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## Inclusion Different Level of Papaya Leaves Meal (*Carica papaya* L.) in Pellet Ration on Performance in Broiler Chickens

To cite this article: Y Sari *et al* 2020 *IOP Conf. Ser.: Earth Environ. Sci.* **515** 012001

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# Inclusion Different Level of Papaya Leaves Meal (*Carica papaya* L.) in Pellet Ration on Performance in Broiler Chickens

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**Abstract.** Good broiler performances require adequate feed and suitable feeding management. Papaya leave contains vitamin C 140 mg, vitamin E 136 mg, vitamin B1 0.15 mg, fat 2.0 mg, calcium 35.3 gram, phosphor 63 mg and iron 0.80 mg as well as some enzymes such as *chymopapain*, *papain* and *lipase* which able to degrade complex bond then increase the efficiency of nutrient digestibility and utilization in ratio. The aim of this study was to determine the effect of inclusion of papaya leaf flour at pellet ration on broiler performance including feed consumption, body weight gain and feed conversion ratio. This research used a Completely Randomized Design (CRD) with 4 treatments and 4 replications. The treatments were T<sub>1</sub>: 0% Papaya leaf flour in ration formulation, T<sub>2</sub>: 3% Papaya leave meals in ration formulation, T<sub>3</sub>: 6% Papaya leave meals in ration formulation and T<sub>4</sub>: 9% Papaya leave meals in ration formulation. The result showed that there was a significant effect ( $P < 0.05$ ) of treatment on feed consumption, but not significant ( $P > 0.05$ ) on body weight gain and feed conversion ratio. The result suggest that the inclusion of papaya leave meals up to 9% into pellet ration may not alter broiler performance.

**Keywords:** Papaya Leaf Flour, Broiler, Performance Broiler

## 1. Introduction

Broiler business development is inseparable from the existence of ration as one of the main support in the production process. The use of the ration in the cost of production reaches 70-75% [1] Generally, feed ingredients used for poultry rations such as corn, soybean meal also largely consumed by humans. In addition, these feed ingredients mostly have been imported from abroad. This facts lead to increase the cost much due to the competition with human needs as well as transportation costs and tax..

Currently, the using of leave meals of plants as feed ingredients as alternative to conventional feed resources is growing interest of research in animal feed. Utilization of agricultural wastes can be used as an appropriate alternative to minimize the high cost of feed. One of the alternatives plantation leave is papaya. Some reasons it could be used as an ingredients of feed such as cheap, accessible and sustainability which is expected to enhance the look of the poultry production. Production papaya plants in Riau province according to data from the Central Bureau of the statistics in 2015 was 7,038 tonnes/ha with the highest production in the city of Pekanbaru about 1,641 tons / ha [2]. Papaya leave content crude protein about 21.89%, which was taken on to the rod 17 from its head down until the



leaves which still green [3]. It was reported that reported that flour papaya leave contains 30.12% crude protein, 10.20% water, 5.60% crude fiber, ether extract 1.20%, ash 8.45% and 44.43% BETN [4]. In addition, [5] revealed that crude protein of papaya leave has been reported relative high (11.41-13.15%). Furthermore, it was revealed that papaya leave contain moisture (57.01%), fat (2.01%), ash (2.18%), protein (6.50%), crude fibre (3.10%) and carbohydrate (29.20%). Vitamins C (68.59 mg/100g), Beta carotene (303.55 mg/100g), B1 (199.31 mg/100g), B2 (295.63 mg/100g) and vitamin E (39.78 mg/100g). [6]. [7] reported that administration of papaya leaf meal up to 9% in the ration significantly affected feed consumption, body weight gain and feed conversion in broiler chickens. Furthermore, [8, 9] reported that administration stew papaya leaf extract to 25 ml and 35 ml were added to the drinking water did not affect performance in broiler chickens. However, research by the addition of papaya leaf meal in the form of pellets has not been done. Provision of papaya leaf meal in chicken feed can be supplied in dry form, namely in the form of pellets.

Based on the problems mentioned above, the purpose of this study was to determine the effect of feeding pellets made of different levels. flour papaya (*Carica papaya*. L) on performance of broilers chickens including feed intake, body weight gain (UN), and feed conversion ratio (FCR).

## 2. Methods

This study used 48 day old chicks of broiler (CP 707), divided into six teen cages, each flock consisted 3 chicks. Feeder and waterer, and 60 watts of hanging bulb lamp as heater were placed at the middle of each flock. During three weeks (1-21 days) chicks were fed with commercial feed (Charoen Pokphand Tbk). Then from 22 to 35 days old, chickens were given treatment rations. The experiment rations were:

- T1 : basal ration control without papaya leave meals
- T2 : 100% basal ration + 3% papaya leave meals
- T3 : 100% basal ration + 6% papaya leave meals
- T4 : 100% basal ration + 9% papaya leave meals

Table 1 show the composition and nutrient content of rations. A Completely Randomized Design (CRD) was tested with 5 treatments; each treatment was replicated 3 times. Analysis of Variance (ANOVA) was used to analyze data and the difference among treatments were tested by using Duncan's Multiple Range Test. The analyzed variables were feed intake, body weight gain feed conversion rations.

