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THE EFFECT OF GIVING FERMENTED SAGO DRAIN IN THE RATION ON THE QUALITY OF PEKING DUCK CARCASSES

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ABSTRACT

Ducks are one of the sources of high-quality animal protein, receiving attention in meeting human consumption needs. However, the cultivation of Peking ducks, which have great potential as meat producers, is still carried out extensively and has not been optimal in Indonesia. This study aims to investigate the effect of fermented sago pulp in rations on the quality of carcasses and abdominal fat of Peking ducks. The research method involved the provision of fermented sago pulp in Peking duck rations, with a focus on evaluating the quality of carcasses and abdominal fat. Peking ducks. This study used an experimental method while the design used was a completely randomized design (CRD) with 4 treatments and 3 replications so that there were 12 experimental units. The results showed that the provision of fermented sago pulp in rations showed a significant impact on live weight, carcass weight, carcass percentage, and abdominal fat of Peking ducks. Based on ANOVA analysis and DMRT test, the provision of fermented sago pulp increased all of these parameters at a significance level of P <0.01. Treatment D with 100% fermented sago dregs produced the highest live weight of 1.29 kg and the highest carcass weight of 576.11 gr, significantly different from other treatments.

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Introduction

Peking ducks are a very potential meat-producing poultry besides chickens. One of the advantages of this poultry is that it has resistance to disease when compared to broiler chickens, so the maintenance process is much easier and does not have a high risk of death. In Indonesia, the duck livestock population is very large, from data from the Directorate General of Animal Husbandry and Animal Health from 2015 to 2019 there was a significant increase of 51,950 ducks (Munawar et al., 2019). The results of this data show that most farmers come from rural communities, but the Peking duck cultivation system in rural areas is not carried out intensively. Peking

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duck cultivation in rural areas has not implemented feed processing technology, farmers only rely on providing bran for duck feed.

Requesthigh market and cheap price of male DOD (day old duck) make local ducks widely farmed by poultry farmers. Peking duck is one of the best broiler chicken with relatively faster weight gain compared to other types of broiler duck (Avian et al., 2016). Peking duck growth is fast because it is able to consume large amounts of feed (Wakhid, 2013). The slaughter age of Peking duck varies between 8 to 10 weeks. At the age of 7-9 weeks, the body weight of male Peking duck ranges from 3-4 kg/head, female 3-3.5 kg/head (Muliani, 2014).

The maintenance of Peking ducks as meat ducks is still carried out in relatively small numbers and is still extensive. The impact of this maintenance is slow duck growth and low quality of meat produced. Increasing duck productivity needs to be done to produce superior and productive livestock, while encouraging the development of meat duck businesses in the country (Daud et al., 2016). One way to improve the appearance of ducks that are specifically used as meat ducks is through improving feed quality. Feed improvements are expected to produce meat ducks that have superior carcass production and better meat quality.

Feed cost is the largest cost of total poultry farming production cost, while feed is an important factor in supporting livestock productivity. The high price of conventional feed is a major obstacle for farmers to maintain their business continuity. Therefore, steps that can be taken to reduce production costs are very necessary in order to maintain optimal livestock productivity. One solution to reduce feed costs is to utilize local feed ingredients found around the farm location. Feed ingredients must be sufficiently available, affordable and not compete with human needs and still have nutritional value.

Local feed raw materials are any materials that are local Indonesian resources that have the potential to be used as animal feed (Sukria and Krisnan, 2019). The use of local feed is usually adjusted to the location and availability of sufficient and diverse feed ingredients, therefore each farmer has a different feed formulation by prioritizing the use of local feed ingredients. This utilization should not compete with human needs, the price is cheap and the potential is abundant. (Zainuddin, 2014).

