominal fat percentage of native chicken was found at P1 of 0.13%. The results of this research indicated that the administration of synbiotics has an effect on reduced the abdominal fat percentage of native chickens. The decreased of abdominal fat was possible due to the administration of synbiotics caused a loweringlipid and will influenced on reduced at fat digestibility [22,23]. [24], the supplementation of non-digestible carbohydrates can provide a good effect on fat

profile. [25], chickens were fed with corn-resistant starch were able to change the lipid metabolism thereby reducing fat deposition.

The results of this research were accordance of [16], synbiotic supplementation in diet reduce the abdominal fat percentage of broiler chickens. [25], supplementation of corn resistant starch was able to depressed the abdominal fat deposition of broiler chickens at starter phase. [17] and [23], broiler abdominal fat decreased due to the addition of synbiotics in the diet. However, [10] reported that the supplementation of combination prebiotic and probiotic had no significant effect on abdominal fat of broiler chickens. [17] also reported that the administration of prebiotics and probiotics also did not affect on abdominal fat of broiler chickens.

Conclusion:-

Conclusion of the research was the supplementation of synbiotic increased of live body weight and carcass percentage and reduced of abdominal fat percentage of native chicken.

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