### 2.1 Source and processing Papaya leaves

Fresh green papaya leaves used for this study were harvested within Pekanbaru city. Each batch of collection was air-dried. Papaya leaves used in this study were taken from the papaya leaf stalk into three or four from the bottom. Then, papaya leave were dried when they became crispy to the touch. They were then milled, using a hammer mill

Ration formulation and nutrient content of the treatment is presented in Table 1.

**Table 1.** The ration formulation and Nutrition Treatment (100 grams)

Feed ingredients	Treatment			
	T1	T2	T3	T4
Corn	33,00	33,00	33,00	33,00
rice bran	42.30	42.30	42.30	42.30
Concentrate	10,00	10,00	10,00	10,00
Papaya leave meals	0,00	3.00	6.00	9.00
Fish flour	9.70	9.70	9.70	9.70
molasses	5.00	5.00	5.00	5.00
amount	100.00	103.00	106.00	109.00
Nutrient				
	T1	T2	T3	T4
Energy (Kcal /	3,040.12	3,077.02	3,113.92	3,150.82

Kg)				
Crude protein (%)	18.42	19.08	19.74	20.39
Crude fat (%)	2.74	2.98	3.22	3.47
Crude Fiber (%)	5.72	5.88	6.05	6.22
Ca (%)	0.64	0.67	0.70	0.73
P (%)	0.38	0.40	0.41	0.43
Papain (%)	0,00	0.16	0.32	0.48

### 3. Results and Discussion

#### 3.1 Feed consumption

The average value of feed intake (g/bird) broilers during the study are presented in Table 2.

Table 2. The mean value of Broiler ration consumption (g / bird). of broiler chicken ay Week 4<sup>th</sup> and 5<sup>th</sup>

Flour treatment	Mean	
Papaya leaf	28 days	35 days
T1 (0%)	1,088.33 ± 31,13 <sup>b</sup>	1,076.33 ± 29.02
T2 (3%)	1,004.75 ± 60,12 <sup>a</sup>	1,093.33 ± 20.87
T3 (6%)	952.58 ± 38,06 <sup>a</sup>	1,008.92 ± 45.29
T4 (9%)	936.00 ± 63,54 <sup>a</sup>	973.00 ± 99.68

Note: Data were Mean ± Standard Deviation

Results of analysis of variance showed that administration of papaya leaf meal pellets significantly ( $P < 0.05$ ) on feed consumption of broiler age of 4 weeks. The average consumption was obtained in the 4<sup>th</sup> week of the study ranged from 936.00 to 1,088.33 g/bird. Duncan Multiple test results further showed that feed intake T1 treatment were significantly different ( $P < 0.05$ ) compared with treatments T2, T3 and T4. The treatments T2, T3 and T4 significantly decreased feed intake compared to T1 treatment. This difference was might be due to the treatments T2, T3 and T4 might change ration taste and affected the palatability of the ration. [10] stated that the factors that can affect the palatability of feed consumption was influenced by smell, taste, texture and color of feed given.

A decrease in feed consumption at treatment T2, T3 and T4 was also suggested to be caused by those color of these diets darker than control diet. The sense of sight chicken has great sensitivity to color due to the color stimulus received by the eye's retina and can distinguish colors with different sensitivity levels. Different effects on the retina can lead to changes in patterns of behavior [11]. The color of the light rations and activities will increase the aggressiveness of chicken as well as affect the increase in feed consumption [12].

The decrease in feed consumption 4<sup>th</sup> week allegedly because the presence of substances carpain the bitter taste of papaya leaves that affect the senses of taste in the chicken. This is consistent with the statement [13] that the chicken has a sense of taste (taste) to taste bitter and salty, sweet and sour so the chicken can taste the food tasted bitter. This is consistent with research [7] that more and more use of papaya leave meal will further lower the chicken feed consumption.

Results of analysis of variance showed that administration of papaya leaf meal pellet was not significant ( $P > 0.05$ ) on feed consumption of broiler age of 5 weeks. Average consumption of broiler ration at the age of 5 weeks in treatment T1 = 1,076.33 g / head, T2 = 1,093.33 g / head, T3 = 1,008.92 g / tail and T4 = 973.00 g / head.

Feed intake did not differ in fact the 5<sup>th</sup> week allegedly because the chickens in this study had experienced adaptation ration ration treatment so that consumption is higher than feed intake 4<sup>th</sup> week. Chicken able to adapt to the amount of feed and management timing of feed so it can regulate feed intake to meet the energy and protein needs by reducing consumption when blood sugar rises and glucose carried by blood flow to the liver (Ferket and Gernat 2006).

If the feed consumption accumulated results of this study, the feed consumption in this research much higher (2,131.2 g/bird) compared with [7] which used papaya leaf meal in the ration basal mash (857.2 g / bird) ,

### 3.2 Body Weight gain (BWG)

The average value of BWG broilers (g /bird) during the study are presented in Table 3.