Alternative local feed ingredients that can be used are sago pulp which is waste from sago plant processing after the starch is removed. Based on the results of the analysis of the Nutrition and Chemistry Laboratory of UIN Suska Riau (2014), the nutritional content of sago pulp BK (Crude Weight) 47.20%, PK (Crude Protein) 0.83%, SK (Crude Fiber) 11.44%, LK (Crude Fat) 0.99%, Ash 1.80% and BETN (Nitrogen-Free Extract Material) 84.94%, and the fiber content of sago pulp ADF (Acid Detergent Fiber) 13.79%, Lignin 10.34%, NDF (Neutral Detergent Fiber) 39.65%, Cellulose 1.74% and Hemicellulose 39.65%. In terms of availability, sago pulp has the potential to be used as animal feed. The utilization of sago pulp which is agricultural waste has the potential to be used as duck feed. This is because the duck's digestive tract from the ileum, cecum and colon functions as a fermenter organ for the growth of cellulolytic bacteria. Fermentative digestion by cellulolytic bacteria in the duck's digestive tract can degrade crude fiber into an energy source (Sutrisna, 2018).

The limiting factor for the potential use of sago pulp waste as poultry feed is because its crude protein content is low and it has high crude fiber. To obtain feed that is rich in protein and vitamins in sago pulp waste, sago pulp is processed using fermentation technology. Fermentation is one method to increase nutritional value

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that is in accordance with the characteristics of tofu pulp raw materials because the process is relatively easy and the results are palatable so that they are easier to give to livestock (Liu et al., 2015), (Mustaqim, et al., 2023), (Mustaqim and Zulkifli, 2022), (Mustaqim et al, 2020). According to Chilton et al. (2015) fermented feed is feed that has been treated with the addition of microorganisms or enzymes until biochemical changes occur and will subsequently result in significant changes in the feed ingredients. The fermentation process has advantages, including having no negative side effects. Fermentation technology aims to increase the protein content of sago pulp by up to 14%.

Weight gain is influenced by the amount of consumption and the nutritional content of the feed. The results of Kadek's (2016) study stated that the use of fermented sago pulp at a level of 9% can increase the amount of feed consumption, increase body weight and reduce the conversion of starter phase duck rations. This opinion is in line with the results of research conducted by Ziraa'ah (2013) which stated that the use of fermented sago pith in feed had a very significant effect on the carcass weight of Serati ducks aged 8 weeks. This is because the quality of fermented sago pith with other feed ingredients can be optimally digested properly so that it produces more meat. Based on the description above, the author is interested in conducting a study entitled "The Effect of Providing Fermented Sago Pulp in Rations on the Carcass Quality of Peking Ducks".

Materials and Methods

Time and Place

This research was conducted in a duck pen in Ujong Blang Village, Kuala District, Bireuen Regency and the process of making Fermented Sago Pulp was carried out in the FAPERTA Laboratory of the National Islamic University of Indonesia. This research was conducted from 2023 to February 2024.

Method

This study used an experimental method while the design used was a completely randomized design (CRD) with 4 treatments and 3 replications so that there were 12 experimental units. Each replication consisted of 2 Peking ducks. The treatments given are as follows: (Sylvia, 2018)

A = Main Feed + Fermented Sago Pulp 25%
B = Main Feed + Fermented Sago Pulp 50%
C = Main Feed + Fermented Sago Pulp 75%
D = Main Feed + 100% Fermented Sago Pulp

Work procedures

Cage Preparation

The cage used in this study was 4 m x 7 m in size, divided into several cage blocks measuring 100 cm x 100 cm. Each block was filled with 3 Peking ducks.

Test Feed Preparation

The procedures and techniques for fermenting sago pulp in this study are:

1. The sago pulp waste is first put into a shredding machine to reduce its size, then the next step is to shred the sago pulp and dry it in the sun until dry, then sift it to separate the sago flour from the fiber.
2. Dry sago pulp flour is moistened until moist (wet), then steamed for 30 minutes or until it feels sticky.
3. The steamed/cooked sago dregs are left to cool completely, then weighed and urea is added as much as 3% of the weight of the wet sago, then stirred until evenly mixed, then add Aspergillus niger as much as 3-5 grams/kg of sago, then mix until homogeneous.
4. Sago dregs that have been given yeast (Aspegillus niger) are placed in a clean container, free of water

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and oil, then tightly closed until opened after 48-72 hours.

