The Effect of Different Probiotics on the Broiler's Offals Percentage

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ABSTRACT
Probiotic is known for its effect that could improve the health and production of poultry. This study aimed to evaluate the offals percentage of broiler chicken given different probiotics. One hundred day-old chickens of broiler were divided into 4 treatments and 5 replications based on a completely randomized design. The treatments applied were the addition of three probiotics, they were P0 = control (without probiotic), P1 = liquid organic supplement probiotic, P2 = Lacto probiotic, and P3 = *tape* yeast probiotic. The measured parameters in this study were offals percentage that consisted of of gizzard, liver, and heart of broiler chicken. The data obtained were analyzed using variance analysis and continued using Duncan's Multiple Range Test. The result shows that the treatments have a significant effect on the percentage of gizzard, liver, and heart of broiler. The highest gizzard and heart percentage is found on the addition of liquid organic supplement probiotics (P1). Meanwhile, the highest liver percentage is found on the addition of *tape* yeast probiotic (P3).

Keywords: *Broiler, Probiotic, Offals percentage*

1. INTRODUCTION

Broiler chicken is one of the most widely bred poultry in Indonesia. Broiler chickens are used as a source of animal protein for the community. Along with the prohibition on the use of antibiotics as poultry growth promoters, breeders seek several ways to improve the performance and health of livestock. One of the efforts made is the use of probiotics.

Probiotics are live microorganisms that are fed to livestock. Probiotics can improve performance while maintaining the health of poultry [1]. Probiotics can be bacteria, yeast, or fungi that are given to poultry. These microorganisms can improve the health of the digestive tract [2]. Probiotics are one of the feed additives that can modulate microorganisms in the digestive tract of poultry. Such modulation can result in a better health status and productivity [3]. Probiotics also have a positive effect on the digestive process, physiological status, and immune system of poultry [4].

In addition to producing meat, broilers also produce non-carcass products that can be consumed. These parts include gizzards, liver, and hearts that still have economic value. Giving probiotics can affect eating activity so it is possible to affect the size of the gizzard. Meanwhile, the condition and size of the liver and heart can indirectly describe the health condition of the poultry. Based on these conditions, a study is conducted to evaluate the effect of different probiotics on the broiler's offals percentage.

2. MATERIALS AND METHODS

This study used 100 DOC of broiler chickens, distributed into four treatments and five replications based on a completely randomized design. The feed used was BP 11 commercial feed that had a crude protein content of 21 - 23%. The treatments were:

P0 = Commercial feed without probiotics

P1 = Commercial feed + liquid organic supplement probiotic (5 ml probiotic in 1 liter of drinking water)

P2 = Commercial feed + Lacto probiotic (10 ml probiotic in 1 liter of drinking water)

Table 1. The Average Percentage of Gizzard, Liver, and Heart of Broiler Chicken

Parameters	Treatments			
	P0	P1	P2	P3
Gizzard percentage (%)	1.78^{b}±0.16	2.10^{a}±0.16	1.88^{ab}±0.21	1.72^{b}±0.21
Liver percentage (%)	1.90^{ab}±0.09	1.87^{b}±0.18	1.89^{ab}±0.15	2.13^{a}±0.24
Heart percentage (%)	0.47^{a}±0.02	0.52^{a}±0.02	0.41^{b}±0.03	0.50^{a}±0.04

Note: different superscripts on the same line show significant differences (P<0.05)

P3 = Commercial feed + tape yeast probiotic (2,8 g probiotic in 1 liter of drinking water)

Feed and drinking water were provided *ad libitum*. The parameters measured in this study were the percentage of the gizzard, liver, and heart of broiler chickens. Data collection on the percentage of gizzard, liver, and heart was carried out when the chickens were five weeks old. The data obtained were analyzed using analysis of variance and continued with Duncan's multiple range test.

3. RESULTS AND DISCUSSION

The average percentage of gizzard, liver, and heart of broiler chicken in this study is presented in Table 1.

The results show that the addition of different probiotics affect (P<0.05) the broiler's gizzard percentage. The highest gizzard percentage is obtained in treatment P1 while the lowest percentage is obtained in treatment P3. Previous studies report the same thing that the addition of probiotics can affect the gizzard size of broiler chickens [5].

The gizzard percentage of broilers in this study ranges from 1.72 to 2.10%. These results are not much different from the results of several previous studies. Several studies report that the average percentage of gizzard broilers ranges from 1.98% [6], 2.36 - 2.86% [7], and 2.60 - 3.29% [8].

The results show that the addition of probiotics affect (P<0.05) the percentage of broiler's liver. The average percentage of the liver in the study ranges from 1.87 - 2.13%. The highest percentage of the liver is obtained in treatment P3 while the lowest is obtained in treatment P1. The results of this study are in line with the results of previous studies which report the percentages of broiler chicken livers ranging from 1.25 - 1.81% [7], 2.13% [6], and 2.08 - 2.58% [8].

The results show that the addition of probiotics affect (P<0.05) the percentage of broiler heart. The highest percentage of broiler heart is obtained in treatment P1 while the lowest is obtained in treatment P2. The percentage of broiler heart in this study ranges from 0.41 - 0.52%. These results are not much different from the results of previous studies which report the average percentage of broiler hearts ranging from 0.57% [6] and 0.51 - 0.68% [8].

Previous studies have reported that giving probiotics can improve body weight gain and final weight of broiler chickens so that it also affects the size of internal organs including the gizzard, liver, and heart [9].

The weight of internal organs such as the liver is commonly observed to see toxicity in a feeding experiment [7]. Feeds containing improper nutrition can cause liver morphological abnormalities including enlargement of its size [10]. Although giving different probiotics shows an effect on the percentage of liver and heart, the percentage of liver and heart of broiler is still in the normal range. There is not visible increase in liver and heart weights that exceed the normal range. There is not visible discoloration of the liver and heart. This indicates that the addition of different probiotics does not have any toxic effects.

4. CONCLUSION

It can be concluded that the addition of probiotics give an effect on the percentage of gizzard, liver, and heart of broiler chickens. The highest percentage of gizzard and heart is obtained in addition to liquid organic supplement probiotics while the highest percentage of the liver is obtained in the addition of *tape* yeast probiotic.

ACKNOWLEDGMENTS

The authors would like to thank the Faculty of Animal Science, Halu Oleo University, which has provided cage facilities and equipment during the research.

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