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The Effect Of Fermenting Papaya Leaf Flour As A Feed Addition To Broiler Chicken Performance

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Abstract. Papaya leaves are one of the wastes that are commonly used as feed additives because they have good quality and are commonly used as medicine in livestock. This study aims to determine the effect of adding papaya leaf flour as a feed additive on the performance of broiler chickens. The study was conducted experimentally using a completely randomized design (CRD) with five treatments with five replications, namely P1 = ration without the addition of fermented papaya leaf flour, P2 = ration with the addition of 3% fermented papaya leaf flour, P3 = ration with the addition of 6% papaya leaf flour. Fermentation, P4 = ration with the addition of 9% fermented papaya leaf flour, P5 = ration with the addition of 12% fermented papaya leaf flour. The research parameters were feed consumption, body weight gain, and feed conversion. The results showed that the use of fermented papaya leaf flour up to 12% had a significant effect ($P < 0.05$) on consumption, body weight gain, and conversion. The study's conclusion showed that adding fermented papaya leaf flour as a feed additive of 12% was more efficiently used to improve broiler performance.

Keywords : body weight gain, consumption, feed additives, fermented, papaya leaves flour

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1. Introduction

Poultry is one of the largest providers of animal protein sources. [1] states that poultry's most significant meat contributor is 1.9 million tons, and egg production at 2.0 million tons. Broiler chicken, or broiler, is one type of poultry producing meat as animal protein for humans. This is the cause the demand for broiler chicken meat is increasing yearly to 6.6%. Broiler chicken production reached 1,689,584 tons, while in the previous year, it was 1,628,307 tons [2].

Papaya contains some essential nutrients, especially vitamin A. Every 0.5 kg of papaya fruit contains nutrients: protein (2.5 g), carbohydrates (46 g), fat (0.5 g), vitamin A (10,000 SI), vitamin C (300 mg), thiamin (0.30 mg), riboflavin (0.27 mg), niacin (1.75 mg), calcium (0.15 g), magnesium (0.25 g), potassium (1 .15 g), sulfur (0.15 g), phosphorus (0.47 g), iron (0.02 g), silicon (0.02 g), chlorine (0.12 g), sodium (0. 2 g), and water (399 g) [3]. Papaya leaves have

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antinutrients or contain alkaloids, saponins, tannins, glycosides, and flavonoids. The results of the research by [4] showed that the addition of papaya leaf flour to 2.5% in the broiler chicken starter phase could reduce broiler chicken ration consumption (312.34) but can increase broiler body weight gain (223.45). The use of papaya leaf flour has reduced conversion feed (1,877). According to [5], using papaya leaf flour up to 2% can improve the performance of broilers in the finisher phase. Papaya leaves have a limit of use because, in addition to the benefits and content that is quite good, papaya leaves also contain antinutrients in the form of tannins which can affect the use of protein and the function of amino acids. Before use, papaya leaves are dried and processed into flour. This serves to reduce the antinutrient content contained in it and make it easier for broilers to consume them [6]. The use of papaya leaves can increase the protein content of feed so that the body weight of broiler chickens increases. Increasing broiler chickens' body weight will positively affect the profits of broiler rearing.

2. Materials and methods

This research was conducted at the Jamson Barus Farm in Dusun II Lau Rakit, Lau Rakit Village, Sinembah Tanjung Muda Hilir District, Deli Serdang Regency, from September to October 2021.

The tools used are experimental cages with a size of 20 meters x 10 meters on stage cages, 20 pieces of feed, 20 drinking places, one incandescent lamp 40 watts as a source of lighting, 15-watt incandescent lamps as many as 20 pieces as a source of heating in the room. Starter period, analytical balance, stationery and calculator, hand spray, thermometer (℃), plastic for daily feed.

The materials used in this study were 100 broiler chickens DOC, broiler chicken ration treatment (milled corn, rice bran, fish meal, soybean meal, papaya leaf flour, premix, vegetable oil), Rodalon as a disinfectant for cages and equipment, vitachick as vitamins, KMnO4 and formalin as fumigation ingredients, drugs such as ND vaccine and gumboro.

2.1. Research Method

The study was carried out experimentally using a completely randomized design (CRD) consisting of 5 treatments and four replications. Each treatment consisted of 5 broiler chickens.

The treatment is the substitution level of Eko enzyme fermented papaya leaf flour as follows:

1. P0: Without the addition of papaya leaf flour, Eko enzymes fermented
2. P1 : 3% papaya leaf flour Eko enzyme fermentation
3. P2: 6% of papaya leaf flour fermented by Eko enzymes

4. P3: 9% Eco-enzyme fermented papaya leaf flour
5. P4: 12% Eco-enzyme fermented papaya leaf flour

2.2 Research Parameters

- Ration Consumption (g/head/week)
- Weight Gain
- Conversion Ration (FCR)

3. Result and Discussion

3.1. Feed Consumption (g/head/week)

The results obtained show the average consumption of broiler chicken feed in the following table.