5. Sago dregs that have undergone perfect fermentation have the following characteristics:
   a) The aroma smells very fruity or smells like sticky rice tape,
   b) The color is a bit reddish
   c) The texture is soft and the taste is slightly sweet.
6. The fermentation results are then dried in the sun or using a drying machine until dry and ready to be packaged or used as poultry feed rations.

Feeding

Feeding is done for all ages of ducks. Ideally, the size of the feed is adjusted to the size of the duck's mouth opening. In this study, the Peking ducks used were 1 month old. The amount of feed needed for a 1-month-old Peking duck is 108 grams/head/day (Adriani et al., 2016). Feeding is done in the morning and evening.

Observation Parameters

Weight of iduLiduLidup

Live weight or slaughter weight is the weight of the duck's body that is weighed before being slaughtered and after fasting. Fasting is done for 6-12 hours, but drinking water is still given ad libitum.

Carcass Weight

Carcass is the final product and clean product of slaughtered livestock that has gone through the process of slaughtering, plucking feathers, removing the innards and abdominal fat and cutting the head, neck, and legs or commonly called feet. Carcass weight is influenced by live weight, if the live weight is large then the carcass weight will also be large. Calculation of carcass weight is done by weighing the live weight then subtracting the weight of the poultry part that has been removed from the feathers, head, neck, innards and legs then calculating the carcass percentage. According to Subekti et al. (2018) carcass weight can be calculated using the following formula:

Carcass weight = Live weight – (feathers, head, feet, viscera, blood and neck)

Carcass Percentage

Carcass percentage (%), is obtained from the calculation of carcass weight (g) divided by the live weight of the poultry (g) then multiplied by 100%. Carcass percentage calculation formula:

$$\text{Carcass Percentage (\%)} = \frac{\text{Carcass Weight (g)}}{\text{Live Weight (g)}} \times 100\%$$

Abdominal Fat

Abdominal fat (g), abdominal fat weight is obtained from weighing abdominal fat (abdominal fat) using gram units. Percentage of abdominal fat (%) is obtained from the calculation of abdominal fat weight (g) divided by carcass weight and then multiplied by 100% (Salam et al., 2013).

$$\text{Abdominal Fat Percentage (\%)} = \frac{\text{Abdominal Fat Weight (g)}}{\text{Carcass Weight (g)}} \times 100\%$$

Data analysis

Data analysis in this study used a Non-Factorial Complete Random Design with the following formula;

$$Yij = \mu + \tau i + \varepsilon ij$$

Yijk = MarkObservations obtained from the experimental unit at level i and repetition j
μ = Averagegeneral
τi = The influence of the i-th Peking duck
εij = The influence of residual factors in the i-th treatment on the j-th transportation time

Table 1. Variance Analysis

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Source of Diversity	Degrees of Freedom	Sum of Squares	Middle Square	F Count	F Table	
					5%	1%
Treatment	(t-1)	JKP	ID card	KTK/KTG		
Error	t (r-1)	JKG	KTG			
Total	tr-1	JKT				

If the F test results show a real treatment effect, then the difference in the mean value of the treatment is tested using the Duncan test at a real level of 5%. Manually, the Duncan test (Duncan Multiple Range Test or DMRT) can be calculated using the following formula,

$$\text{DMRT } \alpha = R\ (p,v,\alpha)\ .\sqrt{\frac{KTG}{r}}$$

Where :
R = Area ValueReal Duncan
p = treatment
v = Degrees of Error Freedom (DBG)
α = Level 0.05 (5%)
KTG = mean square error
r = Number of repetitions

Duncan's Testis a further test to find out which middle values are the same and which middle values are not the same when testing the homogeneity of several middle values gives results that reject the null hypothesis and accept the alternative hypothesis results. Duncan's test is based on a set of real difference values whose size increases, depending on the distance between the powers of the two middle values being compared. Can be used to test differences between all possible pairs of treatments regardless of the number of treatments.

