



The Effect Performance and Percentage Carcass Kampung Chicken Given Fermented Dragon Fruit Peel (*Hylocereus polyrhizus*) on Drinking Water



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Keywords

carcass;
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performance;

Abstract

This experiment was conducted to find performance and percentage carcass of kampung chicken was given fermented dragon fruit (*Hylocereus polyrhizus*) peel on drinking water. This study was carried out 8 weeks at Mengesta village, Penebel district, Tabanan regency, Bali used Completely Randomized Design (CRD) consisting of 4 treatments and 5 replications each consisting of 4 kampung chickens. The treatments were drinking water without fermented dragon fruit peels (P0), drinking water with 2% fermented dragon fruit peels (P1), drinking water with 4% fermented dragon fruit peels (P2), and drinking water with 6% fermented dragon fruit peels (P3). The observed variables were performance and carcass. The results of study had a significant effect ($P < 0,05$) on wing percentage not significantly different ($P > 0,05$) on ration consumption, drinking water consumption, weight gain, weight final body feed conversion ratio, carcass percentage, chest percentage, thigh percentage, and back percentage. Based on the results of the study, it can be concluded that given fermented dragon fruit peel to drinking water at level 2% - 6% cannot increase performance dan percentage carcass of kampung chicken.

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1 Introduction

Kampung chicken is a dual-purpose livestock that can produce meat and eggs, but has relatively slow growth so it takes longer to raise so that meat production has not been maximized. The nutritional content in the ration also affects the productivity of kampung chickens, if the ration given is not in accordance with the needs it will have an impact on the growth and egg production produced. This is in line with [Dewi et al. \(2016\)](#) that livestock growth is affected by the nutritional content consumed. The ban on the use of AGP in rations has an impact on the growth and development of livestock, for this reason it is necessary to use alternative ingredients to replace the role of AGP. One of them is dragon fruit peel, dragon fruit peel contains 8,76% protein, 25,09% crude fiber, 1,32% fat, energy 2887 Kcal/kg, calcium 1,75% and phosphorus 0,30%. High crude fiber in dragon fruit skin can be overcome by fermentation technology. Fermentation is a chemical change process of food organic substances, which can increase digestibility, add aroma, and produce flavors that can cause increased palatability. The research results of [Suartiningsih et al. \(2018\)](#) stated that the provision of fermented dragon fruit peels was 7% and 9% in the ration on the increase in final body weight, body weight gain, FCR, and percentage of kampung chicken carcasses aged 2 – 10 weeks. Then research [Stradivari et al. \(2021\)](#) found that giving fermented dragon fruit skin juice as much as 1% and 3% through drinking water was able to increase chest weight, back weight, upper thigh weight and lower thigh weight of quail aged 4-6 weeks ([Savell et al., 2005](#); [Priolo et al., 2002](#)).

2 Materials and Methods

Place and time of research

This research lasted for 8 weeks (age 30-38 weeks) in Mengesta Village, Penebel District, Tabanan Regency.

Research design

The research design used was a completely randomized design (CRD), with 4 treatments and 5 replications and each replicate was filled with 4 chickens so that 80 kampung chickens were used. The treatment given in this study, among others: drinking water without dragon fruit peel (P0), drinking water added with 2% fermented dragon fruit peel (P1), drinking water added with 4% fermented dragon fruit peel (P2), and drinking water with 6% fermented dragon fruit peel (P3).

Cage

The cage used in this study was a battery colony cage measuring 80 cm x 65 cm x 50 cm made of bamboo. There are 20 cage plots with 4 chickens each ([Paris, 2002](#); [Katano et al., 2011](#)).

Making of fermented dragon fruit peel

Fermented dragon fruit peels are made by preparing fresh dragon fruit peels that have been cleaned and then cut into small pieces which are then mixed with tape yeast and stored under anaerobic conditions for 5 days, after being fermented, the dragon fruit peels are mashed and mixed with drinking water. The treatments given were: drinking water without dragon fruit peel (P0), drinking water given 2% fermented dragon fruit

peel (P1), drinking water given 4% fermented dragon fruit peel (P2), and drinking water given 6% peel fermented dragon fruit (P3) (Marco et al., 2017; Campbell-Platt, 1994).

Variable

The variables observed in this study were ration consumption, drinking water consumption, initial body weight, final body weight, body weight gain, FCR, carcass percentage, wing percentage, breast percentage, thigh percentage and back percentage (Jawad et al., 2021; Raj & Dash, 2020).

Data analysis

The data obtained were analyzed by means of variance, if there was a significant difference between treatments at 5% ($P < 0.05$), it would be followed by Duncan's multiple range test (Steel & Torrie, 1993).

3 Results and Discussions

The result of the research on the performance and percentage carcass kampung chicken were given fermented dragon fruit peel on drinking water.

Table 1
Performance kampung chicken 30 – 38 weeks

Variable	Treatment ¹⁾				SEM ²⁾
	P0	P1	P2	P3	
Ratio consumption (g/head/week)	682,91 ^a	686,40 ^a	734,15 ^a	741,53 ^a	39,20
Water consumption (ml/head/day)	193,45 ^a	207,95 ^a	221,68 ^a	224,13 ^a	19,75
Initial weight (g/head)	1005,35 ^a	1005,29 ^a	1005,35 ^a	1005,21 ^a	0,78
Final body weight (g/head)	1301,10 ^a	1038,30 ^a	1424,80 ^a	1368,70 ^a	72,22
Weight gain(g/head)	295,75 ^a	303,01 ^a	419,45 ^a	363,49 ^a	72,06
Feed Conversion Ratio (FCR)	1,45 ^a	1,44 ^a	1,34 ^a	1,32 ^a	0,18

