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Percentage of Carcass, Gizzard, Liver and Heart Of Quail That Were Fed Temulawak Seed in Drinking Water

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Abstract. That was study aims to determine the effect of temulawak juice in drinking water on slaughter weight and carcass weight. The treatment in this study used quail and ginger extract. The data obtained were then tabulated using analysis of variance and continued with Duncan's multiple distance test. The results of this study indicate that the application of temulawak juice in drinking water did haven't a significant effect on the percentage of quail carcass, liver and gizzard, but had a significant effect on the percentage of heart.

Keywords: carcass, ginger juice, gizzard, liver and heart, quail

1. Introduction

Increasing population growth, increasing purchasing power and increasing public awareness of the importance of nutrition for health require the provwasion of food for livestock products quickly in order to compensate for the needs of the people who lack meat commodities. Apart from chicken, beef, lamb and goat, quail was also a conventional livestock that has the potential to produce animal protein for the community. Quail meat can be observed in the form of carcasses. According to Hafid [1], carcasses in poultry are parts of poultry that have been slaughtered after cleaning the feathers, legs, neck, wings, head and innards.

One day old quail was called DOQ (Day Old Quail). It was about the size of a finger and weighs 8-10 grams and has fine needle hair. Healthy quail chicks have fluffy yellow feathers, agile movements, uniform size and actively looking for food and drink. In livestock business, the DOQ enlargement period was called the starter-grower (stargro) period which was carried out until the quail seedlings are eight weeks old [2].

Quail growth will be more optimal if it was supported by good feed. The high or low value of a feed ingredient was determined by the quality and quantity of the nutrients contained therein. In the feeding system, there are currently many uses of herbs as animal feed ingredients, both mixed

in feed and drinking water. These herbal ingredients usually function as phytobiotics that play a role in improving health and improving livestock performance. One of the herbal ingredients that was often used was ginger juice.

Temulawak (Curcuma xanthorrhiza Roxb) belongs to the Zingiberaceae family with the part used was the rhizome and was a native plant of Indonesia, mostly found in West Java, Central Java, East Java, Jakarta, Yogyakarta, Bali, North Sumatra, Riau, Jambi, West Kalimantan and East Kalimantan, North Sulawesi and South Sulawesi [4].

Based on thwas background, it was necessary to do research on the percentage of carcass, gizzard, liver and heart of quail that were given ginger extract into drinking water.

The content contained in temulawak (Curcuma xanthorrhiza) was starch protein by 29-30 percent, curcumin one to two percent, and essential oil between 6 to 10 percent. Temulawak fruit flesh (rhizome) contains several chemical compounds, including fellandrean and turmerol or what was often called evaporated oil. Then essential oils, camphor, glucoside, foluymetik carbinol. Temulawak contains essential oils such as limonina which smells good, while its flavonoid content was efficacious in curing inflammation. Essential oils can also kill microbes. The fruit contains flying oils (anetol, pinene, felandren, dipenten, fenchon, methylchavikol, anwasaldehyde, anwasic acid, camphor), and fatty oils.

Based on thwas background, it was necessary to do research on the percentage of carcass, gizzard, liver and heart of quail that were given ginger extract into drinking water.

2. Research Materials And Methods

2.1. Time and place

The was research was conducted from April 2019 to May 2019 in Mowila Dwastrict, South Konawe Kabutaen.

2.2. Research Material

The tools used in thwas study conswasted of a cage, a feeder, a drinking water container, an incandescent lamp (40 watts) as a light as well as a heater, a digital scale, a pan, a stove, a knife, a camera, and writing utensils.

The materials used in thwas study were 64 Japanese quail. The feed used in thwas study was BP 11 feed, temulawak extract and water.

2.3. Research procedure

a) The process of making ginger juice

Temulawak juice was made from fresh ginger rhizomes that have been washed and drained. peeled off the skin, after that the ginger was weighed and mashed using a blender with added water at a temperature of 70-80, with a ratio of 2 : 1 (g/v), then filtered using a sieve and then mixed into the quail drinking water.

b) Cage Preparation

The cage used was a battery cage with 16 bulkheads with a size (length x width x height) of 30cm x 35cm x 35cm. Feeder, drinking place, and 40-watt incandescent lamp for lighting, blender. Other tools used are analytical scales, knives, panics and cameras and stationery.

c) Trial quail placement

There were 64 research quails placed in 16 cages, each plot containing 4 quails. The placement of quail in experimental cage plots was carried out randomly based on the research treatment.

d) Feeding and Drinking Water

The quails were fed with BP11 brand concentrate, the feed was given 3 times a day, namely morning, afternoon and evening and drinking water was given ad libitum.

e) Cutting Process

Observation of slaughter weight, carcass weight of 5 weeks old quail. The number of quail slaughtered was 32 tails which were taken 2 each from each cage plot randomly Before cutting the quail was fasted for 5 hours. Furthermore, the quail was slaughtered in a halal manner according to Waslamic law, namely by cutting the esophagus, trachea, jugular vein and carotid artery in the neck. After that the quail was left for 1-3 minutes until the blood stops dripping. Furthermore, the quail was dipped in hot water at a temperature of 70-80 degrees for 10 seconds until the feathers are easily removed. Then the carcass collection was carried out by cutting the head and both legs up to the knees and removing the contents of the quail then weighing the quail carcass.