Results and Discussion

Results

Weight of Peking Duck Life

Based on the ANOVA analysis, it shows that the provision of fermented sago pulp in the ration has a very significant effect (P<0.01) on the live weight of Peking ducks. The average value of the live weight of Peking ducks due to the provision of fermented sago pulp in the rationafter being tested using DMRT 0.05, it is presented in Table 2 below.

Table 2. Average live weight of Peking ducks

Treatment	Average
A	1.03 a
B	1.27 b
C	1.28 bc
D	1.29 c

Description: Numbers followed by the same letter in the same column are not significantly different at the P ≤ 0.05 level (DMRT test)

Based on table 2 above, it can be seen that the highest average weight of Peking ducks was in treatment D (Main Feed + 100% Fermented Sago Pulp) which was 1.29 kg which was very significantly different (P <0.01) from treatments A and B. While the lowest weight of Peking ducks was obtained in treatment A (Main Feed + 25% Fermented Sago Pulp) which was 1.03 kg which was very significantly different (P <0.01) from treatments B, C, and D. The results of the analysis of variance showed that the treatment had a very significant effect on the live weight of Peking ducks. This shows that in general the average value of live weight in treatments A, B, C, and D contributed differently to the live weight in each treatment. Statistically, the provision

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of fermented sago pulp in the ration had a very significant effect (P <0.01) on live weight, but seen from each treatment D (Main Feed + 100% Fermented Sago Pulp), tended to be better than other treatments. This is because the level of fermented sago pulp given in the ration can increase live weight.

Peking Duck Carcass Weight

Based on the ANOVA analysis, it shows that the provision of fermented sago pulp in the ration has a very significant effect (P<0.01) on the carcass weight of Peking ducks. The average value of the carcass weight of Peking ducks due to the provision of fermented sago pulp in the rationafter being tested using DMRT 0.05, it is presented in Table 3 below.

Table 3. Average carcass weight of Peking ducks

Treatment	Average
A	424.44 a
B	461.11 a
C	523.89 b
D	576.11 c

Description: Numbers followed by the same letter in the same column are not significantly different at the P ≤ 0.05 level (DMRT test)

Based on table 3 above, it can be seen that the highest average carcass weight of Peking ducks was found in treatment D (Main Feed + 100% Fermented Sago Pulp) which was 576.11 grams, which was very significantly different (P <0.01) from treatments A, B, and C. Meanwhile, the lowest carcass weight of Peking ducks was obtained in treatment A (Main Feed + 25% Fermented Sago Pulp) which was 424.44 grams, which was very significantly different (P <0.01) from treatments C, and D but not significantly different (P>0.01) from treatment B. This is because treatment D uses 100% fermented sago pulp, thus providing optimal nutritional balance and increasing feed metabolism efficiency compared to other treatments. This increase in efficiency results in better growth and carcass weight. This is in line with research by Widjastuti et al. (2014) which shows that the use of fermented sago pulp in rations can reduce feed costs without sacrificing livestock performance, and can even increase body weight and feed efficiency.

Peking Duck Carcass Percentage

Based on the ANOVA analysis, it shows that the provision of fermented sago pulp in the ration has a very significant effect (P<0.01) on the percentage of Peking duck carcasses. The average value of the percentage of Peking duck carcasses due to the provision of fermented sago pulp in the rationafter being tested using DMRT 0.05, it is presented in Table 4 below.