Information:

1. The treatments given were: drinking water without dragon fruit peel (P0), drinking water given 2% fermented dragon fruit peel (P1), drinking water given 4% fermented dragon fruit peel (P2), and drinking water given 6% peel fermented dragon fruit (P3).
2. SEM: *Standrard Error of The Treatment Means*
3. Value with same letters in the same row show a not significant difference ($P > 0,05$)

The results of the research that has been done show that giving fermented dragon fruit skin juice through drinking water has no effect on the consumption of kampung chicken rations, this is because the energy and protein content in each treatment ration is the same so that the resulting ration consumption is the same. According to Scott et al. (1982) that the main factors for ration consumption are the content of metabolic energy, chicken body weight, temperature and fiber content in the ration. The different energy content of the ration causes the ration consumption of each animal to be different Puspani et al. (2015) so that the higher the energy content of the ration, the lower the ration consumption and vice versa.

Drinking water consumption of kampung chickens fed fermented dragon fruit peel juice resulted in increased consumption of drinking water compared to controls (P0) but was statistically not significantly different. This is presumably because the drinking water given to livestock has a relatively the same pH so it doesn't affect the stomach of chickens. The source of drinking water for livestock is also obtained from the

oxidation of fat or protein as much as $\pm 10\%$ in the ration. Yuliani & Indi (2017) consumption of drinking water is influenced by the environmental temperature of livestock and the quality and quantity of the rations given (Murphy et al., 1996; Chandler et al., 1993).

The final body weight of kampung chickens fed fermented dragon fruit peel juice via drinking water was higher than the control although it was statistically not significantly different ($P > 0.05$). This is because the use of yeast *Saccharomyces cerevisiae* on tape yeast can increase the population of lactic acid bacteria in the intestine. so that the absorption of nutrients that occur in the intestine runs optimally. The yeast content of *Saccharomyces cerevisiae* in the fermentation process is able to degrade crude fiber and increase the protein content in feed ingredients (Bidura et al., 2012). FCR or feed conversion ratio is the ratio of ration consumption to body weight gain or egg weight. The results of research that has been done that kampung chicken given fermented dragon fruit peel juice in drinking water has the highest FCR value compared to the control treatment (P0) but statistically not significantly different ($P > 0.05$). The use of probiotics added to livestock rations and drinking water can prevent infection and the number of pathogenic bacteria in the digestive tract so that nutrient absorption can be maximized (Hidayat 2010). This is in line with Suartiningsih et al. (2017) giving dragon fruit skin fermented using yeast *Saccharomyces cerevisiae* in rations can help the performance of digestive tract microbes which have an impact on low conversion of rations.

Table 2
Percentage carcass kampung chicken 30 – 38 weeks

Variable	Treatment ¹⁾				SEM ²⁾
	P0	P1	P2	P3	
Carcass (%)	56,76 ^a	58,35 ^a	58,76 ^a	60,04 ^a	1,23
Wing (%)	13,25 ^b	11,57 ^{ab}	12,88 ^{ab}	11,40 ^a	0,56
Chest (%)	25,02 ^a	27,35 ^a	25,76 ^a	26,55 ^a	0,89
Thigh (%)	33,56 ^a	32,87 ^a	29,78 ^a	32,86 ^a	1,58
Back (%)	28,17 ^a	28,21 ^a	31,58 ^a	29,18 ^a	1,19

Information:

1. The treatments given were: drinking water without dragon fruit peel (P0), drinking water given 2% fermented dragon fruit peel (P1), drinking water given 4% fermented dragon fruit peel (P2), and drinking water given 6% peel fermented dragon fruit (P3).
2. SEM: *Standrard Error of The Treatment Means*
3. Value with same letters in the same row show a not significant difference ($P > 0,05$)

The percentage of kampung chicken carcasses fed dragon fruit peel juice fermented with yeast *Saccharomyces cerevisiae* was higher than the control treatment (P0) but statistically not significantly different. This is because the absorption of energy and protein in the digestive tract of free-range chickens affects the carcass produced. Dewi et al. (2013) that the percentage of carcass is influenced by the head, neck, legs, feathers, blood, and viscera. The high percentage of carcasses was also influenced by lactic acid bacteria and total bacteria that play a role in the digestive tract of free-range chickens to be able to digest and absorb nutrients so that it was higher than the control treatment (P0). The percentage of kampung chicken wings and thighs fed fermented dragon fruit peel juice was significantly lower than the control treatment (P0). This is presumably because the composition of the bones in the wings is more bone so that the weight of the wings in the control treatment is higher. The wing is the part of the carcass which consists of bones and there are many feathers, which causes the percentage of wings to be lower than the other parts. Massolo et al. (2016) stated that the small amount of meat deposits in carcass parts is affected by the large percentage of bones.

The percentage of kampung chicken breast that was given dragon fruit peel juice was higher than the control treatment (P0) but was not statistically significant. This is because the nutritional content in the rations of each treatment is the same so that protein consumption in the metabolized ration is used for

protein synthesis, namely the formation of meat muscle because amino acids are the main component for the synthesis of meat muscle.

The percentage of kampung chicken backs that were given dragon fruit peel juice was higher than the control treatment (P0) but was not statistically significant. This is because the back is not the place where the main deposition of meat occurs so that during the growth period, nutrients for the formation of meat are found in the place where the deposition of meat occurs. The back is the part that is dominated by bones and has less potential to produce meat ([Ilham, 2012](#)).

4 Conclusion

Based on the result of the study it can be concluded that the use 2% - 6% given fermented dragon fruit peel juice cannot increase performance and percentage carcass of the kampung chicken.

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