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The Response of The Addition of Ginseng Leaves (*Talinum Paniculatum Gaertn*) Mix Supplements in Rations to The Performance of Broiler Production

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ABSTRACT

The aim of this study was to determine the response of adding ginseng leaf supplements (*Talinum Paniculatum Gaertn*) to the diet on the introduction of meat products, including dietary intake, body weight gain and dietary transformation in broilers. The subjects of the study were 100 broilers with five treatments and four replicates grown from DOC for 33 days. A control treatment was a 100% mixed diet (A), and B was a mixed diet with 0.5% ginseng leaf mixture supplement. Treatment C was a mixed diet with 1% ginseng leaf mixture supplement, with 1.5% ginseng leaf mixture supplement (D treatment), and with 2% additive to the ginseng leaf mixture (E treatment). The blended diet consisted of corn, palm meal, soybean meal, fishmeal, oil, and top mix. The variables measured were diet intake, weight gain, and diet conversion. The research method used an experiment with a completely randomized design. The results showed that the addition of the ginseng leaf meal feed additive to the diet had no significant effect ($P > 0.05$) on dietary intake, body weight gain, and diet conversion. The conclusion of this study is that the addition of up to 2% of the ginseng leaf meal feed additive to the diet did not negatively affect the appearance of the product and broilers.

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1. Introduction

The current state of the Covid-19 pandemic continues to be of concern to some people around the world, especially in Indonesia. Prevention, which can be done so that the Covid-19 pandemic does not hit public health, is to implement health protocols in activities and maintain the body's immunity. One of the efforts to keep the body's immunity is to eat healthy and nutritious foods. Broiler meat is a good source of animal protein and is easy to obtain.

Broilers are poultry that can be kept for a short period time and are easy to maintain, which is why they have become the commodity of choice in the livestock business. To increase broiler performance and reduce mortality, breeders usually prescribe antibiotics, anti-stress medications during broiler rearing. This should be of concern because overdosing and non-adherence actually impact broiler consumers.

Nowadays, people are becoming more selective in their choice of healthy and chemical-free foods. It is due to the adverse effects caused by chemicals consumed by broilers, which is why the government has banned the use of antibiotics as growth promoters since January 2018, and this ban is contained in the Regulation of the Minister of Agriculture No. 14 / PERMENTAN / PK.350 / 5/2017 on the classification of veterinary drugs. Prohibiting the giving of veterinary drugs to livestock whose products are consumed by people, in order to avoid the presence of residues of these veterinary drugs in animal husbandry, which affect the health of people consuming these animal products. Therefore, natural medicines are needed that do not affect consumers who consume livestock products. To reduce the use of chemicals or synthetic antibiotics in livestock, appropriate alternatives must be sought to replace them so that broilers can continue to grow and produce without harming farmers.

Indonesia is rich in various types of medicinal plants, and the elderly are accustomed to using medicinal plants as alternative medicine. The medicinal plants used must inhibit the growth of harmful microorganisms in the digestive tract of the chickens. The healthy digestive organ plays an important role in the supply of nutrients to the body as the body's metabolic process for basic life, growth, body immunity, to determine the health status of livestock [1].

One way to replace synthetic antibacterial drugs is to use medicinal plants that contain flavonoids, which act as antibacterial agents. Herbal plants in general are plants that have medicinal functions. One such medicinal plant is ginseng (*Talinum Paniculatum Gaertn*), which can also be used as a substitute for antibacterial chemicals to alleviate people's concerns about broiler consumption.

The several studies have shown that flavonoids, saponins, alkaloids, tannins and other compounds found in Javan ginseng leaves play a role in improving circulation in the central nervous system or peripheral nerves [2]. Standardized extract of Javanese catfish (*Talinum Paniculatum Gaertn*) leaves can be used as an alternative drug for treating skin infections caused by *Staphylococcus Aureus* bacteria as it contains flavonoid compounds, tannins, saponins, alkaloids and quinones [3].

This study aimed to determine the effect of adding ginseng leaf meal *Talinum (Talinum Paniculatum Gaertn)* to the diet on weight gain, dietary intake and dietary transformation.

2. Method

This study was conducted over 2 months in the animal nutrition and feed laboratory and in a broiler cage in the animal production laboratory of the Payakumbuh State Agricultural Polytechnic Institute. The research phase began with the production of ginseng leaf flour, then mixed with complementary foods to form an additive to the ginseng leaf flour mixture.

Tools used were mixers, scales, cages, and their equipment. The ingredients used were 100 DOC soybean meal, fish meal, oil, Topmix, ginseng leaf (*Talinum Paniculatum Gaertn*) and Neobro as a feed supplement.