Table 4. Average percentage of Peking duck carcasses

Treatment	Average
A	38.07 a
B	36.49 a
C	41.02 b
D	44.83 c

Description: Numbers followed by the same letter in the same column are not significantly different at the P ≤ 0.05 level (DMRT test)

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Based on table 6 above, it can be seen that the highest average percentage of Peking duck carcasses was found in treatment D (Main Feed + 100% Fermented Sago Pulp) which was 44.83% which was very significantly different (P <0.01) from treatments A, B, and C. While the lowest percentage of Peking duck carcasses was obtained in treatment A (Main Feed + 25% Fermented Sago Pulp) which was 38.07% which was very significantly different (P <0.01) from treatments C, and D but not significantly different (P>0.01) from treatment B. Carcass percentage can be influenced by body weight, livestock breed, gender, internal organs, and ration quality (Rizal, 2016). Rahardi (2015) stated that carcass percentage is the most important factor for assessing livestock production, because production is closely related to live weight. The higher the live weight, the higher the carcass production. Peking ducks with high body weight will produce a high carcass percentage, conversely, Peking ducks with low live weight will produce a low carcass percentage.

Peking Duck Abdominal Fat

Based on the ANOVA analysis, it was shown that the provision of fermented sago pulp in the ration had a very significant effect (P<0.01) on the abdominal fat of Peking ducks. The average value of abdominal fat of Peking ducks due to the provision of fermented sago pulp in the rationafter being tested using DMRT 0.05, it is presented in Table 5 below.

Table 5. Average abdominal fat of Peking ducks

Treatment	Average (gr)
A	19.76 a
B	19.91 a
C	20.37 b
D	20.44 b

Description: Numbers followed by the same letter in the same column are not significantly different at the P ≤ 0.05 level (DMRT test)

Based on table 5 above, it can be seen that the highest average abdominal fat of Peking ducks was found in treatment D (Main Feed + 100% Fermented Sago Pulp), which was 20.44 grams, which was very significantly different (P<0.01) from treatments A and B, but not significantly different from treatment C. Meanwhile, the lowest abdominal fat of Peking ducks was obtained in treatment A (Main Feed + 25% Fermented Sago Pulp), which was 19.76 grams, which was very significantly different (P<0.01) from treatments C and D, but not significantly different (P>0.01) from treatment B.

Discussion

Live Weight

Fermented sago pulp tends to have better nutritional content compared to unfermented sago pulp. The fermentation process can increase protein content, improve the digestibility of crude fiber, and reduce anti-nutrient content. Research by Yusuf et al. (2017) shows that fermentation of sago pulp using certain microorganisms can increase the nutritional value of sago pulp, which is very beneficial for animal feed. Fermentation of sago pulp can also increase the availability of nutrients for ducks. According to Suryani et al. (2015), fermentation increases feed digestibility because microorganisms break down complex components into simpler forms that are easily digested by animals. With 100% fermented sago pulp substitution, Peking ducks get more efficient and complete nutritional intake, thus supporting optimal growth.

Sago pulp contains several anti-nutritional components that can interfere with nutrient absorption. Fermentation is effective in reducing or eliminating these anti-nutritional components. This is

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supported by research by Fitriani et al. (2016) which found that sago pulp fermentation can reduce oxalate and tannin content, thereby increasing the nutritional value of the feed. Fermentation can also produce lactic acid and certain enzymes that are beneficial for duck intestinal health. According to Sugiharto et al. (2014), fermentation products such as lactic acid can help maintain the balance of intestinal microflora, improve digestibility, and overall health, which ultimately contributes to increased body weight.

The use of fermented sago pulp can help ducks develop healthier and more efficient intestinal microflora. Fermentation produces beneficial natural probiotics, such as Lactobacillus spp., which can improve the balance of intestinal microflora. According to research by Prasetyo et al. (2017), probiotics produced during fermentation can increase nutrient absorption and reduce the risk of intestinal disease, thereby supporting growth and weight gain.

