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# SENSORY QUALITY OF QUAIL EGGS FED WITH CORIANDER FLOUR (CORIANDUM SATIVUM LINN) IN THE FEED

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**ABSTRACT**

The color of the yolk tends to be pale, the texture is less chewy, the taste is less favorable and the egg smells fishy causes the low consumer interest in quail eggs. Feed containing antioxidants is one of the factors that can affect egg quality. Coriander is a spice that contains essential oils that are beneficial for the body when consumed. So it is hoped that the presence of this essential oil can help improve livestock growth and produce quality quail eggs sensory. This study aimed to examine the effect of giving coriander flour to quail feed on the sensory quality of eggs. The study was conducted for 30 days. The livestock used were Japanese quail aged 30 days with 100 heads. The feed used is commercial feed and additional coriander flour. The design used was a completely randomized design with 4 treatments and 5 replications for each unit of 5 birds with treatment R0 = commercial feed +0% coriander flour, R1 = commercial feed + 0.5% coriander flour, R2 = commercial feed + 1% coriander flour, R3 = commercial feed + 1.5% coriander flour. Data were analyzed using Kruskal Wallis and Duncan's multiple range test. The results showed that the administration of coriander flour had a significant effect ($P<0.05$) on the hedonic test of egg white color and texture hedonic quality test, in contrast for the egg yolk color, taste, aroma variables were not significantly different ($P>0.05$). The panelists assessed that quail eggs fed with coriander flour by 1% in the range tended to be neutral (3.16) compared to the other three treatments, which tended to be neutral-like (3.56, 3.68, 3.76). The texture of eggs in this study showed significantly different results where the highest average was at R2 of 3.56 which showed the texture tended to be chewier than the R0, R1, and R3 treatments which were on an average of 3.00-3.36 which means chewy. This study concludes that organoleptic administration of 1% coriander flour can increase the panelists' preference for egg whites and improve the texture of quail eggs. Giving coriander flour to laying quail can be given 1% of the ration.

## 1. INTRODUCTION

Eggs are food sources of animal protein that humans often consume. In addition to low prices, eggs also contain nutrients needed by the body. One of the egg-producing birds the quail. Quail can produce 250-300 eggs/year (Subekti & Hastuti, 2013). Quail eggs have almost the same nutritional content as other poultry eggs. The nutritional content of quail eggs is 13.1% protein, 11.1% fat, 1.6% carbohydrate, and 1.1% ash content (Listiyowati & Roospitasari, 2009). The most crucial factor in the process of raising quail is feed. The feed can affect the growth and production of eggs produced by the quail. So, to get good egg quality, quail must be given good feed both in quantity and quality. In addition, quail rearing in Indonesia, a tropical country, has problems, namely experiencing *heat stress.* So, we need a solution to prevent anti-stress that can harm farmers. The use of antibiotics in livestock will have a negative impact on livestock and on consumers. The continuous use of antibiotics or antimicrobials the feed will trigger problems, including increasing resistance of pathogenic microbes to drugs, drug residues in the body of livestock, and imbalance of intestinal microflora (Awad et al., 2009). Therefore, the use of herbal ingredients that are thought to be used for nutritional intake and anti-stress is necessary.

The consumption of quail eggs in the community is still low compared to purebred chicken eggs. Factors that influence this include a reasonable high cholesterol (844 mg/dL). According to Aviati et al., (2014), good taste, chewy texture and a non-fishy aroma need to be considered in the acceptance of livestock products. The low consumer interest is caused by low organoleptic quality factors, including the color of the yolk tends to be pale, the texture being less chewy, the taste is not liked, and the smell of fishy eggs. Improving the organoleptic quality of quail eggs can be done by feeding them with antioxidants (Prastyanto, 2015).

Coriander (Coriandum sativum linn) is a spice and spice commonly used by the community. Coriander has good health benefits. Feed additives such as herbs and spices are commonly added to animal feed to improve taste and delicacy, increasing performance (Windisch et al., 2008). Coriander essential oil content of 0.4-1.1% can act as an antibacterial ( Astawan, 2009; Burt, 2004; Lo Cantore et al., 2004; Kubo et al., 2004), as an antioxidant (Wangensteen et al., 2004) and stimulatory effects in digestion (Çabuk et al., 2006; Rajeshwari et al., 2011). In addition, coriander contains flavonoids that can help lower cholesterol and has high carbohydrates, protein, and fat (Wahab & Hasanah, 1996). Based on the above explanation, research on coriander in quail feed needs to be carried out to produce eggs of good quality, especially in terms of sensory quality. This study aimed to examine the effect of giving coriander flour to quail feed on the sensory quality of eggs.

