Dressing percentage, giblet and abdominal fat of broiler chickens given Orthosiphon stamineus Benth leave juice in drinking water

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Abstract. This research was conducted to study the effects of cat whiskers leave juice (*Orthosiphon stamineus* Benth) (OLJ) on the dressing percentage, giblet, and abdominal fat of broiler chicken. The research used 100 chicks which were reared for five weeks. At the end of the fifth week, 40 chickens were slaughtered as samples. The diets consisted of a commercial ration with 2900 kcal.kg^{-1} metabolizable energy and 22% protein. The drinking water consisted of different levels of OLJ (0, 10, 20, 30 mL/L). A Completely Randomized Design was used in this research with 4 treatments and 5 replications. Dressing percentage, liver, heart, gizzard, and abdominal fat were observed. The data were analysed by Analysis of variance/ANOVA. The result showed that OLJ significantly ($P<0.01$) affected live bird's weight, but not significantly different ($P>0.05$) for dressing percentage, giblet, and abdominal fat of broiler chicken. On broiler chicken, administration of 10 mL/L OLJ significantly ($P<0.01$) decreased the live bird's weight compared to control (0 mL/L OLJ). However, drinking 20 mL/L and 30mL/L cat whiskers juice were not significantly different. The conclusion is that the broiler chicken could tolerate up to 30 mL/L cat whiskers leaves juice.

1. Introduction

Antibiotics as growth and health boosters in poultry feed have sparked concern in recent years. On the other hand, its use can harm consumers because it leaves residues which in turn can interfere with health. Since Indonesian government restrictions prohibiting the use of antibiotic growth promoters (AGP) in chicken feed were enacted, this has headed the scientists to look for feed alternatives, which can serve more than one purpose. A feed additive is an item added to feed that has the potential to alter the health, productivity, and nutritional condition of livestock, even if the feed itself is insufficient to meet their nutritional requirements [1]. Feed additives given to livestock can be in the form of medicinal plants. The provision of medicinal plants mixed into herbs for livestock is efficacious as a feed additive and is not an antibiotic, so it is not harmful to humans. It was further explained that medicinal plants mixed both in rations and in drinking water could improve health [2]. Many research have shown that employing natural ingredients to increase animal production indexes is feasible [3, 4, 5]. However, not just as growth boosters, but also in terms of their impact on the production of prime cuts and high-quality meat, these compounds must be better investigated. Broilers are the most common chicken breed. The whole bird is the most common product of poultry slaughterhouses. However, because cut-up bird parts and convenience items have a higher value, there has been a transition in recent years from fresh, whole-

bird sales to cut-up bird parts and convenience products [6]. There is very little information in the literature about the relationship between broiler chicken dressing percentage, giblet, and abdominal fat of broiler with drinking water. Therefore, this study aimed to investigate the effects of supplementation of OLJ in drinking water on dressing percentage, yield of giblet, and abdominal fat of chicken broiler.

2. Material and methods

2.1. Material

The trial and bird slaughter took place at Sam Ratulangi University's Faculty of Animal Husbandry's poultry facilities., Manado, North Sulawesi, Indonesia. In this experiment, 100 days old Lohman broiler chickens were used. They were housed in brooder cages for 7 days, and then transferred into the experimental cage. The chicks were unsexed, individually weighed and randomly sorted into 20 experimental units of 5 birds each at 8 day old until 35 days. During the experiment, the lighting was kept on at all times. A commercial diet was supplied to the birds (22% protein and 2900 ME kcal/kg) for 5 weeks. Feed and water were provided *ad libitum*. At 35 days of age, the broiler chickens were slaughtered and processed according slaughter procedures: slaughtered through the neck using a sharp knife, slaughter was done by slashing 3 channels (eating, breathing, and blood vessels) using a sharp knife in one incision (Islamic method); bleeding hanger (5.0 min); scalding for 20 second in hot water, defeathering for 30 second, eviscerating (the feet, head and viscera were then manually removed). After that, the birds were dressed, opened up, and the gizzard, heart, liver, and intestine were taken, as well as the weights, washed with cold water, 3 minutes of leaking. Following the leaking carcasses were weighed and cut into the commercial pieces, sealed in plastic containers and kept refrigerated until quantitative and qualitative tests were completed.

