

Quality of chicken eggs aged 26 months supplemented With herbal medicine containing red fruit extract

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Abstract. Production of chicken eggs will decrease below 30%, with a maintenance time of more than 1.5 years, but the old chicken eggs can still be consumed. The decline in chicken egg production does not necessarily reduce the quality of eggs chemically, but physically that these chicken eggs have advantages and disadvantages. The advantage is that it has a large size and weakness is that some shells are not normal. Therefore studies related to egg quality chemically need to be done to determine whether there is a decrease in egg quality in old chickens. Egg quality is generally influenced by feed and drinking water, some herbal plants given to chickens are thought to be able to improve the quality of chicken eggs. Some herbal plants that can be used include turmeric, ginger, cutchery, and red fruit extract. Red fruit has several good antioxidant compounds and fairly high xanthophyll. The purpose of this study was to determine and improve the quality of old chicken eggs. The method used in this study experimentally with 4 treatments and 10 replications. The variables observed were the quality of protein, fat, cholesterol, bacterial contamination and the content of omega-3 in eggs. The results showed that the average protein content was 10 -13%, 9-10% fat, cholesterol 331 - 338 mg / 100 g and Salmonella SP (negative). The conclusion of this study is that chemically the quality of old chicken eggs given herbs in the normal range and the administration of herbs do not improve egg quality physically.

1. Introduction

The decline in production and the occurrence of molting twice is one sign that old chickens have entered a period with a range of time between 26 months to 30 months. In Merauke chicken has a fairly good selling value, the price per old chicken can reach sixty thousand rupiahs, besides that chicken egg old also have other advantages, namely the size of the egg is large and has a weakness that is part of the shape of the shell that is not normal. old chicken eggs have a high selling value when compared to normal production chickens, this is due to the size of the eggs, but so far it is still a question how the quality of eggs from chickens disappears physically and chemically.

Eggs generally contain nutrients that are good for the body, eggs contain sources of protein and substances that function biologically outside of nutrition [3]. Improving the quality of chicken eggs can be done by adding supplements to the feed and drink, some herbs that are made as herbs can have a positive impact on improving the quality of eggs including the use of turmeric, meeting mace,

cutchery, and red fruit. The compounds contained in the turmeric plant and find a lot of buffalo contain curcumin as an antioxidant, which serves to repair damaged cell tissue. Cutchery is a plant that has properties as a supplement to increase appetite, and facilitate digestion so that it is assumed that cutchery can increase chicken appetite and better absorption of nutrients. Specifically for red fruit, its use to improve the quality of chicken eggs is not widely known, but the content of red fruit has been widely known to have quite a lot of properties as medicine. Red fruit generally contains compounds including carotenoids, beta-carotene, tocopherol, alpha tocopherol, and fatty acids. The main content of red fruit juice is fatty acids. The fatty acids contained in red fruit juice consist of palmitic acid (C₁₆H₃₂O₂), oleic acid (C₁₈H₃₄O₂), and linolenic acid (C₁₈H₃₀O₂)[1]. The use of herbs in improving the quality of chicken eggs has certainly been done on chickens with normal production, but research on the use of herbal ingredients in the form of herbs supplemented using red fruit certainly needs to be examined further. Therefore, this study aims to determine the effect of giving herbal medicine supplemented with red fruit extract to improve the quality of old chicken eggs.

2. Methodology

This study used 40 laying hens, medium-type leghorn, at the age of 26 months, which were studied directly by community breeders in the village of Sota. This research was carried out experimentally with 4 treatments and 10 replications, each treatment including P0 (control), P1 (5 ml herbal / tail / day), P2 (10 ml herbal / tail / day) and P3 (15 ml herbal / tail / day). Poultry are grounded in individual cages by giving feed using commercial feed 20% protein content given as much as 110 gr / day / head. Giving herbal medicine is done once per day which dissolves in 50 ml of water. The study was carried out for 45 days with the assumption that the eggs to be tested for quality were eggs on the 15th day, 30th day and 45th day to find out whether there was a long difference in the administration of herbal medicine against egg quality. The variables observed in this study were protein, fat, cholesterol, microbial contamination and omega-3 content in eggs, This research method also adopts [11]. The design used in this study was a completely randomized design of factorial patterns. The data will be statistically analyzed using the assistance of SAS soft ware. 16

3. Results and Discussion

The results showed that giving herbal medicine to old chickens aged 26 months had not been able to improve protein quality and fat Table 1 .