Table 3 Body Weight Gain (g / bird) of broiler chicken at week 4<sup>th</sup> and 5<sup>th</sup>.

Treatment Papaya Leaf Flour	Mean	
	28 days	35 days
T1 (0%)	326.78 ± 13.10	308.33 ± 30.96
T2 (3%)	344.43 ± 25.88	320.03 ± 85.77
T3 (6%)	310.90 ± 10.36	296.53 ± 56.22
T4 (9%)	325.77 ± 49.56	285.00 ± 35.86

Note: Information:Data are Mean ± Standard Deviation

Results of analysis of variance show that the use of papaya leaf meal in broiler feed pellets was not significant ( $P > 0.05$ ) on body weight gain (UN) broilers. This was presumably because each treatment arranged between the iso-energy 3,040.12 to 3,150.82 Kcal / Kg (Table 3). [14] stated that in order to achieve optimal growth rates in accordance with the genetic potential, the necessary foods that contain nutrients qualitatively and quantitatively the required cattle. [15] stated that the body weight gain was influenced by the actions of farmers, ambient temperature, type of livestock and nutrition contained in the ration.

No differences of BWG in this study also suggested due to the low initial body weight of broilers at the beginning of treatment and lower feed intake ration treatment (age 21 days), which ranged from 783.33 to 784 g/chicks. [16] stated that the increase of initial body weight can increase body weight gain. [17] stated that the increasing of BWG is associated with the feed, both the quantity and quality of feed. In terms of quantity related to the consumption of feed consumption of feed which if disturbed it will interfere with growth.

### 3.3 Feed Conversion ration (FCR)

The average value of the conversion ration (FCR) of broilers during the study are presented in Table 4

Table 4 The mean value of conversion ration (FCR) of broiler chicken at 4<sup>th</sup> and 5<sup>th</sup>

Treatment Papaya Leaf Flour	Mean	
	Sunday 4th	Sunday All 5
T1 (0%)	3.37 ± 0.11	3.32 ± 0.13
T2 (3%)	3.21 ± 0.48	3.95 ± 0.32
T3 (6%)	2.94 ± 0.32	3.49 ± 0.66
T4 (9%)	2.73 ± 0.20	3.46 ± 0.67

Note: Information:Data are Mean ± Standard Deviation

Results of analysis of variance showed that administration of papaya leaf meal in broiler feed pellets at the age of 4 and 5 weeks was not significant ( $P > 0.05$ ) on feed conversion of broiler. Feed conversion value in this research ranged from 2.73 to 3.95 lower compared to research [17] the value of broiler feed conversion were obtained with the addition of flour betel leaf (*Piper betle* L) was between 3 , from 44 to 5.27.

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Author(s) : Edi Erwan, Yunita Sari, Evi Irawati  
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Dear Author(s),

We are pleased to inform you that, your paper has been accepted for Oral presentation in the the International Conference on Sustainable Agriculture and Biosystem 2019 (ICSAB 2019). On behalf of the Organizing Committee, we would like to invite you to attend the ICSAB 2019, and present your paper/poster/. The Conference will be held on November 12-13, 2019 in the Kriad Bumi Minang Hotel, Padang West Sumatra Indonesian

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Dear Edi Erwan

We are pleased to inform you that the committee has decided that your abstract entitled 'Inclusion different level of Papaya Leaf Flour (*Carica papaya* L) in Pellet ration on Performance in Broiler Chickens' presentation at the International Conference on Sustainable Agriculture and Biosystem 2019, which will be held in Padang, 12-13 November 2019. Congratulations!

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11.15-11.30	Evy Rossi Akhyar Ali , Raswen Efendi. Fajar Restuhadia, Yelmira Zalfiatri, Tengku Sa (University Of Riau)	Lady C. E. Ch. Lengkey, I Wayan Budiastara, Kudang B. Seminar, Dan Bambang S. Purwoko (Sam Ratulangi University)	Feri Arlius, Renny Eka Putri, Ashadi Hasan (Andalas University)	Sandra, Reny Eka Putri, Gunomo Djoyowasito, Satria Nata Wijaya (University Of Brawijaya)	Dego Yusa Ali, Dodyk Pranowo, Wenny Bakti Sunarharum, Yuniar Ponco Prananto, Chavia Zagita Larasati Tansil (University Of Brawijaya)	Nurhayani (Sumatra Utara University)
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11.30- 11.45	Erny J.N.Nurali, Thelma D.J Tuju Rawung, Elisabeth M.Meray (Sam Ratulangi University)	Eri Gas Ekaputra, Isril Berd, Feri Arlius, Delvi Yanti, Fadli Irsyad (Andalas University)	Bambang Susilo, Mochamad Bagus Hermanto, Arif Mujahidin, Gunomo	Iwan Taruna, Bambang Marhaenanto, Dian Purbasari (University Of Jember)	Deni Novia, IndriJuliarsi (Andalasa University)	Fajri Anugroho, Evi Kurniati, Zavira Riananda, Ashri Nuraini (University Of Brawijaya)