2.2. Methods

2.2.1. General. The study design followed a completely randomized design 4 x 5. As treatment is the level of OLJ, (*Orthosiphon stamineus* Benth) leaves juice which is 0 mL/L; 10 mL/L, 20 mL/L, and 30 mL/L. Each treatment was repeated 5 times. To evaluate carcass and cut yields, Birds were recognized at the end of the trial, individually weighed, and housed in pens to assess carcass and cut yields. They fasted for around 8 hours however water was supplied to them throughout that time. Before being slaughtered, the birds were re-weighed in the slaughterhouse

2.2.2. Parameters measured. Following the slaughter and dripping operations, carcasses were weighed without feet, head, and neck, and cuts were made to assess giblet yield (liver, heart, gizzard, and abdominal fat (g, %).

2.2.3. Statistics. Minitab's general linear model (version 19) was used to analyze diversity on the data obtained. Tukey simultaneous test (HSD) was performed to test the difference between treatment means, and the significance was determined at the $P<0.01$ and $P<0.05$.

3. Results and discussion

Table 1. showed the average of dressing percentage, giblet, and abdominal fat yield both gram and percentage of experimental chickens. There were significant differences ($P<0.01$) between treatments for live birds' weight ($P<0.01$). The response sequence of experimental chickens the highest to lowest live bird's weight was found in experimental chickens that drink fresh water, 20 mL/L OLJ, 30 mL/L of OLJ, and 10 mL/L of OLJ, respectively. Experimental chickens that received OLJ as much as 10 mL/L, 10.89% lower than the control (drinking fresh water) and the other two treatments. The experimental chickens that were given 20 mL and 30 mL/L of OLJ had significantly higher live birds by 8.58% and 5.89%, respectively, compared to the 10 mL/L OLJ treatment. Giving feed containing cat whiskers flour in the ration at 5 weeks of age resulted in lower live birds compared to drinking water

[7], but in line with the dressing percentage of chickens given combined lauric acid and *Areca vestiaria* in the ration [8]. The dressing percentage, giblet and abdominal fat variables in this study showed no significant difference between treatments. The percentage of experimental chicken carcasses in this study is according to the Lohmann strain standard of 70%, body weight in the fifth week should be 1.8 kg [9]. Broiler carcass percentage is 68-72 percent [10].

Meat muscle tissues, fat, bone, and remaining carcass components including as tendons, connective tissue, blood vessels, and nerves are all included. The percentage of carcass, also known as the percentage of cutting, is computed as the ratio of carcass weight to live bird weight and given as a percentage [11]. Organ weight or tissue carcass components (bone, muscle, fat) were primarily affected by prenatal (beginning of life) cell multiplication in the body's organs, followed by cell growth in the postnatal period, depending on the hierarchy, character, and size of each cell [12]. Environmental variables and genetic traits (management, food, disease) can influence the rate of growth [13], and depending on, the proportionate growth of tissue forming carcasses is affected by sex and race [11]. Carcass composition is influenced by some parameters like a live bird, gender, feed nutrient content, and feeding schedule (Leeson and summer). Therefor genetic factors such as species, nation, type, and individual livestock, as well as environmental factors such as physiological and nutritional factors, determine the amount of meat generated from carcasses, as well as the quality of meat and meat products [11] So that another parameter showed not significant differences, because the factors that influence it were in the same state.

Table 1. Average of the live bird, dressing percentage, giblet, and abdominal fat of chicken broiler on 5 weeks of age.

Variable		Level of OLJ (%)			
		0	10	20	30
Live bird weight	(g)	2368±29.5[a]	2110±19.6[b]	2308±57.6[ab]	2242±70.8[ab]
Dressing percentage	(%)	72.80±0.7	75.58±0.9	75.22±0.8	73.92±0.4
Liver weight	(g)	42.51±1.4	38.44±1.1	43.46±3.8	41.47±3.0
	(%)	1.80±0.05	1.82±0.05	1.88±0.13	1.85±0.12
Heart weight	(g)	11.92±0.5	10.43±0.6	10.25±0.4	11.32±0.3
	(%)	0.50±0.02	0.49±0.03	0.44±0.02	0.51±0.01
Gizzard weight	(g)	18.34±0.4	16.10±1.1	18.42±1.0	17.80±1.6
	(%)	0.78±0.02	0.76±0.05	0.80±0.05	0.80±0.09
Abdominal fat weight	(g)	29.01±1.5	27.75±2.2	25.79±2.7	28.55±4.8
	(%)	1.22±0.1	1.31±0.1	1.24±0.1	1.13±0.1

OLJ, (*Orthosiphon stamineus* Benth) leave juice; Tukey's Test finds that means followed by similar letters in the row are similar ($p>0.05$) within the same variable. F is the final test.

4. Conclusion

The conclusion of this research was that the broiler chicken can tolerate up to 30 mL/L cat whiskers leave juice.

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