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### Original Article

# THE EFFECT OF WATER LETTUCE MEAL FLOUR ON THE PERCENTAGE OF CARCASS AND PROTEIN IN KAMPUNG CHICKEN

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### ABSTRACT

The quality of feed is Main factor in supporting production of kampung chickens, Water lettuce meal (*Pistia stratiotes*) is one of the plants that is contains nutrients needed by kampung chickens because Water lettuce meal have high crude protein content (23,57%). This study was conducted on the effect of giving Water lettuce meal flour to the percentage of carcass and protein of kampung chicken meat as one of the sources of protein for kampung chicken. The method used in this study was a completely randomized design (CRD) consisting of five treatments and three replications. Each test consisted of 3 kampung chickens. The total number of chickens used was 45 with treatment (P). The use of Water lettuce meal flour in each treatment was different, namely P0 0%, P1 5%, P2 10%, P3 15% and P4 20%. The results of variance showed that the average carcass percentage obtained in this study was P0 (67.51%), P1 (69.33%), P2 (69.47%), P3 (68.76%) and P4 (70.88%) while for protein content in breast meat was P0 (25.21%), P1 (26.03%), P2 (25.43%), P3 (25.86%) and P4 (25.35%). Provision of Water lettuce meal flour did not have a significant effect ( $P > 0.05$ ) on carcass percentage and protein content of super chicken meat but could be used as feed ingredients that could substitute other feed ingredients such as soybean meal and fish meal.

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### INTRODUCTION:

Increased population and productivity of poultry balanced with the availability of feed ingredients to be formulated into rations, because the feed ingredients that contain substances Enough nutrition to meet the needs of poultry both in terms of quality and quantity will support the growth and productivity of poultry to get maximum results. The nutrients referred to here are food substances such as carbohydrates, proteins, fats, vitamins and minerals that must be contained in feed ingredients that will be formulated into rations.

The development of kampung chickens has constraints including low levels of production both meat and eggs associated with the maintenance and feeding system'. Increased production of kampung chicken can be done through improving the quality and quantity of feed with an intensive maintenance system.

Main factor in supporting production in kampung chickens is the quality of feed. Even though we have livestock with gene quality the best but is not supported by the quality of the feed it will affect the growth of these animals'. Quality feed is feed that can meet the nutritional needs of kampung chicken animals both protein, fat, carbon dioxide, vitamins and minerals. Feed is food or intake consumed by livestock derived from various types of feed ingredients that have been processed or unprocessed to meet the nutritional needs of the animal alone.

Water lettuce meal (*Pastia stratiotes*) is one of the plants that is contains nutrients needed by kampung chickens because Water lettuce meal have high crude protein content (23,57%) Budiarti, 2018 in. Water lettuce meal is also a plants that can be found in water areas such as lakes, ponds, rice fields to even puddles of water and including growing bodies multiply.

Based on the data, a study was conducted on the effect of giving Water lettuce meal flour to the percentage of carcass and protein of kampung chicken meat as one of the sources of protein for kampung chicken.

### Materials and methods

The design applied in this study was the Design method Completely randomized (CRD) consisting of 5 treatments and 3 replications. Each test consisted of 3 kampung chickens, the total number of chickens used was 45 with treatment (P), namely:

P0: Standard feeding without using Water lettuce meal flour.

P1: Standard feeding with the addition of 5% Water lettuce meal flour

P2: Standard feeding with an additional 10% of Water lettuce meal flour.

P3: Standard feeding with the addition of 15% Water lettuce meal flour.

P4: Standard feeding with the addition of 20% added Water lettuce meal flour.

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### A. Preparation in the Maintenance of Kampung Chickens

Stages before raising super original chickens in this study, namely:

#### a. Cage

Prepare materials for use in making cages bulkheads such as bamboo, blocks, and others. Then make a cage with an area of 60 x 60 cm each, then sanitize the cage using disinfectant or detergent and then sprinkle the husk as a base with a thickness of 7 cm. Prepare a kampung chicken with an age of 3 months that will be maintained for 30 days. The treatment was applied to chickens from a period of 3 months until the completion of the study. The number of chickens used in this study was 45 tails, which were randomly selected and then put into a bulkhead cage where each bulkhead was filled with three chickens, then the enclosure is equipped with 15 watts LED lights of 2 pieces.

#### b. feed

##### 1) Water lettuce meal (Pistia stratiotes)

Water lettuce meal plants used in this study were taken in Bantaeng, south sulawesi Indonesia. Taken in a fresh state and then dried in the sun for several days depending on the weather at the time of drying. After drying, then milling is done to change the physical form of the material into flour.

##### 2) Ratio Formulation

Table 1. Nutrient content of Water lettuce meal flour

Nutrient content	Percentage (%)
Water	16.94
Crude Protein	35.74
Crude Fat	7.67
Rough fiber	15.87
Extract material without nitrogen /BETN	16.65
Ash	24.07

Table 2. The ingredients of the research ration

Feed Ingredients	Treatment				
	P0 (%)	P1 (%)	P2 (%)	P3 (%)	P4 (%)
Corn	54	53	53	53	53
bran	10	9	8	7	6
fish flour	10	9	7	5	3
Soybean meal	26	24	22	20	18
Water lettuce meal flour	0	5	10	15	20

Table 3. Nutritional Content of the Research Ration

Nutritional Content	Total				
	P0	P1	P2	P3	P4
Protein (%)	16.2	16.11	16.12	16.3	16.3
Energy Metabolism/EM (Kkal/Kg)	2821.5	2808.71	2808.03	2807.35	2806.67
Cude fat (%)	4.12	4.29	4.46	4.63	4.8
Rough fiber	3.94	4.47	5.01	5.55	6.09