Table 1. Effect of fermented papaya leaf flour on broiler chicken feed consumption (g/head/week)

Treatment	Test				Total	Everage
	1	2	3	4		
P0	319,60	322,97	318,60	319,00	1280,17	320,04[a]
P1	316,70	319,50	318,53	314,57	1269,30	317,33[a]
P2	308,77	308,73	309,30	300,63	1227,43	306,86[b]
P3	310,67	321,73	325,83	326,13	1284,37	321,09[a]
P4	324,87	321,43	311,80	317,77	1275,87	318,97[a]

Description: Different letter superscripts in the same column showed significant differences ($P<0.05$) in ration consumption.

"Table 1" shows the feed consumption of broiler chickens fed with fermented papaya leaves with Eko Enzyme, ranging from 306.86 to 321.09. The highest average feed consumption was found in the P3 treatment, 321.09 g/head, and the lowest feed consumption was found in P2 treatment, 306.86 g/head. The average ration consumption is lower than the study (Sarjuni and Mozin, 2011) which gave papaya leaf flour 3% - 12% in the starter phase that the consumption of broiler chicken rations fed with papaya leaf flour content in it resulted in an average ration consumption of 824.01 - 857 ,82 g/head/week. [7]

The low feed consumption as a result of this study could be caused by several factors, namely the use of old papaya leaves, so that they contain high carpain alkaloids, which cause a bitter taste, thereby reducing the level of feed consumption. According to Sarjuni and Mozin., (2011), the carpain substance in papaya leaves causes a bitter taste that affects the sense of taste in chicken and affects palatability. [8]

3.2. Weight Gain

The results of the research carried out obtained the average body weight gain of broiler chickens during the study, which can be seen in Table. 2

Table 2. Effect of fermented papaya leaf flour on broiler body weight gain (g/head)

Treatment	Test				Total	Everage
	1	2	3	4		
P0	188,03	189,60	184,00	186,70	748,33	187,08^{c}
P1	187,07	188,60	188,03	187,07	750,77	187,69^{c}
P2	182,53	200,80	194,93	196,50	774,77	193,69^{c}
P3	219,73	225,27	219,33	212,33	876,67	219,17^{b}
P4	233,13	228,70	229,97	242,20	934,00	233,50^{a}

Description: Different letter superscripts in the same column show a significant difference ($P<0.05$) in body weight gain of broiler chickens

In “Table 2,”. it can be seen that the highest average body weight gain was found in treatment P4 which was 233.5 g/head, and the lowest feed consumption was found in treatment P0, which was 187.08 g/head. The average body weight gain as a result of the study was much lower than the study by [1], with the results of the average body weight gain reaching 442.62 – 415.52 g/head/week. The low weekly body weight gain was caused by the fiber content of fermented papaya leaf flour used containing high crude fiber. [8] mentioned that the addition of fermented papaya leaf flour in broiler chicken feed had a significant ($P<0.05$) effect on the body weight gain of broiler chickens. The high content of crude fiber in papaya leaf flour is caused by the use of old papaya leaves. The addition of papaya leaf flour improves the quality of feed. It increases the feed's protein content, so the higher the additive's addition, the protein content also increases. This protein content affects body weight gain. More protein feed increases the body weight of broiler chickens.

3.3. Conversion Ratio (FCR)

The results of the research that have been carried out obtained the average value of broiler feed conversion during the study can be seen in “Table 3”. Based on the feed conversion data in “Table 3”, it can be seen that the lowest average feed conversion was found at P4, which was 1.43 g/head, and the highest feed conversion was found at P0, which was 1.90 g/head. The results showed better results than research by [1] which stated that the feed conversion value of broiler chickens fed with papaya leaf flour and turmeric flour with an average feed conversion value of 2.065 - 1.866. This shows that the feed with the addition of a dose of fermented papaya leaf flour is more efficient because it produces a smaller feed conversion. [9]

Table 3. Average dry matter digestibility of golden snail flour in feed for seven days (%)

Treatment	Test				Total	Everage
	1	2	3	4		
P0	1,86	2,00	1,87	1,88	7,60	1,90[a]
P1	1,90	1,87	1,85	1,73	7,35	1,84[a]
P2	1,78	1,72	1,77	1,67	6,94	1,73[b]
P3	1,51	1,55	1,55	1,52	6,13	1,53[c]
P4	1,42	1,42	1,44	1,43	5,72	1,43[d]

Description : Different letter superscripts in the same column showed significant differences ($P<0.05$) in feed conversion

The analysis of variance showed that the addition of fermented papaya leaf flour in broiler chicken feed significantly reduced the feed conversion ratio of broiler chickens. The feed conversion ratio is the amount of feed given to produce one kilogram of live weight of chickens. If the feed conversion ratio is high, the use of rations is less efficient and causes the application of nutrition and feed conversion to be less good. Vice versa, if the feed conversion ratio is lower, the body weight gain is higher [10].

Conclusion

Based on the research, it is known that adding fermented papaya leaf flour as a feed additive as much as 12% treatment is the most optimal and efficient way to improve the performance of broiler chickens.

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