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THE PERFORMANCE OF BROILER CHICKENS GIVEN RATION CONTAINING EXTRACTS JENGKOL SKIN (*PITHECELLOBIUM JIRINGA*)

Abun Abun[1*], Ai Siti Habibah[2] and Kiki Haetami[3]

[1]*Department of Animal Nutrition and Feed Technology, Padjadjaran University, Sumedang-West Java, Indonesia.*
[2]*Alumni of the Faculty of Animal Husbandry, University of Padjadjaran.*
[3]*Department of Fisheries, Padjadjaran University, Sumedang-West Java, Indonesia.*
[*]*Corresponding author Tel: +6281394370007; EM: abunhasbunap@gmail.com; (0000-0003-1017-4365)*

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ABSTRACT

This research was conducted at the poultry farm, Faculty of Animal Husbandry, Padjadjaran University, Sumedang. This research was found to determine the effect and level of using jengkol pericarp extract in the ration which produces the optimal performance of broiler. The method which was used is experimental, and used a Completely Randomized Project (CRP) with four treatments and five repetitions; there is a ration without jengkol pericarp extract (R0), a ration by the addition of 0. 01% jengkol pericarp extract (R1), a ration by the addition of 0. 02% jengkol pericarp extract (R2), and a ration by the addition of 0. 03% jengkol pericarp extract (R3). Variables that were observed are consumption of ration, weight gain, and conversion of ration. The data was analyzed by using variance and continued by using the Duncan Multiple Range Test. The result of this research is the using of jengkol pericarp extracts in the ration affects the weight gain of the broiler. The use of 0. 02% jengkol pericarp extract produces the optimal weight gain of the broiler but does not affect the consumption and conversion ration.

INTRODUCTION

The increasing need for food sources of animal protein has encouraged interest in building a broiler chicken farming business. Profits will be obtained to the maximum when the performance of chickens is raised by existing standards and market wishes. Some of the components of performance that can be measured are ration consumption, weight gain, and ration conversion.

The development of the broiler chicken farming business has several obstacles that are quite influential on performance, one of which is the availability of feed. The availability of feed should be highly regarded, especially in terms of the efficiency of feed use. Various ways have been researched and implemented to make feed can be used efficiently, one of which is the modification of the nutrient value of feed by providing feed additives, for example in the form of antibiotics, which can control and affect the digestive process, such as reducing pathogenic microorganisms and increasing the activity of microorganisms that can synthesize growth factors. The use of antibiotics at improper doses and for a long time turned out to have another impact, namely the emergence of resistance in livestock to certain microorganisms and the presence of residues in livestock products that are toxic and even able to cause cancer for consumers. This proves that the quality of food sources of animal protein has not been guaranteed safety. Therefore, the use of herbs as feed additives is expected to be a solution to be developed to create livestock products that are safe for consumption, one of which is jengkol plant waste in the form of jengkol pericarp extract.

Several research results prove that simplisia and jengkol pericarp extract (JPE) have active ingredients in the form of alkaloids, flavonoids, tannins, saponins, glycosides, and steroids/triterpenoids that can be used as herbal antibiotics. Judging from its production potential, jengkol leather is quite widely available in Indonesia, reaching 62,475 tons in 2009 [1], and JPE has a proportion of 60%. Broiler chickens are quite responsive livestock in response to various treatments, as well as have rapid

growth. Therefore, broiler chickens were chosen as the object of study. Based on the description above, the author is interested in researching the effect of the use of JPE in the ration on the performance of broiler chickens. The purpose of the study was to determine the effect and obtain the level of use of JPE in the ration on the performance (consumption of rations, weight gain, and ration conversion) of broiler chickens.

The mechanism of improving the absorption of some food substances is a positive influence on the administration of antibiotics on livestock. This can occur through the influence of thinning of the walls of the gastrointestinal tract of cattle given antibiotics. Microorganisms that cause thickening of the walls of the gastrointestinal tract, suppressed their growth with the use of antibiotics [2]. Natural ingredients that have the potential to be herbal antibiotics are JPE. JPE phenolic acids are a class of polyphenol compounds that are anti-bacterial [3]. Based on the results of phytochemical screening examination, simplisia and JPE are rich in chemical compounds of the alkaloid group, flavonoids, tannins, saponins, glycosides, and steroids/triterpenoids [4].

Referring to the research of [4] it was found that the use of JPE in the ration was effective at a percentage of 0.02%. The administration of JPE is considered effective because it has an inhibitory power diameter of approximately 14 mm to 16 mm [5]. The use of aloe vera gel or extract in broiler rations of 0.25-1.00 g/kg (0.025-0.1%) can increase the efficiency of ration use [6]. The recommended antibiotic use rate of the United States Drugs Association (USDA) to be added to animal feed is less than 200 grams per ton of feed or 200 ppm or 0.02% [7].

MATERIALS AND METHODS

The experiment was conducted for 35 days using 100 one-day-old chickens (DOC) of the Cobb strain without sex separation with an average body weight of 36.42 g and a coefficient of variation of 6.85%. The method used is an experimental method using a Complete Randomized Design (RAL) with 4 treatments, namely rations without JPE (R0), rations with the addition of 0.01% JPE (R1), rations with the addition of 0.02% JPE (R2), and rations with the addition of 0.03% JPE (R3). Each treatment is repeated 5 times. The changes observed are ration consumption, weight gain, and ration conversion. The arrangement and nutritional composition of the research ration are presented in Table 1.

