# ADMINISTRATION OF SOME PROBIOTICS FROM LACTIC ACID BACTERIA TO CARCAS AND NON-CARCAS IN BROILER CHICKENS

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***Abstract:*** *The aim of this research was to determine the administration of several probiotics from lactic acid bacteria to carcasses and non-carcasses in broiler chickens. The hypothesis of this research is that the administration of several probiotics from lactic acid bacteria can increase carcass weight and carcass percentage and reduce the weight and non-carcass percentage of broiler chickens. The research design used was a non-factorial completely randomized design (CRD) with 4 treatments and 5 replications, where each replication consisted of 5 ducks. The treatments studied were as follows: P0 (control/administration of the agp antibiotic virginiamycin (stamix-20 AGP product)); P1 (Lactobacillus plantarum supplement); P2 (Lactobacillus pentosus supplement) and P3 (Lactobacillus casei supplement). The parameters observed were carcass weight, percentage of carcass weight, non-carcass weight, and percentage of non-carcass weight. The results of this study showed that giving P1 treatment (Lactobacillus plantarum supplement); P2 (Lactobacillus pentosus supplement) and P3 (Lactobacillus casei supplement) were not significantly different (p>0.05) from treatment P0 (control/administration of the agp antibiotic virginiamycin (stamix-20 AGP product)) on carcass weight, percentage of carcass weight, weight non-carcass and non-carcass percentage*

## INTRODUCTION

Utilization of lactic acid bacteria as probiotics is an approach to reduce the use of growth-promoting antibiotics (AGP) in the poultry industry. Lactic Acid Bacteria (LAB) is a group of bacteria that act as probiotics where these bacteria live in the digestive tract of livestock. The poultry digestive tract is a place for the development of various microbes, both beneficial and unfavorable. Harmful microbes are classified as pathogens, while beneficial microbes are classified as probiotics.

One group of microbes that is interesting to the poultry digestive tract is lactic acid bacteria. Lactic acid bacteria (LAB) are one of the important normal microbial populations

in poultry. (Budiansyah, 2004) reported that several benefits from using probiotics in animals or livestock include being able to stimulate growth, improve conversion, control health, among other things, by preventing digestive disorders, especially in young animals. Probiotics can also reduce cholesterol in broiler blood (Panda et al., 2006). Research using lactic acid bacteria with the *Lactobacillus plantarum* type of bacteria combined with gembili tubers in free-range chickens resulted in very effective growth (Setyaningrum et al., 2023).

Probiotics are live microorganisms which, when consumed, can improve the health of livestock by balancing the microflora in the digestive tract if consumed in sufficient quantities. Bacteria can be said to be probiotic bacteria if they meet several criteria, namely that they are non-pathogenic and represent the normal intestinal microbiota of a particular host, are still active in conditions of stomach acid and high concentrations of bile salts in the small intestine, are able to grow and metabolize quickly and are present in large quantities. which is abundant in the intestine, can colonize some parts of the intestinal tract temporarily, can produce organic acids efficiently and has antimicrobial properties against harmful bacteria. Several researchers have isolated from the digestive tract of poultry as probiotic candidates, such as (Maslami et al., 2018) who have found lactic acid bacteria which have the ability to produce glutamic acid which can improve the quality of broiler meat, especially the aroma, color and consumer preferences. According to (Bidura, 2007) fermentation by microbes is able to convert complex macromolecules into simple molecules that are easily digested by birds and do not produce toxic chemical compounds.

Based on this description, this research was conducted to determine to what extent the provision of several probiotics from lactic acid bacteria can be used in broiler chicken rations and its effect on weight, carcass percentage, as well as non-carcass weight and percentage.

## RESEARCH METHODS

This research was carried out on Jalan Nusa Indah Gang Bulan, Medan Selayang District, Asam Kumbang Village, the research will be carried out from January to February 2023.

The materials used in the research were 100 DOC (day old chick) broiler chickens, NaOH 1.5 N, $H_2SO_4$ 0.3 N, acetone, chemikalia diethyl ether, *Lactobacillus plantarum* ($1x10^{10}$cfu/ml), *lactobacillus pentosus* ($1x10^{10}$cfu/ml), *lactobacillus casei* ($1x10^{10}$cfu/ml) and a basal diet consisting of corn, rice bran, soybean meal, fish meal, oil and premix. The research ration was prepared with Metabolic Energy (EM) 3,000 kcal/kg and 20% crude protein in the starter period and Metabolic Energy (EM) 3,000 kcal/kg and 20% crude protein in the finisher period.

This research method uses the experimental design used in the research is a non-factorial completely randomized design (CRD) with 4 treatments and 5 replications. The treatment given is as follows:

P0: control (administration of the agp antibiotic virginiamycin (stamix-20 AGP product))
P1: *Lactobacillus plantarum* supplement
P2: *Lactobacillus pentosus* supplement

P3: *Lactobacillus casei* supplement

**Research Implementation**

**Cage Preparation**

Cage preparation consists of cleaning the cage, making cage plots, sanitizing the cage, sowing chaff, installing heating lamps and fumigation of the cage. Next, 5 broiler chickens were placed in each experimental unit which was equipped with feed and water containers.