The research preparation began with the production of ginseng leaf flour as a feed additive, where the ginseng leaves were collected and then dried in the sun. The dried ginseng leaves were then mixed together until they turn into flour. The treatment ration was prepared by mixing ginseng leaf flour with Neobro supplement feed in a ratio of 80%: 20%. After it was well mixed, the treatment in the ration was up to 0.5%, 1%, 1.5% and 2%. The addition of this ginseng leaf flour mixture as a feed supplement was started when the chickens were 8 days old before the broilers consumed commercial rations.

This research method used a fully randomized design (CRD) with 5 treatments and 4 replications:

A = Mixed ration

B = Mixed ration + 0.5% ginseng leaf compound feed supplement

C = Mixed ration + 1% ginseng leaf compound feed supplement

D = Mixed ration + 1.5% ginseng leaf compound feed supplement

E = Mixed ration + 2% ginseng leaf compound feed supplement

The data obtained from the measurement results in the course of the study were checked by means of diversity analyzes. If the results were significantly different between the treatments ($P < 0.05$), then Duncan's New Multiple Range test according to [4] was continued.

The variables measured during the study were:

1. Consumption of ration
The ration consumption was measured weekly by calculating the difference between the given ration and the rest of the ration.
2. Weight gain
Body weight gain is known as the difference between the weight of the chickens' body weight in a given week and the previous week's weight of the chickens or the final body weight minus the initial body weight.
3. Conversion ratio
The ration conversion value was obtained from the amount of ration consumed in comparison with the body weight gain.

Table 1. Composition and nutritional value of broiler rations

No	feed ingredients	Formulation (%)	Crude protein (%)	Metabolic energy* (Kkal/Kg)	Crude fiber (%)	Crude fat (%)
1.	Corn	50.5	4.88	1713.6	0.52	2.39
2.	Soybean meal	40	16.15	896	2.12	1.63
3.	Fish flour	5	1.74	138.6	0.55	0.05
4.	Oil palm	1	0.11	16.3	0.21	0.06
5.	Vegetable oil	3	0	258	0	0
6.	Top mix	0.5	0	0	0	0
		100	22.88	3022.5	3.39	4.14

Description: The results of the proximate analysis of the chemical labor of the Payakumbuh State Agricultural Polytechnic (2019) Calculation results of metabolic energy based on the composition table of food substances in feed ingredients for Poultry [5].

Table 2. Nutritional value of ginseng leaf flour

No	Nutritional Value	%
1.	Crude protein	20.58
2.	Crude fiber	1.42
3.	Crude fat	1.76

Description: The results of the proximate analysis of the chemical labor of the Payakumbuh State Agricultural Polytechnic (2021)

3. Results and Discussion

The response of broilers in the study after the addition of mixed ginseng leaf flour with Neobro as a supplement, ration consumption, body weight gain and ration conversion can be seen in Table 3.

Table 3. Average ration consumption, body weight gain, broiler ration conversion

Variable	Treatment				
	A	B	C	D	E
Consumption ration (g/head)	2,916.01	2,809.70	2,799.98	2,866.08	2,806.20
Body weight gain (g/head)	1,734.13	1,656.00	1,685.28	1,640.85	1,541.48
Ration conversion	1.68	1.70	1.66	1.75	1.82

3.1 Consumption ration (g/head)

The average consumption of broiler rations during the study, based on the results of the diversity analysis in Table 3, is that the addition of ginseng leaf flour compound feed supplements to the ration did not have a significantly different effect ($P > 0.05$) on the consumption of rations. There was no significant difference in the effect of adding ginseng leaf powder to compound feed supplements on ration consumption due to the slight difference in the addition amount, which was 0.5% of the total ration, and the ratio of using ginseng leaves mixed with complementary feed was also 80%: 20%. The small difference in the amount of ginseng leaf flour added in the ration and the constant comparison of the use of complementary feeds did not affect the nutritional quality of the ration and the palatability of the ration, which would affect the amount of ration consumption. Calculation of ration nutritional needs is based on energy and protein needs, while other nutritional needs are adjusted accordingly. Broilers will stop consuming rations when their energy needs are met [6].

The graph of the consumption of broiler rations with the addition of ginseng leaf flour compound feed additives in the ration during the study can be seen in Figure 1.

In Figure 1, it can be seen that dietary intake of broilers was higher in option A, in the mixed diet without the addition of feed additive to the ginseng leaf meal mixture - up to 2916.01 grams per head, while the intake of broiler diets was insignificant. below. Treatment C ration given with 1% ginseng leaf feed additive is 2799.98 g / head. Based on diversity analysis, adding ginseng leaf meal feed additives at 0%, 0.5%, 1%, 1.5% and 2% levels did not significantly affect ($P > 0.05$) dietary intake of broilers.