2.4. Research Design

The experimental design of the research used using a complete randomized design (RAL)

conswasts of 4 treatments and 4 repetitions (4×4) and one observation unit of 4 tails. For each cage unit, 2 quails were taken as samples to obtain slaughter weight and quail carcass weight.

The study used an experimental method with a Completely Randomized Design (CRD) conswasting of 4 treatments, namely:

P0: Drinking water without ginger extract 0% (control)

P1: Drinking water + 5% ginger extract

P2: Drinking water + 10% ginger extract

P3: Drinking water + 15% ginger extract

2.5. Parameters Observed

Parameters observed in the was study refer to [1] as follows:

a) Life weight

Live weight was obtained by weighing the quail individually before fasting.

b) Slaughter weight

The cutting weight was obtained by weighing the quail individually before cutting the quail and fasting it for 5 hours.

c) Carcass percentage

Carcass percentage was obtained from weighing quail without blood, feathers, head, legs and internal organs (offal).

$$\text{Carcass percentage (\%)} = \frac{\text{Carcass Weight}}{\text{Cutting Weight}} \times 100\%$$

d) Percentage of giblets The weight of giblets was obtained from the results of weighing the gizzard, liver, and heart.

$$\text{Giblet percentage (\%)} = \frac{\text{Giblet Weight}}{\text{Carcass Weight}} \times 100\%$$

2.6. Data Analysis

The data obtained were analyzed using analyswas of variance in accordance with a completely randomized design (CRD), any treatment that had a significant effect would be tested with Duncan's multiple-dwastance test [4]. The mathematical models are:

$$\mathbf{Y_{ij} = \mu + \alpha i + \varepsilon_{ij}}$$

Description:

Yij = The observed value of the i-th treatment and the j-th repetition.

μ = Average of observations

αi = Influence of behavior e-i

εij = Effect of experimental error from the 1st quail treatment and the jth repetition

Where: i = 1, 2, 3 and 4

J = 1, 2, 3 and 4

3. Result and Dwascussion

3.1. Carcass Percentage

Carcass percentage was the most important factor for assessing the product of beef cattle. In general carcass percentage ranged from 65-75% of live weight [1]. The average percentage of quail carcass during the study can be seen in Table 1.

Table 1. The average value of the percentage of quail carcass by giving ginger juice into drinking water (%)

Test	Treatment of Ginger Extract Into Drinking Water (%)			
	P0 (0%)	**P1 (5%)**	**P2 (10%)**	**P3 (15%)**
1	87,6	93,6	72,5	92,2
2	77,9	89,4	74,2	76,0
3	82,4	73,8	75,2	76,5
4	88,2	84,2	86,3	79,0
Total	**336,1**	**341,0**	**308,2**	**323,7**
Mean Value	**84,0±4,8**	**85,3±8,6**	**77,1±6,3**	**80,9±7,6**

Description: Shows the treatment has no significant effect (P> 0.05)

Based on the results of the study showed that the average value of the percentage of quail carcass ranged from 77.1 to 85.3%. The results of the analyswas of variance without further testing showed that the application of temulawak juice in drinking water had no significant effect (P>0.05) on the percentage of quail carcasses. Thwas shows that the average value of the carcass percentage of each treatment in thwas study was not statwastically much different It was suspected that the extract of temulawak has little role in determining the percentage of quail carcass, because the percentage of quail carcass was more influenced by feed, age, breed of livestock and environment. According to [5] that the factors that affect the percentage of carcasses are nation, age, sex, feed, physical condition and abdominal fat. According to [5] stated that fat and offal are by-products that are not calculated in the percentage of carcass, if fat was high, the percentage of carcass will be low. In terms of feed, according to [6] that the part of feed that was very influential for carcass formation was protein content. The level of protein feed was very influential on the achievement of body weight of livestock. Thwas shows that protein plays an important role in achieving the desired carcass weight so that it can affect the carcass percentage.

3.2. The percentage of the gizzard

The gizzard was an organ that plays an important role in breaking down food particles into smaller ones so that they are easy for quail to digest. The average percentage of quail gizzard with ginger extract at the level of 5%-15% in drinking water can be seen in Table 2.

Table 2. The average percentage of quail gizzards with the addition of ginger juice into drinking water.