**Treatment Stage**

Treatment is carried out when the chickens are 0-4 weeks old. 100 broiler chickens were placed in 20 experimental cages. Broiler chickens were divided randomly into 4 treatments with 5 replications, where each replication consisted of 5 broiler chickens. Basal rations and drinking water were provided ad libitum. The treatment of providing probiotics in the form of lactic acid bacteria in drinking water is carried out when broiler chickens are 1-4 weeks old according to the respective treatment given in the morning. Collecting carcass and non-carcass data after the chicken is slaughtered.

**Table 1. Research Basal Rations**

| Feed Ingredients | Starter | Finishers |
|---|---|---|
| Corn fine | 49.30 | 51.90 |
| Bran fine | 6.00 | 6.00 |
| Bunkle Soya bean | 31.20 | 26.00 |
| Fish flour | 10.00 | 10.00 |
| Oil | 2.50 | 1.50 |
| Mineral mix | 1.00 | 0.60 |
| **Total** | **100** | **100.00** |
| PK (%) | 22.01 | 20,20 |
| ME ( kcal / kg) | 3020.59 | 3003.69 |
| LK (%) | 6.94 | 6.41 |
| SK (%) | 3.92 | 4.08 |
| Ca (%) | 1.05 | 0.91 |
| P (%) | 0.58 | 0.58 |

**Chicken Slaughtering**

Chicken slaughter is carried out in accordance with the guidelines of the Directorate General of Animal Husbandry and Animal Welfare (2010). Before the chicken is slaughtered, the chicken is first fasted for 12 hours and weighed to determine the slaughter weight. The chicken is cut at the respiratory tract (trachea), esophagus and jugular vein which is located at the bottom of the neck. Chickens that have been cut and confirmed to be dead will then be dipped in hot water with a temperature of around 60-70$^0$C for approximately 1 minute. This makes it easier to remove hair. The blood that comes out of the chicken is collected and weighed to determine its weight. Then proceed with separating the parts of the chicken's body, namely the digestive tract and internal organs by cutting the stomach, cutting the legs, head and neck. After clarifying the carcass part. The carcasses obtained were weighed with a digital scale. Next, the skin, meat and

bones are separated. The skin, meat and bones from each part of the carcass are cut and then weighed.

**Analytics And Data**

The research data is analyzed using analysis of variance and if there are real differences it will be followed by a difference test with the coefficient of diversity of the research results.

**Observed Parameters**

1) *Carcass weight is obtained from the slaughter weight after deducting the neck, head, shanks and viscera. Slaughter weight is the weight of the chicken weighed before slaughter after fasting for 12 hours.*
2) *Carcass Percentage*

*The carcass percentage is obtained by dividing the carcass portion by the slaughter weight multiplied by 100%.*

3) *Non-Carcass Weight*

*Non-carcass weight is carried out by weighing the head, neck, feet and internal organs (after the chicken has been fasted for 8 hours).*

4) *Non-Carcass Percentage*

*The non-carcass percentage is calculated by comparing the non-carcass weight with the slaughter weight multiplied by 100%.*

**RESULTS AND DISCUSSION**

Recapitulation of research results for 4 weeks of all parameters observed regarding the administration of P0 supplements (control/administration of the agp antibiotic virginiamycin (stamix-20 AGP product)); P1 (Lactobacillus plantarum supplement); P2 (Lactobacillus pentosus supplement) and P3 (Lactobacillus casei supplement) on carcass weight, carcass percentage and non-carcass weight and percentage of broiler chickens are presented in table 2.

Table 2. Recapitulation of data on carcass weight, carcass percentage, non-carcass weight and non-carcass percentage of broiler chickens given supplement P0 (control/administration of the AGP antibiotic virginiamycin (stamix-20 AGP product)); P1 (Lactobacillus plantarum supplement); P2 (Lactobacillus pentosus supplement) and P3 (Lactobacillus casei supplement).

| Perlakuan | Parameter | | | |
|---|---|---|---|---|
| | Bobot Karkas | Persentase Karkas | Bobot Non Karkas | Persentase Non Karkas |
| P0 | 1.229,82$^{tn}$ | 78,02$^{tn}$ | 346,52$^{tn}$ | 21,98$^{tn}$ |
| P1 | 1.227,02$^{tn}$ | 77,99$^{tn}$ | 346,36$^{tn}$ | 22,01$^{tn}$ |
| P2 | 1.214,94$^{tn}$ | 77,81$^{tn}$ | 346,48$^{tn}$ | 22,19$^{tn}$ |
| P3 | 1.221,86$^{tn}$ | 77,83$^{tn}$ | 348,11$^{tn}$ | 22,17$^{tn}$ |

*Notes: tn = not significantly different*

The research results obtained in table 2 state that the administration of P1 treatment (Lactobacillus plantarum supplement); P2 (Lactobacillus pentosus supplement) and P3 (Lactobacillus casei supplement) were not significantly different ($p>0.05$) from treatment P0 (control/administration of the agp antibiotic virginiamycin (stamix-20 AGP product))


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on carcass weight in broiler chickens.