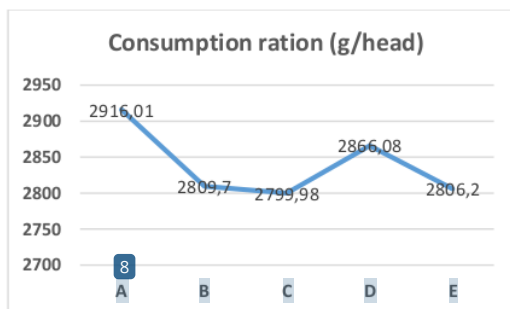


Figure 1. Graph of broiler ration consumption.

In this study, the average consumption of broiler rations over 33 days ranged from 2,799.98 grams per head to 2,916.01 g / head, with an average daily intake ranging from 84.24 g / head / day to 88.36 g / head / day. Compared to previous studies that used medicinal plants and processed them into flour as a feed additive in the diet, the consumption of broiler diets with the addition of feed additives of the ginseng leaf mixture was higher. Consumption of broiler diets supplemented with medicinal plants in the form of bay leaf meal, papaya leaf meal, guava leaf meal and miana leaf meal in the diets was 2306.58, 2386.31, 2238.87 and 2283.85 g / head [7], with an average daily consumption of 76.89, 79.54, 74.63 and 76.13 g / head / day. Another study of broilers using katuk leaf meal in the diet formulation showed an average diet consumption of 2,305.73 to 2,368.03 g/head with broiler observations up to 35 days of age[8]. The amount of broiler diets consumed with the addition of feed additives from ginseng leaf meal is associated with the addition of additional feed to the ginseng leaf meal, and the use of ginseng leaf meal is not in large quantities, that is, from 0% to 2%. The broiler nutritional diet satisfies the nutritional requirements of the diet and does not have a dark color, so this diet is suitable for broilers. The texture, shape, smell and color of the ration were nearly the same, which would provide a taste that would not be different for livestock [9].

In Table 3, the addition of ginseng leaf flour did not have a significantly different effect ($P > 0.05$) on feed intake due to the level of its use in small amounts, but in broilers that did not receive the supplement. The amount of feed additives of the ginseng leaf mixture was obtained. The diet intake during the study was higher than with other treatments. This is due to the fact that ginseng leaves contain active ingredients in the form of flavonoids that act as antioxidants [10]. The several studies have shown that compounds derived from saponins, alkaloids, flavonoids, tannins and other compounds found in ginseng leaves. can improve blood circulation in the central nervous system or peripheral nerves [2]. The presence of active ingredients of medicinal plants in the animal's body will affect the nervous system, digestive and immune states, then sensory factors in animals will affect the consumption of the diet, because the smell and taste of medicinal plants contained in the diet can stimulate the central nervous system and other digestive organs [11]. The reduction in portion consumption can be attributed to the bitter taste of the food, thereby reducing the palatability of the food and having an impact on the consumption of the portion [12].

3.2 Weight gain

The average weight gain during the study can be seen in Table 3. Based on the diversity analysis, it is known that the addition of ginseng leaf meal feed additives to the diet did not have a significantly

different effect ($P > 0.05$) from broiler weight gain. This was due to the fact that the amount of the consumed diet also did not differ significantly ($P > 0.05$). Basal rations were made up the same for each type of treatment. The only difference is the level of addition of feed additives to the mixture of ginseng leaf flour with a slight difference in dosage, namely 0.5%. The nutritional value of the diet and the amount of diet consumed can affect weight gain. The consumption of nutrients such as protein and energy expenditure will affect body weight gain, so chickens fed with the amount of protein that meet their needs will produce better body weight gain than chickens with chickens fed low protein diets [13]. The treatment diet supplemented with the ginseng leaf meal supplement was small and the difference between the treatment levels was also small, namely 0.5%, so there was no effect on nutritional value of ration, dietary intake and body weight gain in broilers. The ginseng leaf meal supplement as a medicinal plant is intended as a feed additive that can improve the appearance of broiler products. Medicinal plants can be used as multifunctional natural feed additives, since they are effective in improving the condition of the digestive tract, feed conversion, increasing the digestibility of nutrients, body weight, immunity, reproductive capacity, reducing morbidity and mortality (mortality) and can also prevent and treat diseases in livestock [11]. Flavonoids contained in ginseng as a feed additive in ration treatment have a positive effect on body weight gain. For flavonoid compounds that do not have adverse effects on livestock [14]. It is also added that the presence of flavonoids can act as an antibacterial so that optimal growth can be achieved. This was obtained from a study of *E. coli* populations in broiler manure receiving diets with bay leaf meal at 2% and 3%, which showed that the active compounds in bay leaves such as saponins, flavonoids, triterpenoids and tannins can inhibit the growth of *E. coli* bacteria in the gastrointestinal tract [15]. With the active ingredients in the feed additives in the processed feed, it will affect the body weight gain of broiler chickens. Therefore, body weight gain is not only influenced by the amount of ration consumed, but also by the presence of active ingredients in feed additives in the form of saponins, terpenoids capable of cleaning the digestive tract. of pathogenic bacteria for optimal absorption of nutrients [16].