### B. Observed parameters

The parameters measured in this study were the percentage of carcass and carcass protein. Sampling was conducted at the end of the study, then weighing is done to determine the carcass weight and test the protein content of meat on each object of research (kampung chicken). Here is how to get results based on observed parameters

#### 1. Percentage of Carcass

How to get a percentage value of carcasses According is doing calculations using the following formula :

Carcass Protein (%)

$$\frac{V \times N \times 14 \times 6.25 \times P}{\text{Sample weight (mg)}} \times 100\%$$

explanation

V = Volume of titration

N = The Normality of H2SO4 solution

P = Dilution factor

### C. Data Analysis

The data obtained will be analyzed using the Completely Randomized Design (RAL). When the results of the research treatment have a significant effect, further tests will be carried out in the Ducan multiple region to see the difference in each treatment sample. According to Steel the mathematical model or formula of the Completely Randomized Design (RAL) is as follows:

$Y_{ij}$  = Observation value of the i- threatment of antibiotics and j- probiotics

$\mu$  = real average value

$\alpha_i$  = Effect of treatment at i level

$\epsilon_{ij}$  = error

I = P0, P1, P2, P3 (treatment)

j = 1,2,3, (repetition)

### Results

The results of a 30-day study based on the application of Water lettuce meal flour in the ration to the percentage of carcasses and protein of kampung chicken meat are presented in Table 4.

**Table 4. Average percentage of carcass and protein kampung chicken meat**

Parameter	Treatment					p value
	P0	P1	P2	P3	P4	
Percentage of carcass (%)	67.51	69.33	69.47	68.76	70.89	0.17
Meat protein (%)	25.22	26.04	25.43	25.87	25.36	0.96

The results of variance in the percentage of carcass and meat protein values were shown in table 4 shows that the application of Water lettuce meal flour had no significant effect ( $p > 0.05$ ) on the percentage of carcass and protein content of kampung chicken meat.

## Discussion

### 1. Percentage of carcass

Based on the data in table 4, it can be seen that the application of 20% Water lettuce meal flour in the P4 treatment with an average percentage of carcasses of 70.89% is higher than in the P0, P1, P2 and P3 treatments with levels Water lettuce meal flour starting from 0%, 5%, 10% and 15%.

The results of this carcass percentage study were higher compared to studies Iskandar which stated that the percentage of carcasses calculated based on body weight without feathers and without viscera compared with the average live weight of the two strains of chickens ranged 62.89% each for kampung chickens and 64.93% for cross-pelung chickens, while Indra – reported that the age of kampung chickens aged 12 weeks was around 53.04%. This is supported by the opinion of Iskandar stating that carcass weight is influenced by the type of chicken, ration, body weight, sex, and age.

Situmeang states that the average slaughter weight and percentage of kampung chicken carcass are 537.63 g/tail and 62.96%, respectively. Meanwhile, according to Kurniawan the percentage of kampung chicken at 12 weeks is 66.49% -69.35%.

According to Massolo reported that on average the percentage of carcasses obtained ranged from 66.37% -73.29%. This is in line with the opinion with the previous research North states that the percentage of broiler carcasses varies between 65 - 75% of body weight, the heavier the chicken is slaughtered, the higher the carcass is.

The amount of protein content in the ration is one of the elements needed for tissue growth. The amount of protein in the ration will affect the attainment of livestock body weight, as is the case by Soeparno, one of the most influential food substances the growth of carcass forming tissue is protein. This is supported by the opinion of Rasyaf which states that chicken body weight is influenced by the quantity and quality of feed consumed by livestock, so that differences in food feed ingredients and the amount of feed consumed will have an impact on the resulting weight gain due to the content of food substances that are balanced and sufficient in accordance with the needs needed for optimal growth.

Resnawati, states that the carcass weight produced influenced by several factors, namely age, sex, weight cut, size and conformation of the body, fat, quality and quantity of rations as well as the strain being maintained. Carcass weight is also influenced by body weight, where a large body weight will be followed by a large carcass weight and vice versa.

### 1. Meat Protein

The results of this study are testing meat protein levels breasts in kampung chickens fed with additional Water lettuce meal flour maintained for 30 days are shown in Table 4 with the highest value of protein content found in the P1 treatment (Standard feeding with the addition of 5% Water lettuce meal flour) was 26.04% while the lowest value of protein content was found in the P0 treatment (Standard feeding without using Water lettuce meal flour) was 25.22%.

The results of research on meat protein levels are higher when compared with Hartati which states that free-range chicken fed with 100% broiler feed gets an average protein content of around 19.38%. Lawrie in the previous year also reported that chicken protein content ranged from 16% to 22%, the chemical content of meat from livestock also varied greatly depending on age, nationality, species, stress, feed and sex. This is also supported by research by Aberle and Soeparno who report that chicken meat contains essential amino acids namely valine, tryptophan, threonine, methionine, leucine, isoleucine, lysine and histidine.

Susanti stated that the protein content in chicken meat free range of 23.05% greater than the protein content purebred chicken is 21.86%. This is in line with research conducted by Winedar with a range of broiler chicken protein protein values between 21.80% to 23.20%. Feeds with low protein content will be also has a low meat protein content. This research proves that the use of Water lettuce meal flour in feed can substitute the use of feed ingredients with protein content high like soybean meal and fish meal.

## Conclusion

The conclusions that can be conveyed in this study are as follows:

1. The application of Water lettuce meal flour at different levels in the ration formulation did not have a significant effect on the percentage of carcass and super chicken meat protein.

2. Provision of Water lettuce meal flour can be a food ingredient that can substitute other feed ingredients that contain high protein content such as soybean meal and fish meal.

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