Table 1. Arrangement and Nutrient Composition of Basal Ration

Feed Ingredients	Formulation (%)	Nutrients content	
Fine bran	0.90	Metabolizable Energy (kcal/kg)	3200
Yellow corn	56.10	Crude Protein (%)	23.07
Fish meal	6.84	Crude Fat (%)	7.76
Coconut oil	4.00	Crude Fiber (%)	3.53
Coconut Meal	3.60	Calcium (%)	0.85
Soybean Meal	26.80	Phosphorus (%)	0.53
Bone meal	1.20	Lysine (%)	1.29
Premix	0.50	Methionine (%)	0.48
DL-Methionine	0.06		

Measured was:

- Ration consumption = Fed ration(g) – Residual ration (g)
- Weight gain (g/bird) = final body weight (g) – initial body weight (g)
- Feed conversion ration = ration consumption (g) / weight gain (g)

RESULTS AND DISCUSSION

The results of experimental observations of ration consumption, weight gain, and ration conversion are presented in Table 2.

Table 2. Average ration consumption, weight gain, and feed conversion ration broilers

Changers	Treatment Rations			
	R0	R1	R2	R3
Ration consumption (g/birds)	2223.00	2213.78	2351.92	2165.87
Weight Gain (g/birds)	1027.07[a]	966.97[a]	1185.39[b]	968.02[a]
Ration Conversion	2.0	2.28	1.99	2.28

Description: Different letters towards the column show markedly different results (P<0.05)
R0 = Basal ration (without JPE administration)
R1 = Basal ration + JPE 0.01%
R2 = Basal ration + JPE 0.02%
R3 = Basal ration + JPE 0.03%

The results of the analysis of variant showed that the use of JPE in the ration did not have a noticeable effect (P>0.05) on

broiler ration consumption. This confirms that the tannins contained in JPE are condensed tannins, which are difficult to dissolve in the digestive tract of chickens, the astringent taste of the tannin solution does not come out and finally does not reduce the palatability of the ration so that the consumption of the ration of the entire treatment is still within normal limits and has the same effect on the amount of ration consumption. The solubility of hydrolysable tannins is higher than that of condensed tannins so hydrolysable tannins are easier to hydrolyse than condensed tannins which causes a decrease in feed consumption due to the astringent taste for livestock [8].

The low levels of extracts given in the experiment did not have a significant effect. Poultry, especially chickens, can tolerate rations containing tannins by 0.33% [8]. The results of the analysis of variant for broiler chicken weight gain showed that the use of JPE in the ration had a noticeable influence ($P<0.05$) on broiler chicken body weight gain. That is, the treatment of rations with the addition of JPE of 0.02% (R2) had a significant effect ($P<0.05$) higher than the treatment without the addition of JPE (R0), the addition of JPE 0.01% (R1), and 0.03% (R3), while for R0, R1, and R3 did not give a noticeable difference ($P>0.05$) to the increase in broiler body weight.

The extract addition rate of 0.02% is the best percentage to produce the highest weight gain. The rate of addition of JPE is 0.02%, and the level of tannins in the ration does not have a harmful influence on growth [8]. The containment of steroids/triterpenoids in JPE is also a growth stimulant in broiler chickens that are given a treatment ration with appropriate dosages. Essential oils can help digestion by stimulating the nervous system's secretions so that gastric sap-containing enzymes such as pepsin, trypsin, lipase, and amylase are secreted into the stomach and intestines so that they can increase the metabolism of food substances [9].

Saponin on JPE also influences body weight gain. Saponins are compounds that are bioactive to the growth of animals and digestive microbes. The administration of saponins can increase the permeability of cell walls in the intestines, and increase the absorption of food substances [10]. Low levels of saponins can improve the transport of nutrients between cells [11].

The effect of treatment on broiler weight gain is not in line with the opinion expressed by [11] that alkaloids, flavonoids, and saponins, have pancreatic lipase inhibitor activity. In addition, it also refutes the research of [10] which indicates that triterpenes have the potential to be agents denying obesity. This experiment proved that not always the active substance has the potential to lose weight during dosing or the percentage rate of use of the right ingredient.

The ration conversion figure shows the extent to which the ration used is effective or not in producing body weight per given unit. Ration conversion is measured by dividing the number of rations consumed and the weight gain of broiler chickens during the experiment. The results of the fingerprint analysis showed that the provision of JPE in the ration did not have a real effect ($P>0.05$) on broiler ration conversion. The conversion value of the ration is influenced by the large number of rations consumed and the increase in body weight achieved in a given time by broiler chickens.

CONCLUSION

Based on the results of experiments and discussions, it can be concluded that the use of JPE (*Phitecellobium jiringa*) in broiler rations influences the weight gain of broiler chickens. The rate of using JPE of 0.02% in the ration results in optimal weight gain of broiler chickens but does not affect ration consumption and conversion.

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