In Table 3, the addition of ginseng leaf meal feed additives resulted in broiler body weight gains ranging from 1541.48 grams per head to 1734.13 grams per head during 33 days of rearing. If weight gain is calculated per day, the figures obtained range from 46.71 to 52.55 grams per head per day. Compared to the results of the study [17], the addition of flour from the leaves of miana (*Coleus Atropurpureus*, L) to the level of 4% in the diet, the gain in live weight of broilers ranged from 1437.00 to 1467.00 g / head if the body weight gain was calculated per day and ranges from 47.9 grams per head per day to 48.9 grams per head per day. This indicates that the addition of ginseng leaf meal was not negative for the increase in body weight in broilers. The same was obtained from the results of a study [7], according to which the addition of feed additives for medicinal plants in the form of bay leaf flour, papaya leaf flour, guava leaf flour and miana leaf flour, 0.5% each in the diet did not corresponded. negatively affect the productivity and productivity of the digestive organs of broilers. The graph of the increase in live weight of broilers during the study is shown in Figure 2.

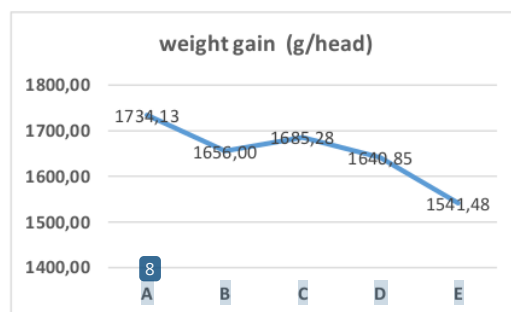


Figure 2. Graph of the increase in body weight during the study.

3.3. Ration Conversion

Based on the results of the diversity analysis shown in Table 3, it was found that the addition of ginseng leaf meal feed additives to the diet had no significant effect ($P > 0.05$) on the conversion value of the diet. This may be due to the amount of diet consumed and the increase in body weight of broilers, given that the treatment diet also did not give significantly different effects. The amount of dietary conversion was calculated by comparing the amount of food consumed with the increase in body weight. The ration conversion is a tool to measure the efficiency of using feed to gain body weight gain. Feed conversion is the amount of ration consumed by livestock to get 1 kg of body weight gain [6]. Low ration conversion is highly expected by farmers because in terms of business analysis it will be more profitable because it can increase the efficiency of diet use [18]. A graph of the effect of adding a ginseng leaf powder blend feed additive on diet conversion during the study can be seen in Figure 3.

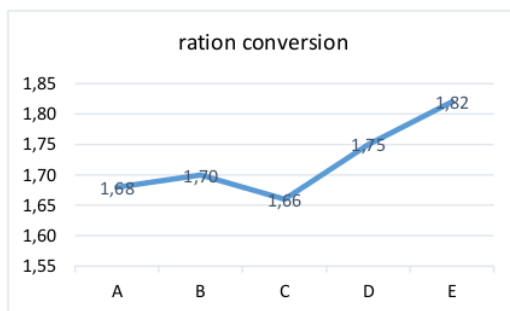


Figure 3. Conversion of rations during the study

The mean of dietary conversion ranged from 1.66 to 1.82. The ration conversion value of 1.66 is the lowest value from the results of this study, namely for the C treatment with the addition of feed additives from the ginseng leaf meal mixture up to 1% in the diet, while the diet conversion value is 1.82: Treatment E with ginseng leaf meal feed added up to 2% in the diet, is the highest dietary conversion among the other 5 treatments. Low dietary conversion indicates that the diet is of good quality, because even if the chicks consume a small amount of the diet, it can provide high body weight gain. Diet conversion is the amount of rations consumed by livestock in order to obtain a gain in live weight per kilogram [6]. Adding ginseng leaf meal as a feed additive and adding Neobro as a feed additive to the diet reduces the conversion value of the diet, as the active ingredient content of ginseng leaf meal can aid the digestion process and provide a feed additive to compensate for nutritional deficiencies in the diet. In [11] it is added that the consumption of medicinal plants can stimulate the central nervous system, salivary glands and the secretion of digestive juices from the stomach, liver, pancreas and small intestine, which control the pH for the efficiency of digestive enzymes, thus influencing feed conversion. In this study, the meal given was still ground, but the conversion value of the ration was close to that of the crumb or pelleted, about 1.68-1.82. Pelleted feed had a better conversion than mash by 1.8 vs. 1.9 and the results of studies using commercial ration from several feed mills obtained feed conversion average around 1.60 - 1.72 [19].

4. Conclusion

The addition of ginseng leaf flour mix feed supplements to a level of 2% in the ration did not give a negative response to the appearance of broiler production.

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