

The Level of Utilization of Papaya Leaf Flour (*Carica papaya* L) in Feed on the Performance of Internal Organ Weight and Abdominal Fat of KUB Chickens

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ABSTRACT

This study aims to determine the utilization of papaya leaf flour (*Carica papaya* L) on performance, live weight, internal organs (liver and kidney) and abdominal fat in KUB chickens. This study used 100 chickens and this research method used a completely randomized design (CRD) with 5 treatments and 4 replications consisting of A (feed with 0% papaya leaf flour), B (feed with 2.5% papaya leaf flour), C (feed with 5% papaya leaf flour), D (feed with 7.5% papaya leaf flour), E (feed with 10% papaya leaf flour). The results showed that the utilization of papaya leaf flour (*Carica papaya* L) on live weight, internal organs and abdominal fat in chickens had non-significant ($P > 0.05$) on chickens. The conclusion of this study was that utilization papaya leaf flour up to level 10% could use to feed of KUB chickens.

Keywords: Abdominal fat, internal organ, KUB chicken, papaya Leaf, performance,

1. INTRODUCTION

Livestock in Indonesia is now starting to develop quite advanced, along with public awareness of the importance of protein, especially chicken meat. The need for chicken meat in Indonesia is increasing day by day. To meet this need, the development of chicken, plays an important role as an effort to provide affordable and economical meat. The demand for chicken meat is increasing along with the increasing income and awareness of the population of the importance of animal protein.

The kampung chicken is one of the chickens that comes from a long line of historical processes in terms of genetic development of poultry in Indonesia. Free-range chickens were obtained from the domestication of red jungle fowl (*Gallus gallus*) and green jungle fowl (*Gallus varius*). Where initially these chickens lived in the forest, were domesticated, developed by communities around rural areas [1]. Kampung chicken is a native chicken that has adapted to the environment in Indonesia itself. Rural communities at that time kept native chickens at that time a source of animal food in terms of producing meat and eggs [2].

Kampung Unggul Balitnak (KUB) Chicken is a superior kampung chicken of the Indonesia Agency for Livestock Research and Development or Balitnak, which is the result of selection from a group of native chickens for 6 generations [3]. KUB chicken is a dual-purpose type chicken as a producer of meat and as a producer of eggs which is quite high where egg production can reach 170 eggs/year and has a low incubation rate. Chickens have the ability to grow quickly so that they can shorten the harvest period of chickens to 50 days and weigh up to 1 kg [4].

The papain enzyme found in papaya leaves (*Carica papaya* L) was reported by [5] could form new proteins and hydrolyzed protein compounds (plasteins). Papaya leaves contain proteolytic enzymes, papain, kimopapain and lysozyme as well as carpain alkaloids, pseudo carpaina, glycosides, carposides, saponins, sucrose, and decrose. According to [6] the enzymes chymopapain, papain and lipase can help break down nutrient rations so as to increase the digestibility and efficiency of nutrient ration utilization. Eleazu et al [7] reported that papaya leaves contain 0.80% saponins, 6% alkaloids, 0.43 mg/100g tannins, 6.7% flavonoids, and 0.62 mg/g HCN.

Sharma and Ogbeide [8] stated that papain in papaya leaves is useful in assisting in the regulation of amino

acids and helps remove toxins in the body which will later help the work of internal organs, namely the liver as

a detoxifier of toxic compounds and a means of excreting metabolites that are not useful for the body in chickens. itself [9]. And can help kidney function through the breakdown of compounds that can be said to be toxic and produce ammonia, urea, and uric acid by utilizing amino acids and nitrogen. Kidneys can also get rid of some toxins and other foreign substances produced by digestion such as pesticides, drugs, and additives [10].

In addition, papaya leaves can increase appetite and palatability in livestock [11]. The composition of papaya leaves according to [12] that 100 grams of papaya leaves contain vitamin C, vitamin E, niacin and beta carotene which are quite high at 11.565 mg, papaya leaves also contain 5-6% tannin [13] and limit the use of tannins. in the ration of 0.33% [14] from various research results tannin compounds can be physically reduced by heating and drying.

Papaya leaves can also produce a fragrant aroma that can stimulate chickens to consume rations thereby increasing body weight of KUB chickens [15]. According to [16] that rations containing papaya leaf flour produce a fragrant aroma that can stimulate chickens to consume and the bitter taste of papaya leaf flour is not felt so it does not cause a decrease in ration consumption.