Fermented sago pulp provides a more stable and sustainable energy source for Peking Ducks. According to research by Widyastuti et al. (2018), fermentation can increase the content of simple sugars that are easily accessible and used by ducks as an energy source. This stable energy source supports optimal metabolic activity, contributing to increased body weight.

Based on the description above, it can be seen that the highest live weight of Peking Ducks in treatment D (100% fermented sago pulp) can be explained by increased nutrient content, digestive efficiency, decreased anti-nutrients, and improved intestinal health caused by sago pulp fermentation. Sago pulp fermentation increases nutritional value and digestibility, which directly has a positive impact on the growth and live weight of livestock.

Carcass Weight

The results showed that the highest carcass weight was in treatment D with a value of 576.11 grams, which was very significantly different ($P < 0.01$) from treatments A, B, and C. This is because fermented sago pulp has better nutritional content compared to non-fermented sago pulp. The fermentation process increases crude protein content and improves the availability of other nutrients such as essential amino acids, which are important for duck growth. Research by Mahata et al. (2016) shows that fermentation of sago pulp using microorganisms such as Aspergillus niger can increase protein content and reduce crude fiber, making it easier for livestock to digest.

The fermentation process can increase the palatability (taste and aroma) of feed, so that feed consumption by ducks increases. Higher feed consumption is directly correlated with increased body weight and carcass. According to Prasetyo et al. (2014), fermentation of sago pulp using Rhizopus oligosporus can increase fiber and energy digestibility, which contributes to increased carcass weight. The microorganisms used in fermentation act as probiotics that are beneficial for the health of the duck's digestive tract. Probiotics can increase feed utilization efficiency, reduce disease, and improve the overall health of ducks. Sari et al. (2018) found that giving fermented feed to poultry increased digestive enzyme activity and nutrient absorption, which ultimately improved production performance.

Treatment D, which uses 100% fermented sago pulp, likely provides optimal nutritional balance and increases feed metabolism efficiency compared to other treatments. This increased efficiency results in better growth and carcass weight. Research by Widjastuti et al. (2014) showed that the use of fermented sago pulp in rations can reduce feed costs without sacrificing livestock performance, and can even increase body weight and feed efficiency.

Based on the research results, the use of 100% fermented sago pulp in the

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ration (Treatment D) resulted in the highest carcass weight of Peking ducks. This can be caused by increased nutrient content, palatability, digestibility of feed, and probiotic effects of fermentation. Fermentation of feed ingredients such as sago pulp can significantly improve the performance of poultry production.

Carcass Percentage

The provision of fermented sago pulp in the Peking duck feed ration showed a significant effect on the carcass percentage, where treatment D with a composition of 100% fermented sago pulp produced the highest carcass weight of 44.83%, which was very significantly different ($P<0.01$) compared to treatments A, B, and C. These results indicate that fermented sago pulp can function as a good source of nutrition for Peking ducks, significantly increasing the carcass percentage.

The high percentage of carcasses in treatment D can be explained by several factors. First, fermentation of sago pulp increases nutritional value, especially protein content and reduces crude fiber content. The decrease in crude fiber and increase in protein make sago pulp easier to digest and absorb by the duck's digestive system, thus increasing feed efficiency. Second, the fermentation process reduces the content of anti-nutritional substances such as phytate and tannin in sago pulp, which usually interfere with nutrient absorption. By reducing anti-nutritional substances, nutrient absorption in the duck's digestive tract becomes more optimal, supporting better muscle growth and development. Third, fermentation enriches the feed with beneficial microbes such as Lactobacillus which can improve digestive tract health. These microbes help improve nutrient digestibility and absorption, which contributes to increased carcass weight.

