

The Utilization of Fermented Kepok Banana Peels on Feed Againsts The Percentage of Non Carcass of Local Male Sheep

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Abstract. This research aims to determine the effects of fermented kepok banana peel as feed by EM4 against the percentage of male local sheep non carcass. This research was conducted in Praditya Rahardja's Farm, Jalan Bunga Rinte, Kecamatan Medan Tuntungan, Kota Medan from July to October 2019. The design used was a completely randomized design (CRD) with 4 treatments and 5 replications so that 20 experimental units. While the sheep were cut for parameter of non carcass as much as 2 from each treatment to produce 8 sheep. The treatments given are P0 (40% kepok banana peel without fermentation in feed), P1 (20% fermented of kepok banana peel in feed), P2 (40% fermented of kepok banana peel in feed), and P3 (60 % fermented of kepok banana peel in feed). The parameters used were percentage of head weight without skin, feet without skin, skin, tail without skin, trachea and lungs, heart, liver, blood, intestine and compound stomach male local sheep.

The result showed that the utilization of fermented kepok banana peel as feed for local sheep had no significant effect on percentage of weight the head without skin, feet without skin, skin, tail without skin, trachea and lungs, hearts, and liver. But had significant effect on percentage of weight the blood, intestine, and compound stomach male local sheep.

Keyword: Kepok banana peel, fermentation, non carcass, male local sheep.

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1 Introduction

The issue of animal feed is a major consideration in the livestock business. The availability of feed throughout the year is an absolute requirement for the survival of livestock businesses. The cost to provide this feed occupies the largest portion of production costs, reaching 60-80%. The amount of the fee is determined by the type and breed of livestock [1].

Utilization of agricultural industrial waste is one way to find alternative sources of feed for livestock, especially the use of banana peel waste. Banana peels are a large amount of waste material (banana waste). In general, banana peels have not been used significantly, only disposed of as organic waste or used as animal feed such as goats, cows, and buffalo. A considerable amount of banana peels will have a beneficial selling value if they can be used as food raw materials [2].

These Based on data from the Central Statistics Agency in 2013 for the production of bananas in Indonesia in 2013 amounted to 6,279,290 tons or increased an increase of 90,238 tons or about 1.45% compared to 2012. Meanwhile, the production of bananas in North Sumatra Province in 2013 amounted to 342,298 tons. North Sumatra is the second largest banana producing province in Sumatra after Lampung Province. And in North Sumatra, bananas are the fruit plants with the highest production compared to other fruit plants. [3]

The results of chemical analysis showed that the composition of the kepok banana peel contained a lot of water, namely 68.90%, carbohydrate at 18.50%, crude protein 6.56%, fat 6.7%, and crude fiber 15.32% [4]. The relatively low protein content is an obstacle in the use of banana peels as animal feed. Various kinds of processing are carried out on feed ingredients with the aim of increasing the nutritional content, such as physical, chemical and biological processing, or their combination (fermentation). According to [5] states that the technology for improving feed quality is fermentation, with fermentation the nutritional quality of feed ingredients will increase.

Non carcass is the result of slaughtering cattle consisting of head, skin and fur, blood, internal organs, lower leg of the carpal joint for the front leg and tarsal joint for the rear leg. Feed can affect the weight gain of non carcass components. Sheep that consume feed with high energy content, have a heavier heart than sheep who consume feed with low energy content under conditions of maintenance in individual cages [6].

Based on this, the authors are interested in conducting research related to the utilization of fermented kepok banana peels in rations on the percentage of non-carcasses of local sheep.

2 Materials and Methods

This research were used rams 20 heads with weight average of $12,30 \pm 1,77$ kg. Composition of research feed ingredients were forage and concentrate which had different percentage of fermented or non fermented kepok banana peel. Starbio as fermentor of kepok banana peel (effective microorganism-4), medicines such as worm medicine (kalbazen), anti bloat for bloating and vitamins. Drinking water to meet the water requirement given ad libitum.

Equipment used include: individual cages 20 units and equipments, live weight scale and carcass weighing 50 kg with sensitivity 10 g, 2 kg weight scale with sensitivity 5 g for weighing feed.

2.1 Reseach Method

The experimental design used research was Completely Randomized Design (CRD) with 4 treatments and 5 repetitions. The treatments given are P0 (40% kepok banana peel without fermentation in feed), P1 (20% fermented of kepok banana peel in feed), P2 (40% fermented of kepok banana peel in feed), and P3 (60 % fermented of kepok banana peel in feed).

The parameters used were percentage of head weight without skin, feet without skin, skin, tail without skin, trachea and lungs, heart, liver, blood, intestine and compound stomach male local sheep.