## 2. METHODS

The research was carried out in the poultry house of the Animal Husbandry Study Program, Faculty of Agriculture, Djuanda University for 30 days. The livestock used were 100 female quails aged 30 days (female quails have started to enter sexual maturity at 5-6 weeks (Rotikan et al., 2018). The cage used is a battery cage. The feed given is commercial feed and coriander flour.

The design used was a completely randomized design with 4 treatments and 5 replications, each experimental unit consisting of 5 tails. The 4 treatments were R0 = commercial feed +0% coriander flour, R1 = commercial feed + 0.5% coriander flour, R2 = commercial feed + 1% coriander flour, R3 = commercial feed + 1.5% coriander flour. The data were analyzed using ANOVA and if they were significantly different, they would be further tested using Duncan's test. The variables observed in this study were hedonic tests and hedonic quality tests. The two tests each consist of 5 criteria, namely egg white color, egg yolk color, aroma, taste and texture. The hedonic test is a preference test consisting of 5 rankings

from 1 = very dislike, 2 = dislike, 3 = neutral, 4 = like, 5 = very like. The hedonic quality test is in accordance with the criteria from (QUAILS, n.d.)

The research procedure was carried out, namely the cage was cleaned first. Then the coriander flour is made by mashing the coriander using a blender until it becomes smooth and ready to be used as an additional animal feed. The cattle used went through an adaptation process for 1 week. The feed given in the first week was 20 g/head/day which was then increased to 25 g/e/day. Provision of drinking water ad libitum. The treatment was given for 30 days to the quail to see the response of the treatment given. The eggs produced by each experimental unit were boiled first and served to the panelists. The panelists used were semi-trained panelists as many as 30 people. Each sample is assigned a three-digit code on the serving plate. Before the test started, the panelists were given instructions in filling out the organoleptic form.

## 3. RESULTS AND DISCUSSION

### 3.1. Results

Table 1 Average hedonic test for quail eggs

| Treatment | Variable | | | | |
|---|---|---|---|---|---|
| | Egg White Color | Egg Yolk Color | Aroma | Flavor | Texture |
| R0 | 3.56±0.58 [b] | 3.48±0.65 | 3.72±0.61 | 3.88±0.60 | 3.88±0.72 |
| R1 | 3.76±0.59 [b] | 3.64±0.70 | 3.40±0.64 | 3.36±0.70 | 3.76±0.59 |
| R2 | 3.16±0.62 [a] | 3.52±0.65 | 3.24±0.77 | 3.72±0.89 | 3.84±0.80 |
| R3 | 3.68±0.80 [b] | 3.32±0.85 | 3.24±0.87 | 3.44±1.00 | 3.56±0.87 |
| Average | 3.54±0.68 | 3.49±0.71 | 3.40±0.75 | 3.60±0.82 | 3.76±0.75 |

R0: Different superscripts in the same column showed significantly different results (P<0.05). Commercial Ration without coriander flour (control), R1: Commercial Ration + 0.5% coriander flour, R2: Commercial ration +1% coriander flour, R3: Commercial ration + 1.5% coriander flour.

Table 2 Average hedonic quality test for quail eggs

| Treatment | Variable | | | | |
|---|---|---|---|---|---|
| | Egg White Color | Egg Yolk Color | Aroma | Flavor | Texture |
| R0 | 3.00±0.57 | 1.68±0.85 | 2.80±0.86 | 3.16±0.47 | 3.00±0.57 [a] |
| R1 | 3.16±0.89 | 1.64±0.70 | 3.08±0.86 | 3.32±0.62 | 3.12±0.60 [a] |
| R2 | 3.24±0.66 | 1.80±0.76 | 2.84±0.89 | 3.36±1.03 | 3.56±0.71 [b] |
| R3 | 3.16±0.74 | 1.76±0.59 | 3.00±0.64 | 3.28±0.89 | 3.36±0.75 [ab] |
| Average | 3.14±0.72 | 1.72±0.72 | 2.93±0.82 | 3.28±0.78 | 3.26±0.69 |

R0: Different superscripts in the same column showed significantly different results (P<0.05). Commercial ration without coriander flour (control), R1: Commercial ration + 0,5% coriander flour, R2: Commercial ration +1% coriander flour, R3: Commercial ration +1.5% coriander flour.