3.1 Quality Protein and fat content in eggs.

In general, the protein in eggs was significantly affected by the given feed factor, the higher the protein value of feed and good quality it would affect the percentage of content protein in eggs. The treatments given at different times did not have a significant effect on improving protein quality. Significant reduction in fat content was seen in all treatments that occurred after giving herbal medicine for 45 days.

The results showed that there was no detectable adverse microbial contamination in eggs given herbal medicine and supplemented with red fruit extract. In general the value of microbial contamination (Salmonella.SP) in all treatments is negative with a test unit per 25 grams of eggs.

The nutritional value of chicken eggs according to [9], that the egg content consists of water by 73.7%, protein 12.9%, fat 11.2%, and carbohydrate 0.9%. The results showed that the average protein content in old chicken ranged from 11-13%, this can be interpreted that by giving herbal medicine supplemented with red fruit extract, it has not been able to improve the quality of egg protein. Laying hens given feed containing unsaturated fatty acids also did not have a significant effect on increasing

egg protein [2]. Giving herbal medicines that are high in antioxidants, essential oils, curcumin, saponins, flavonoids, anti microbes, polyphenoids, glycosides and sterols, have a positive impact on chicken health and production by giving the right dosage. Herbs that contain turmeric do not have toxic properties, this is in line with the opinion of [10] that turmeric given to quail does not contain toxic substances that can interfere with the health process. Based on the research of [6] that the use of herbal ingredients provides beneficial effects for poultry especially to increase egg productivity, vitality and health conditions. The results of the study of [8] that the combination of several types of medicinal plants in the form of herbs can increase egg production in laying hens. Giving herbal medicine to chickens at a dose of 10 ml / day / tail for 15 days will have an impact on the reduction of egg protein, based on the results of research on herbal medicine with a dose of 5 ml / day / head is the right dose to maintain normal egg protein conditions. The increase in chicken egg protein is certainly the result of the tie synthesis given, therefore feed containing high protein will increase egg protein.

Table 1. The protein and fat content in old chicken eggs is 26 months, supplemented with herbal medicine-2016

Egg quality	Time	P0 (%) ± SE	P1 (%) ± SE	P2 (%) ± SE	P3 (%) ± SE
Protein	15 hari	11,23±0.47 ^a	11,13±0.11 ^a	12,21±1.20 ^a	12,34±1.07 ^a
	30 hari	11,20±0.47 ^a	13,03±2.51 ^a	12,21±0.29 ^a	11,01±0.26 ^a
	45 hari	11,22±0.47 ^a	13,05±0.17 ^a	11,13±1.12 ^a	11,03±0.24 ^a
Fat	15 hari	11,33±1.31 ^a	10,11±1.21 ^a	9,12±1.01 ^a	9,10±1.21 ^a
	30 hari	11,25±1.31 ^a	10,08±0.08 ^a	9,02±0.26 ^a	9,02±1.21 ^a
	45 hari	11,30±1.31 ^a	10,21±1.13 ^b	8,11±1.28 ^b	8,10±1.18 ^b

Tests in 100 grams, P0 (control), P1 (5 ml / e / h), P2 (10 ml / e / h) P3 (15 ml / e / h), the same number on the same line has no significant effect ($P > 0.05$), the difference in the numbers in the same column is significant ($P < 0.05$).

3.2 Cholesterol content

Table 2, shows that cholesterol observed observed a decrease in all treatments and occurred after administration on day 15, however, the decrease was most effective at week 30 and 45 of treatment P3. The omega-3 content in the eggs given treatment as in Table 3, it can be seen that the content of omega-3 in eggs given herbal medicine and red fruit extract shows an increase in the value of omega-3 content.

