

Use of Herbal Medications in Ratio on The Productivity and Quality of Eggs of Laying Chickens

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Abstract

This research aims to determine the effect of using herbal ingredients on the productivity and egg quality of laying hens. This farm uses a Completely Randomized Design (CRD) with a unidirectional pattern consisting of 4 treatments repeated 4 times, namely JR0: Low Corn without the addition of herbal ingredients, JR1: Low Corn with the addition of herbal ingredients, JT0: High Corn without the addition of herbal ingredients, JT1 : High Corn with the addition of herbal ingredients. The production variables observed include: Feed Consumption, Egg Production (HDA), and Feed Conversion (FCR). Egg quality variables include: Egg Weight, Egg Yolk Color, Egg Yolk Weight, Shell Weight, and Shell Thickness. The data obtained was analyzed using anova (Analysis of Variance). With a further test DMRT (Duncan Multiple Range Test). The research results show that The use of herbal concoctions in laying hen rations has a significant effect on egg yolk color and shell thickness. However, it had no real effect on HDA, FCR, egg weight, egg yolk weight and shell weight.

Keywords : Herbal Concoctions; Laying Hen; Egg Production; Egg Quality.

Introduction

Laying chickens are not too difficult in terms of maintenance, but that doesn't mean they don't have problems. When maintenance management is not appropriate, the quality of the eggs may decrease. Egg quality is the most important thing in choosing eggs. The quality of eggs can be seen in several ways, for example by looking at the thickness of the shell, the color of the shell and the color of the egg yolk. Egg quality is greatly influenced by maintenance management factors as well as the price of feed and medicine. The prices of feed and medicine continue to increase, so it is necessary to reduce production costs. One alternative is to replace medicines by using herbal concoctions as phytobiotics.

Herbal mixture (ginger, white turmeric, red turmeric, garlic, kencur, sweet vegetables) is a medicine made from natural ingredients, especially plants and is the nation's cultural heritage and has been used for generations to make potions. Therefore, using herbal ingredients (ginger, white turmeric, red turmeric, garlic, kencur, sweet vegetables) is expected to improve egg quality, such as shell color, shell thickness and egg yolk color. According to Zainuddin (2006) the use of spices and medicinal plants as herbal medicine consisting of components of white turmeric, red turmeric, garlic, ginger, sweet vegetable galangal, molasses, cooking oil on chicken egg production has been proven to significantly increase the color of egg yolks to be more orange than yellow. eggs without adding herbal or herbal solutions.

Research on herbal mixtures was previously carried out in Agustina's (2006) research, which showed that liquid herbal mixtures were able to inhibit gram-positive and gram-negative bacteria. Furthermore, Agustina et al (2010) stated that the use of a liquid herbal concoction of 2.5 ml/liter of drinking water, is the best result in terms of performance and histopathological

abnormalities of internal organs. The combination of 12 herbal ingredients has a positive effect on poultry.

Jay (2000) explains that specifically Salmonella Enteritidis can be found in the eggs and ovaries of egg-laying chickens, with possible routes of transmission via transovarium, translocation from the peritoneum to the yolk sac or oviduct, penetrating the egg shell as the egg rolls through the cloaca, and washing the egg. In general, the source of Salmonella in the chicken's body is the digestive tract, including the cecum. The content of bioactive substances in herbal ingredients functions to block pathogenic microbes from being in the digestive system, thereby improving food absorption in the small intestine, and increasing productivity, as well as the essential oil content in kencur which acts as an appetite enhancer and as an antibacterial and antifungal (Sulaiman, 2020). Furthermore (Rifaed, 2018) stated that turmeric is also efficacious for bile (cholagoga), antidote to poison (antidota), strengthens the stomach and increases appetite.

Flavonoid compounds are antioxidants that neutralize free radicals that attack body cells. These active compound components are useful for keeping the body fresh and improving blood circulation. According to (Setiawati, 2016) There are many medicinal plants that can be used as traditional medicine, including turmeric & ginger whose effects include preventing coccidiosis, improving the digestive tract, and increasing appetite.

Materials and Methods

Material

The research materials used were basal feed (table 1), herbal concoctions (table 2), and 50 week old Isa-Brown strain laying hens.

Table 1. Feed Formulation

Feed Ingredients	Basal Feed A	Basal Feed B
Concentrate	30%	30%
Corn	20%	50%
Rice bran	50%	20%

Table 2. Herbal fit Composition

Herbal composition	Percentage (%)
Ginger	10%
White turmeric	10 %
Red turmeric	10 %
Garlic	10 %
Aromatic ginger	10 %
Sweet vegetables	2.5 %
Molasses	42.5 %
Cooking oil	5%
Amount	100%

Method

This type of research is quantitative research. The research used a Completely Randomized Design (CRD). This research was carried out from February to March 2023. The subjects in this research were 60 Isa-Brown chickens. This research used 4x treatments and 5x replications. Each replication requires 3 chickens. Each replication occupies 1 cage plot. The composition of the treatment ration can be seen in table 3.