Carcass percentage is the ratio between carcass weight and empty body weight or livestock weight after fasting multiplied by 100%. Carcass percentage is calculated by comparing carcass weight with slaughter weight. These results are obtained from the cutting process until the respective separation. Variations in carcass weight and percentage are influenced by live weight, quality and quantity of ration as well as the different abilities of each animal in converting the nutrients eaten into carcass, non-carcass components or other body tissue (Hartati et al., 2024). According to the data in table 2, there were no significant differences between treatment P1 (Lactobacillus plantarum supplement); P2 (Lactobacillus pentosus supplement) and P3 (Lactobacillus casei supplement) were not significantly different ($p>0.05$) from treatment P0 (control/administration of the agp antibiotic virginiamycin (stamix-20 AGP product)) on the percentage of carcass weight in broiler chickens. This can be understood, because the percentage of carcass weight is a ratio of carcass weight to live weight, so that a large live weight will also be followed by a large carcass weight, and vice versa. At live weights that do not differ, generally the carcass percentage does not differ. This is in accordance with the opinion of (Widodo, 2010) that the high carcass weight is supported by the final live weight as a result of the increase in live weight of the livestock concerned. In this study it can be seen that the average percentage of carcass weight in all treatments was 77.81%/head - 78.02%/head. The results of this research are still said to be higher because in general the percentage of poultry carcasses ranges from 65-75% of live weight (Nurmi et al., 2019). The research data shows that the average non-carcass weight ranges between 346.36 – 348.11 grams. The highest non-carcass weight was in treatment P4 with a value of 348.11 grams and the lowest non-carcass weight average value was in treatment P1 with a value of 346.36 grams. Non-carcass weight is obtained by weighing the head, neck, blood vicera, feathers and feet (Nggena et al., 2019).

The results of analysis of variance in non-carcass weight showed that treatment P1 (Lactobacillus plantarum supplement); P2 (Lactobacillus pentosus supplement) and P3 (Lactobacillus casei supplement) were not significantly different ($p>0.05$) from treatment P0 (control/administration of the agp antibiotic virginiamycin (stamix-20 AGP product)) on non-carcass weight in broiler chickens. According to (Auza et al., 2023) that non-carcass weight is influenced by feed, if the nutrient content in the ration exceeds the established recommendations, the formation of non-carcass components will be higher if the needs for production and basic living have been met to reach the maximum level. According to (Dewi, 2012) non-carcass weight is an extension of live weight. Carcass and non-carcass weight had a positive impact on live weight, and this positive correlation reduced the negative with live weight level.

(Ertina et al., 2021) Carcass is the final product as well as the net product (net product) from the beef livestock business, so that carcass can also be used as an indicator to measure the productivity of beef livestock, including broiler chickens. The carcass is full of cleaned gizzards, liver and heart.

The non-carcass percentage is the non-carcass weight divided by the body weight before slaughter multiplied by 100%. Based on the results of research conducted by administering P1 treatment (Lactobacillus plantarum supplement); P2 (Lactobacillus

pentosus supplement) and P3 (Lactobacillus casei supplement) were not significantly different (p>0.05) from treatment P0 (control/administration of the agp antibiotic virginiamycin (stamix-20 AGP product)) on the percentage of non-carcasses in broiler chickens. The highest average percentage of non-carcass weight was in treatment P2, namely 22.19%/head, then P3, namely 22.17%/head, then P1, namely 22.01%/head, and the lowest percentage of non-carcass weight was in treatment P0, namely 21.98%/head. In this study, the non-carcass percentage ranged from 21.98– 22.19%/head, where the results of this study were lower, the non-carcass percentage was better compared to the results of (Widowati, 2022) research on corn substitution using cassapro (Cassava Protein) in the ration of free-range chicken carcasses with an average non-carcass percentage of 24.20%/head. The percentage of poultry carcass is determined by the amount of feed nutrients consumed and digested. It is used to increase the body weight of poultry, which results in a greater slaughter weight (Hidayati et al., 2016)

## CONCLUSION

In this study, treatment P1 (Lactobacillus plantarum supplement); P2 (Lactobacillus pentosus supplement) and P3 (Lactobacillus casei supplement) were not significantly different (p>0.05) from treatment P0 (control/administration of the agp antibiotic virginiamycin (stamix-20 AGP product)) on carcass weight, percentage of carcass weight, weight non-carcass and non-carcass percentage.

## SUGGESTION

The suggestion given is that further research be carried out to find out the best use of supplements to obtain better carcass weight, carcass percentage, non-carcass weight and non-carcass percentage.

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