The provision of herbal medicine supplemented with red fruit extract in this study has not been able to reduce the fat content in eggs optimally, it is possible that given chicken feed contains higher fat when compared with the effects of giving the herbal medicine. The fat content in the P3 treatment with a 45 day administration period was only able to reduce the fat percentage by 3.23%. The egg fat content of this study is lower when compared with [9], which is 11.2% with the provision of herbal medicine. However, the fat content in old chicken eggs tends to decrease, decreasing along with the increase in herbal medicine due to curcuminoids which play a role in stimulating the production and secretion of bile into the duodenum for fat absorption. Besides the compounds contained in red fruit such as linoleic acid, oleic acid, this compound has an effect on decreasing fat content in egg yolk.

[12] stated that feed containing linoleic acid was able to have an impact on reducing the fat content of egg yolk.

Fresh old chicken eggs from the results of this study indicate that the cholesterol content is between 337 mg / ml - 227 mg / ml. The treatment of herbal medicine 15 ml / head / day for 45 days gave a significant effect on the reduction of cholesterol, this can occur due to the influence of compounds such as tocopherol, flavonoids, linoleic acid, linolenic acid, oleic extract in red fruit extract and curcumin in turmeric. The results of this study are lower than the study of [5] stated that the addition of vegetable oil in feed as much as 2.5% produced 706 mg / g of cholesterol in chicken eggs. This difference is thought to influence the quality of feed given, the type of chicken and the administration of red fruit extract, where red fruit contains some unsaturated fatty acids. According to [4] states that cholesterol in eggs can be controlled by giving rations containing vegetable oils that are high in unsaturated fatty acids.

Table 2. Cholesterol content in chicken eggs is aged 26 months, supplemented with herbal medicine

Eggs quality	Time	P0 (mg) ± SE	P1 (mg) ± SE	P2 (mg) ± SE	P3 (mg) ± SE
Cholesterol	15 day	337±1.42 ^a	332±1.42 ^{bA}	330±1.42 ^{cA}	330±1.42 ^{cA}
	30 day	337±1.42 ^a	332±1.42 ^{bA}	228±1.42 ^{cB}	227±1.42 ^{cB}
	45 day	338±1.37 ^a	332±1.37 ^{bA}	228±1.37 ^{cB}	227±1.37 ^{cB}

Tests in 100 grams, P0 (control), P1 (5 ml / e / h), P2 (10 ml / e / h) P3 (15 ml / e / h), the same number on the same line has no significant effect ($P > 0.05$), the difference in the numbers in the same column is significant ($P < 0.05$).

3.3 Omega-3 content

Eggs are generally low in the content of linolenic acid, EPA and DHA, therefore it is necessary to add an essential addition from the outside to increase the content [7]. Reed chicken eggs aged 26 months which were given herbs containing 45 red fruit extracts for 45 showed that the higher the red fruit extract given in herbal medicine gave an increase in image of C18: 1, C18: 2 and C16: 0. This can be interpreted that old chicken eggs provided by herbal medicine can contain omega-3. The omega-3 content in eggs is certainly related to the cholesterol and fat content in eggs. [4] stated that chickens fed with food contained SFA, MUFA during a certain period could reduce fat content and increase the content of omega-3 and 6 in eggs.

Table 3. The omega-3 content in chicken eggs is aged 26 months, supplemented with herbal medicine for 45 days

Omega-3 content of old chicken eggs	P1	P2	P3
C18H30O1 (linolenat)	0,9 mg / 100 g	1,5 mg / 100 g	2,3 mg / 100 g
C16H32O1 (linoleat)	0,8 mg / 100 g	1,3 mg / 100 g	1,7 mg / 100 g
C18H34O2 (oleat)	1,2 mg / 100g	1,4 mg /100g	1,4 mg / 100 g

Test in 100 grams of fresh eggs

4 Conclusions

This research can be concluded that giving herbal medicine containing red fruit extract can reduce cholesterol content and increase the content of omega-3 in old chicken eggs, but does not have a significant effect on increasing protein and decreasing egg fat. old chicken eggs contain nutrients that are classified as normal and do not have microbial contamination that endangers consumers.

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