### 3.2. Discussion

The organoleptic test consists of a hedonic test or a preference test and a hedonic quality test. The results of the Kruskall Wallis analysis on the hedonic test showed significantly different results (P<0.05) on the egg white color variable but not significantly

different (P>0.05) on the egg yolk color, aroma, taste and texture variables. Panelists' assessment of egg white color showed that R2 was significantly different from all treatments R0, R1 and R3. The panelists considered that quail eggs fed with coriander flour of 1% in the range tended to be neutral (3.16) compared to the other three treatments, which tended to be neutral-like (3.56 , 3.68, 3.76). The mean of the egg yolk color variable in this study was in the range of 3.32-3.64 where the panelists judged that the yolk color was in the neutral-like range. The results of the analysis of Kruskall Wallis on the aroma of eggs showed that the results were not significantly different. The average preference value for aroma is in the range of 3.24-3.72 which means neutral-like. The taste variable in this study has an average value of 3.44-3.88 which is still in a neutral-like trend. The average value of the texture of quail eggs treated with coriander flour showed results that were not significantly different in the range of 3.56-3.88, which was neutral-like.

The results were not significantly different, presumably because the ratio content was almost the same. According to Purfianti (2013), the public's eggs are liked are yellow to orange egg yolks, good taste, slightly chewy texture, not fishy aroma and easy to peel. As a comparison, research by Lukito et al., (2012) stated that of preference for quail eggs ranged from 2.72 to 3.08 which gave a liking value. Hedonic quality test is different from hedonic test. The hedonic quality test is more specific to the egg quality, while the hedonic test describes the panelists' preference test. In this study, the results showed that the application of coriander flour to quail feed was significantly different on the texture variables but not significantly different on the egg white color, egg yolk color, aroma and taste variables. The results were not significantly different, presumably because the content of the ration consumed was almost the same.

Color is an important quality property of food because it affects consumer perceptions of the quality and intensity of aroma and taste (Loetscher et al., 2013). The color of the egg whites produced is in an average of 3.00-3.24, which means that the panelists assess the color of the egg white as white. The color of the yolk has an average value of 1.64-1.80 which means that the panelists judge that the color of the yolk is yellow. As comparison research, which gave kenikir leaf flour to feed, gave results that were not significantly different with a value of 2.5-3.10 (classified as slightly yellow), Prastyanto's research (2015) egg yolk color of 2.69-3.06 which means yellow. According to Winarno & Koswara (2002), the color or pigment in egg yolks is strongly influenced by the type of pigment contained in the ration consumed. Therefore, the ration has a direct effect on the color of egg yolks, especially foods that contain carotenoid pigments. Beta-carotene is a substance that can affect egg yolk color pigment and has the same function as xanthophyll (Yamamoto, 2017).

Aroma has an important function in food products. Before consuming the food,it is usually first smelled by the senses of the nose. If the aroma in the product is too strong or seems bland, it will make consumers not interested in consuming it. Aroma has an average of 2.80-3.08 which means the eggs have a fishy smell. In contrast to the research of QUAILS, (2020) which gave bitter melon extract in quail drinking water significantly different aroma results. The taste in this study has an average of 3.16-3.32 which means it is delicious. The results based on the analysis of Kruskall Wallis showed that the results were not significantly different. This is presumably because the fat content in the ration is not different. In line with Winarno, (2004) opinion that fat from food can improve the taste of food. Djaafar (2007) added that the fat in eggs enhance the taste.

The texture of eggs in this study showed significantly different results where the highest average was at R2 of 3.56 which indicated the texture of the eggs tended to be chewier than the treatment R0, R1, and R3 which were on an average of 3.00-3.36 which means chewy. These results are the same as those of QUAILS, (2020) produced a significantly different texture between treatments with bitter melon extract in the chewy range.

## 4. CONCLUSION

This study concludes that organoleptic administration of 1% coriander flour can increase the panelists' preference for egg whites and improve the texture of quail eggs. Giving coriander flour to laying quail can be given 1% of the ration.

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