Tabel 3. Composition of Rations

TREATMENT	Ration Composition			
	Corn	Concentrate	Rice bran	Herbal
JR0	20%	30%	50%	-
JR1	20%	30%	50%	+
JT0	50%	30%	20%	-
JT1	50%	30%	20%	+

- = Without adding herbal ingredients
 + = Addition of herbal concoction 10g/head/day.

How to feed: 6kg basal feed is weighed first. After that, mix with 200ml of herbal mixture and 200ml of water then stir evenly. Method of giving drinking water: Ad libitum.

Results and Discussion

Production performance of laying hens adding herbal ingredients to various treatments can be seen in table 4.

Table 4. Production performance of laying hens in various treatments of adding herbal ingredients to the ration.

Production Performance	Treatment			
	JR0	JR1	JT0	JT1
Feed Consumption ^{Ns}	133.33	133.33	133.33	133.33
Egg Production (HAD)	34.27 ^a	33.33 ^a	35.70 ^b	35.94 ^b
Feed Conversion (FCR)	6.94 ^b	6.65 ^{ab}	6.40 ^{ab}	6.25 ^a

Ns: Non Significant (P > 0.05)

^{a,b}: In the second row, the difference is significant (P < 0.05)

The average feed consumption with the addition of herbal ingredients did not affect feed consumption. Using low or high portions of corn has no effect on feed consumption. Because the feed is limited to the same amount. Based on the results of egg production (HDA) analysis, the addition of herbal ingredients does not affect HDA, while the use of high portions of corn increases HDA.

This condition means that there is an increase in egg production with the addition of high corn (JT). Herbal concoctions contain very low values of Carbohydrates, Protein, Energy, so they do not affect egg production (HDA). On research (Setiawati, 2016), Egg production can be expressed using the hen day average (HDA). High HDA is generally accompanied by the provision of feed that meets basic living and production needs. The average FCR value with the addition of herbal ingredients did not have a significant effect on FCR. Meanwhile, the use of low portions of corn to high portions of corn does not have a significant effect on FCR. A smaller FCR value indicates feed efficiency in egg production and no feed waste, which is of course supported by good management. A greater FCR value indicates feed waste as a result of not maximizing the benefits of feed on egg production.

Quality of laying hen eggs with the addition of herbal ingredients to various treatments seen in table 5.

Table 5. Quality of laying hen eggs in various treatments with the addition of herbal ingredients in the ration.

Egg Quality	Treatment
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	JR0	JR1	JT0	JT1
Egg Weight ^{Ns}	56.96	60.03	58.50	59.48
Egg Yolk Color	8.90 ^a	14.99 ^d	12 ^b	14.41 ^c
Egg Yolk Weight ^{Ns}	27.17	25.92	26,20	26.25
Shell Weight ^{Ns}	6.60	6.43	6.59	6.74
Shell Thickness	0.39 ^a	0.45 ^b	0.44 ^b	0.48 ^c

Ns: Non Significant ($P > 0.05$)

^{abcd}: In the second row, the difference is significant ($P < 0.05$)

Meanwhile, using low or high portions of corn also had no effect on egg weight. This was caused by the ration given iso protein, even though the level of corn given was different in each treatment, the protein content remained the same between treatments.

Based on the results of the egg yolk color analysis, the addition of herbal ingredients has a very significant effect on the color of the egg yolk. Using low to high portions of corn has a significant effect on egg yolk color. The effect of adding herbal ingredients is more effective on low corn. This is caused by the bioactive substances contained in herbal ingredients such as turmeric, galangal and ginger which contain curcumin compounds which function to improve the color of egg yolks. So the better the quality of the herbal ingredients, the more carotene content will be deposited in the egg yolk, thus affecting the color of the egg yolk that will be produced.

The results of the analysis showed that the herbal concoction treatment did not affect the weight of the egg yolk. Using low or high portions of corn has no effect on egg yolk weight. This shows that the addition of herbal ingredients has no effect on the egg yolk weight of purebred chickens.

The results of the analysis show that the average egg shell weight of laying hens with herbal ingredients added to the ration does not affect the shell weight. Meanwhile, the use of low or high portions of corn had no effect on shell weight. This is because there is the same percentage of concentrate used in feed in all treatments.

The results of the analysis show that the average egg shell thickness of laying hens with herbal ingredients added to the ration has a significant effect on shell thickness. The use of low or high portions of corn has a significant effect on shell thickness. The results of this study are in line with research (Rifaed, 2018) which states that the thickness of the egg shell is greatly influenced by the herbal ingredients mixed in the ration.

Conclusion

The research conclusion shows that the use of herbal concoctions in laying hen rations has a significant effect on egg yolk color and shell thickness. However, it had no real effect on HDA, FCR, egg weight, egg yolk weight and shell weight.

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