Widyamanda [17] stated that papaya leaves contain flavonoids which have properties that can activate lipase enzymes. The lipase enzyme will convert excess fat in the body into fatty acids and glycerol so that there is no accumulation of fat in the body of chickens so that the more flavonoids in papaya leaf flour, the lower the percentage of abdominal fat percentage in chickens. Wahdini [18] reported administration of papaya leaf extract up to 75 ml/l resulted in a live weight of 951.80-1.034.00 g/head with an average yield of 982.70 g/head. As for abdominal fat, it ranged from 1.21% to 1.67%, which is still in the normal range. The use of papaya leaf flour up to a level of 3% in broiler feed was not significant effected the live weight of 1,562 g within 5 weeks. Besides, the higher of papaya leaf flour addition can reduced the final body weight [19]. Therefore, this study aims to determine the level of utilization of papaya leaves (*Carica papaya L*) in feed on the performance of live weight, internal organs (liver and kidney) and abdominal fat in KUB Chicken.

Table 1. Average ration consumption, weigh gain and ration, ration conversion during the KUB chicken study

Treatment	Consumption	Weigh gain	Conversion
A (0% papaya leaf flour)	319.99	86.99	3.58
B (2,5% papaya leaf flour)	318.07	86.51	3.62
C (5% papaya leaf flour)	320.01	90.86	3.47
D (7,5% papaya leaf flour)	316.24	87.73	3.61
E (10%, papaya leaf flour)	311.89	83.84	3.74

2. MATERIAL AND METHODS

2.1. Material

This study was used Kampung Unggul Balitnak (KUB) Chicken, which is produced by PT. Source of Indonesian Poultry (SUI), A total a selected 100 DOC from the 200 chickens that have been provided.

2.2. Methods

This study was conducted with 5 treatments and 4 replications (consisted of 5 KUB chickens). Treatment (A): Ration with 0% Papaya Leaf Flour Treatment (B): Ration with 2.5% Papaya Leaf Flour Treatment (C): Ration with 5% Papaya Leaf Flour. Treatment (D): Ration with Papaya Leaf Flour 7.5%. Treatment (E): Ration with 10% Papaya Leaf Flour.

The performances variable of this study has consisted of feed consumption, body weight gain, and feed conversion ratio. The following variables were also carried out from this study: live weight, internal organs, and abdominal fat in KUB chickens. Live weight was obtained from the results of weighing an animal's body weight while it was still alive after being fasted for 12 hours at the end of the study. The weight of internal organs was calculated by weighing the liver and kidneys separately. The percentage of abdominal fat (%) was obtained by comparing the weight of abdominal fat with live weight (g) multiplied by 100%. The data were analyzed using the analysis of variance with the Completely Randomized Design (CRD) performed by the SPSS Program.

3. RESULT AND DISCUSSION

3.1 The Effect of Treatment on Performance of Feed Consumption, Body Weight Gain and Feed Conversion Ratio of Feed of KUB chickens

The feed consumption, body weight gain, and feed conversion ratio of KUB chicken fed by addition of papaya leaf flour were showed in Table 1. The results of the study were non-significant effect on giving papaya leaf flour to a level of 10% on the feed consumption. The content of bioactive substances (alkaloids, triterpenoids, steroids, flavonoids, saponins, and tannins) contained in

papaya leaves in the treatment did not affect the feed consumption of KUB chicken rations.

Widodo [14] stated that the feed containing 0.33% tannin does not harm poultry, but if the tannin content reaches 0.5% it will have an effect on growth. The results that have no significant effect are due to the composition of the KUB chicken ration because the energy and protein balance to a level of 10% is almost the same. Sagala [20], reported that the equality of energy levels in the feed caused the amount of feed consumed in each treatment to be almost the same. In line with [21] that the application of 4% papaya leaf flour in laying quail feed was increased the feed consumption and feed conversion ratio, otherwise at the 6% was reduced consumption and feed conversion.

The provision of papaya flour to a level of 10% in KUB chicken rations is still a safe level to be used as feed in KUB chicken rations for ration consumption. The previous study was reported that the provision of papaya flour to a level of 9% 8% and 12% has not significantly effect on feed consumption, for quail, broiler and laying hens [22,23,24].

The body weight gain of KUB chicken did not have a significant different. The condition related with the feed consumption which was also not different. The provision of papaya leaf flour to a level of 10% has no significant effect on the feed conversion ratio. The results of this study were similar with previous study, which reported that the provision of papaya flour. The addition of 3% has no significant effect on live weight of broiler chickens [19], 2.5% papaya leaf extract in broiler drinking water has no significant effect on water consumption, feed consumption, weight gain and feed conversion ratio [25], 1.5% of papaya leaf juice in drinking water has no significant effect on feed consumption, drinking water consumption, body weight gain, and feed conversion ratio [26].