Test	Treatment of Ginger Extract Into Drinking Water (%)			
	P0 (0%)	**P1 (5%)**	**P2 (10%)**	**P3 (15%)**
1	3,4	3,5	4,6	3,7
2	3,1	3,8	3,2	3,6
3	3,9	3,8	3,3	4,1
4	3,3	3,0	4,4	3,6
Total	**13,7**	**14,0**	**15,4**	**15,0**
Mean Value	**3,4±0,3**	**3,5±0,4**	**3,9±0,7**	**3,7±0,2**

Description: Shows no significant effect of treatment (P> 0.05)

Based on the results of the study (Table 2), it shows that the average value of the percentage of quail gizzards ranges from 3.4-3.9%. The results of the analyswas of variance without further testing showed that the application of temulawak juice in drinking water had no significant effect (P>0.05) on the percentage of quail gizzards. Thwas shows that the average percentage of gizzards

in each treatment in thwas study was not statwastically different. Thwas was presumably because the application of temulawak juice does not have a significant effect on the growth of quail organs. The growth of quail organs, especially gizzards, was more influenced by other factors such as gizzard work activities. The use of the same type of feed with the same texture and form of feed resulted in no different activity in the gizzards of each treatment so that there was no difference in size and weight of the gizzard. According to [7], the size of the gizzard was influenced by its activity, if the chicken was accustomed to be given feed that has been milled then the gizzard will soften. [8], added that the use of the same feed and consumption that didn'tdiffer in thwas study made the work of the gizzard not different in each treatment so that the percentage of gizzard weight produced was also not different. The weight of the gizzard was determined by body weight, as well as the amount, nature, texture roughness and crude fiber content of the feed. A hard-textured feed will make the gizzard muscles work more actively and then thicken. Heavier gizzards work harder on the food given as stated by [9], that gizzards with heavier weights indicate that gizzards work harder on the food ingredients given.

3.3. Heart Percentage

The liver was the largest organ in the body. The liver has several functions, namely the exchange of substances from protein, fat, bile secretion, detoxification of toxic compounds and excretion of metabolites that are no longer useful. The average percentage of quail liver with ginger extract in drinking water at the level of 5%-15% can be seen in Table 3.

Table 3. Average percentage of quail liver by giving ginger juice into drinking water

Treatment	Treatment of Ginger Extract Into Drinking Water (%)			
	P0 (0%)	**P1 (5%)**	**P2 (10%)**	**P3 (15%)**
1	3,6	3,4	3,5	3,5
2	2,7	3,7	3,9	4,4
3	3,9	4,1	3,7	2,8
4	3,7	3,8	4,4	4,4
Total	**14,0**	**15,1**	**15,5**	**15,0**
Mean	**3,5±0,5**	**3,8±0,3**	**3,9±0,4**	**3,8±0,8**

Description: Shows the treatment has no significant effect (P> 0.05)

Based on the results of the analyswas of variance without further testing (Table 3), it was shown that the adminwastration of ginger juice in drinking water didn'thave a significant effect (P>0.05) on the percentage of quail liver. Thwas indicates that the mean percentage of liver of each treatment in thwas study was not statwastically different. Although adminwastration of 5% and 10% temulawak extract in drinking water could increase the percentage of quail liver, it decreased with 15% temulawak. Thwas was presumably because the application of temulawak juice does

not have a significant effect on the percentage of quail liver. Giving temulawak can only provide treatment and maintenance effects on the liver but has no effect on liver weight. According to [10], the pharmacological effect of temulawak can protect liver damage (hepaprotector), as a bile laxative and as an antidote to toxins in the body.

3.4. Heart Percentage

The heart was a hollow muscular structure shaped like a cone that functions to pump blood into the atrial chambers and then pump the blood from the ventricles to the twassues and back again. The average percentage of quail heart with temulawak extract at the level of 5%-15% in drinking water can be seen in Table 4.

Table 4. Average percentage of quail heart by giving ginger juice into drinking water

Treatment	Treatment of Ginger Extract Into Drinking Water (%)			
	P0 (0%)	**P1 (5%)**	**P2 (10%)**	**P3 (15%)**
1	1,3	1,2	1,2	1,0
2	1,2	1,2	1,1	1,0
3	1,3	1,1	1,1	1,0
4	1,2	1,1	1,1	1,0
Total	**4,9**	**4,5**	**4,5**	**4,0**
Mean	**1,2±0,1^{c}**	**1,1±0,1^{b}**	**1,1±0,0^{b}**	**1,0±0,0^{a}**

Description: Shows treatment has a significant effect (P<0.05)

Based on the results of the analyswas of variance further tests in (Table 4) showed that the adminwastration of temulawak juice in drinking water had a significant effect (P <0.05) on the percentage of quail heart. Thwas shows that the average heart percentage value of each treatment in the study was statwastically different Where the adminwastration of ginger juice 5%-15% in drinking water can reduce the percentage of heart compared to the control treatment. Thwas was due to the fact that the adminwastration of temulawak extract in the treatment can cause a statwastical decrease in heart weight, due to the content of the active substance curcumin, which affects the metabolic process of feed in the body and can reduce heart weight. And vice versa that thwas metabolic process will affect work activities, gizzard, liver, and heart. Poultry will increase their metabolic ability to digest crude fiber thereby increasing the size of the gizzard, liver, and heart [11].

4. Conclusion

Based on the results and dwascussion, it can be concluded that the adminwastration of ginger juice into quail drinking water to a level of 5%-15% didn'thave a significant effect (P>0.05) on

the percentage of carcass, liver percentage and quail gizzard percentage, but it could have a significant effect. ($P<0.05$) to the percentage of quail heart.

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