This is supported by research conducted by Setiawan et al. (2014) stating that fermented sago pulp can increase crude protein content and reduce crude fiber content, making it easier for poultry to digest and increase feed efficiency. Furthermore, Widodo et al. (2016) found that the use of fermented sago pulp in broiler chicken feed rations increased growth and feed efficiency, with a significant increase in carcass weight. Haryanto et al. (2018) reported that substitution of conventional feed with fermented sago pulp in local ducks showed an increase in carcass weight and feed efficiency, due to increased digestibility and decreased anti-nutrients. Rahman et al. (2019) showed that the use of fermented sago pulp as an alternative feed ingredient in broiler ducks resulted in increased carcass weight and meat quality, in line with increased nutrient digestibility. Prasetyo et al. (2021) found that feeding with fermented sago pulp content increased production performance and carcass quality in broiler chickens, supporting the use of fermented sago pulp as a high-quality feed.

Based on the description above, it can be concluded that fermented sago pulp has great potential as an alternative feed for Peking ducks, providing a significant increase in carcass percentage especially in high concentration treatments. These results are supported by increased nutritional value, decreased anti-nutrients, and improved digestive health that allows Peking ducks to optimize growth and muscle development.

Abdominal Fat

The highest abdominal fat in treatment D can be explained by several factors. Fermented sago pulp has increased nutritional value, especially higher metabolic energy content compared to raw materials. This increase causes higher energy consumption by ducks, which is eventually stored in the form of body fat, including abdominal fat. The high percentage of fermented sago pulp in the ration can reduce the balance of protein and

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energy in the feed, which causes increased fat deposition as compensation. The fermentation process increases the availability of nutrients and fiber digestibility, which can affect lipid metabolism in the duck's body.

Dewi et al. (2016) reported that the use of fermented ingredients in animal feed increases metabolic energy content which has an impact on increasing fat deposition. In addition, Yulianti et al. (2018) found that increasing energy levels in animal feed contributes to increasing body fat levels. Another study by Rahman et al. (2020) showed that the use of fermented ingredients in poultry feed can increase nutrient absorption and energy use efficiency, which leads to increased fat deposition in the body.

In addition to the factors mentioned above, it is important to consider the deeper mechanisms that occur in sago pulp fermentation. The fermentation process by microorganisms converts complex components such as starch into simple sugars and increases the content of free amino acids that are more easily digested by ducks. The increased availability of energy and nutrients contributes to the accumulation of body fat when the duck's energy needs have been met.

Research conducted by Santoso et al. (2015) showed that fermentation of feed ingredients increases nutrient content and bioavailability, which ultimately increases feed efficiency. This was also confirmed by Arifin et al. (2017) who found that fermentation of sago pulp increases levels of volatile fatty acids (VFA) which play a role in the energy metabolism of ruminant animals, although in poultry the role may be different but remains significant in increasing metabolic energy.

Furthermore, research by Wulandari et al. (2019) showed that increasing feed energy from fermented materials can cause increased fat deposits in certain body organs, including the abdomen. This study also showed that increased body fat levels due to high-energy feed can be anticipated by adjusting the protein-energy ratio in the feed.

Based on the description above, it can be concluded that treatment D with 100% fermented sago pulp provides a much higher energy content, which if not balanced with the energy needs for activity or growth, will be stored as body fat. Providing fermented sago pulp in Peking duck feed increases metabolic energy content, which significantly affects the increase in abdominal fat at a higher percentage level. This is important to consider in feed formulation to regulate the optimal balance of energy and protein to avoid excessive fat increase in livestock.

Conclusions

Based on research on the effect of providing fermented sago dregs in rations on the quality of Peking duck carcasses, the following results were obtained.

1. The effect of providing fermented sago dregs in the ration showed a significant impact on the live weight, carcass weight, carcass percentage, and abdominal fat of Peking ducks.
2. Based on ANOVA analysis and DMRT test, the provision of fermented sago dregs affected all of these parameters at a significance level of $P<0.01$. Treatment D with 100% fermented sago dregs produced the highest live weight of 1.29 kg and the highest carcass weight of 576.11 gr, significantly different from other treatments.

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