3.2. The Effect of Treatment on Live Weight, Internal organs and Abdominal fat of KUB Chickens

The live weight, internal organ and abdominal fat of KUB chicken fed by addition of papaya leaf flour were showed in Table 2. The provision of papaya leaf flour up

to 10% had no significant effect on live weight, internal organ and abdominal fat of KUB chickens. The non-significant live weight of KUB chickens in the study was due to the non-significant difference in the feed consumption and body weight gain (Table 1). The similar of feed consumption was produced the same energy and protein. The difference in consumption in KUB chickens because the papain enzyme content which is expected to be able to convert complex proteins into simple proteins that can be digested by the digestive tract does not have an effect on the treatment. This is due to the drying of papaya leaves, resulting in the papain enzyme content in papaya leaves being damaged.

Liver is the largest organ in the body reddish brown color consisting of two large lobes and located in the arch of the duodenum and gizzard. The liver has a complex function, among others, in the metabolism of carbohydrates, fats, proteins and iron. The average results of the study on the effect of using papaya leaf flour in each treatment at the end of the study can be seen in Table 2. The papaya leaves was contained a 5-6% of tannin and the limit for the use of tannins in the 0.33% ration [13] in papaya leaf flour can still be tolerated by chickens and does not have a negative impact on chicken liver with the use of 10% papaya flour. In addition, the papain in papaya leaves which is expected to be useful in helping remove toxins in the body that helps the internal organs in the liver as a detoxifier of toxic compounds does not affect the treatment, this is due to the drying of papaya leaves, resulting in damaged papain enzymes. Meanwhile, the average liver percentage reported by [27] regarding the use of papaya leaf flour on internal organs in native chickens ranged from 1.99-2.70% of the slaughter weight of native chickens aged 12 weeks. Furthermore, [28] explained that the increase in crude fiber with the addition of mulberry up to 20% in the ration has no significant different on liver weight.

Kidneys are paired organs, brown in color on the dorsal belly of chickens. The shape of the kidney is generally complex in that the kidney consists of 3 to 4 lobes where the pyramidal lobules in the multilobar kidney are separated by connective tissue and blood vessels. Kidneys are very important kidney function, the main function of which is to filter waste substances in the body both from food and toxic substances. The

Table 2. Average live weight, internal organs and abdominal fat of KUB chickens in the study.

Treatment	Body weight	Internal organ		Meat mass
		Kidney	Heart	
A (0% papaya leaf flour)	1021	0.48	2.24	0.38
B (2.5% papaya leaf flour)	1025	0.63	2.1	0.205
C (5% papaya leaf flour)	1047	0.63	2.77	0.304
D (7.5% papaya leaf flour)	1014	0.7	2.6	0.273
E (10%, papaya leaf flour)	972	0.71	2.89	0.462

percentage of KUB chicken kidneys was 0.47-0.71 of live weight. The similar of kidney percentage of this study was caused by tannin content in papaya leaves that reach 5-6% and the limit for the use of 0.33% rations [13] in papaya leaf flour which can still be tolerated by chickens and does not have a negative impact on the internal organs of the kidneys. Meanwhile, the average kidney percentage reported by [27] regarding the use of papaya leaf flour on internal organs in native chickens ranged from 0.25-0.31% of live weight. Subekti [29] reported that normal kidney size in chickens ranges from 1-2.6% of live weight.

Abdominal fat is a waste in broiler carcasses and its presence is considered as a decrease in carcass quality. The average percentage of KUB chicken was ranged from 0.20-1.46 g/head. The difference in the percentage of abdominal fat up to 10% was not significant due to the significant difference in live weight and ration consumption. The presence of phytochemicals such as flavonoids in papaya leaf flour does not affect the absorption of fat by the digestive system of broiler chickens. According to [30] stated that the percentage of abdominal fat in poultry ranged from 0.73 to 3.78 g/head. Feeds with high energy content are a factor in the formation of abdominal fat, excess energy is stored in the form of fat in the stomach and is attached to internal organs. Abdominal fat weight tends to increase with age.

4. CONCLUSION

The study concludes that providing papaya leaf flour with different levels of up to 10% in the feed has resulted in similar feed consumption, body weight gain, feed conversion ratio, live weight, internal organs, and abdominal fat KUB chicken.

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