Table 1. Composition of Research Feed Ingredients

| Feed Ingredients | Treatments (%) | | | |
|--|----------------|-------|-------|-------|
| | T0 | T1 | T2 | T3 |
| Kepok banana peel without fermentation | 40,00 | 0 | 0 | 0 |
| Fermented Kepok Banana Peel | 0 | 20,00 | 40,00 | 60,00 |
| Rice Bran | 12,00 | 35,00 | 20,00 | 7,00 |
| Palm Kernel Meal | 10,00 | 12,00 | 11,00 | 8,00 |
| Soybean Meal | 18,00 | 12,00 | 10,00 | 8,00 |
| Onggok | 14,00 | 15,00 | 13,00 | 11,00 |
| Molases | 5,00 | 5,00 | 5,00 | 5,00 |
| Premix | 1,00 | 1,00 | 1,00 | 1,00 |
| Total nutrisi | 100 | 100 | 100 | 100 |
| BK (%) | 59,03 | 73,19 | 59,23 | 45,20 |
| PK (%) | 15,62 | 15,83 | 15,77 | 15,63 |
| SK (%) | 11,08 | 9,33 | 9,82 | 10,14 |
| LK (%) | 4,87 | 5,37 | 5,36 | 5,47 |
| TDN | 60,99 | 64,38 | 63,07 | 61,67 |

3 Result and Discussion

3.1 Percentage of Head Without Skin

The percentage of head without skin obtained from headless skin weight divided by empty body weight multiplied by 100%. Average headless skin weights can be seen in Table 2.

Table 2. Percentage of head without skin

| Treatments | Repetition | | Average \pm sd |
|------------|------------|------|-------------------------------|
| | I | II | |
| T0 | 6,06 | 7,57 | 6,81 ^{ln} \pm 1,07 |
| T1 | 8,11 | 6,93 | 7,52 ^{ln} \pm 0,83 |
| T2 | 7,82 | 8,57 | 8,19 ^{ln} \pm 0,53 |
| T3 | 9,16 | 7,24 | 8,20 ^{ln} \pm 1,36 |

From Table 2. it can be seen that the average percentage of head without skin in sheep fed with kepok banana peel ranged from 6,81 \pm 1,07 % to 8,20 \pm 1,36 %. Based on [7] the percentage of head weight without local sheepskin fed fermented cocoa skin ranged from 9.33 \pm 0.70 to 10.04 \pm 0.93.

Based on the results of analysis of variance, it was found that the percentage of head without skin of male local sheep given kepok banana peels in feed did not have a significant effect. This is because the consumption of feed and the daily body weight gain of sheep fed with kepok banana peels have no significant effect, so that the percentage of headless skin weights also does not affect. In addition, the age of the sheep used during the study was relatively the same. This is in accordance with the opinion of [8] states that consumption of high nutrients increases the weight of the liver, rumen, large intestine, small intestine, and total digestive apparatus, but vice

versa for head and foot weight of treatment and nutrition as well as pasture and pangonan species in sheep do not affect the weight of the head, legs and skin at the same body weight.

3.2 Percentage of Foot Without Skin

The percentage of foot without skin is obtained from skinless foot weight divided by empty body weight multiplied by 100%. The average percentage of foot weight without skin can be seen in Table 4.

Table 4. Percentage of Foot Without Skin

| Treatments | Repetition | | Average \pm sd |
|------------|------------|------|------------------------------|
| | I | II | |
| T0 | 2,30 | 2,79 | 2,54 ^m \pm 0,35 |
| T1 | 2,83 | 2,70 | 2,76 ^m \pm 0,09 |
| T2 | 2,70 | 3,13 | 2,91 ^m \pm 0,30 |
| T3 | 3,16 | 3,18 | 3,17 ^m \pm 0,01 |

From Table 4. it can be seen that the average percentage of foot without skin in sheep fed with kepok banana peel ranged from 2.54 ± 0.35 to $3.17 \pm 0.01\%$. The same thing happened in the results of [9] The results showed that the percentage of local male feet which were fed with cassava tuber skins ranged from 3.25% to 3.35% higher than the weight of local sheep feet which were given skin cassava tubers without fermentation that is equal to 2.92%.

Based on the results of the analysis of variance that giving fermented kepok banana peel did not have a significant effect on the percentage of foot weight without skin. This is because leg weight is not influenced by nutrient consumption but is influenced by the age of the sheep and the age of the sheep used in this study is relatively similar. According to [8] states that high nutritional consumption does not affect foot weight at the same body weight.

3.3 Percentage of Skin

The percentage of skin is obtained from weight of skin divided by empty body weight multiplied by 100%. The average percentage of skin can be seen in Table 6.

Table 6. Percentage of skin (%)

| Treatments | Repetition | | Average \pm sd |
|------------|------------|-------|-------------------------------|
| | I | II | |
| T0 | 13,76 | 14,13 | 13,94 ^m \pm 0,26 |
| T1 | 12,91 | 14,18 | 13,54 ^m \pm 0,90 |
| T2 | 12,49 | 13,96 | 13,22 ^m \pm 1,04 |
| T3 | 19,37 | 16,35 | 17,86 ^m \pm 2,14 |

From Table 6. it can be seen that the average percentage of skin weights in sheep fed with kepok banana peels ranged from 13.22 ± 1.04 to $17.86 \pm 2.14\%$. Based on the results of [10] the percentage of skin weights that were given the waste media of fermented mushroom growing media ranged from 14.20 ± 1.84 to $15.00 \pm 1.27\%$.

The results of the analysis of variance showed that the administration of fermented kepok banana peels did not have a significant effect but, the percentage tended to increase. This is because the weight of sheep cut is directly proportional to the weight of the skin, so the greater the percentage weight of the slaughter, the greater the percentage of the skin weight. Percentage of sheep cut weight given fermented kepok banana skin gives a real effect and the weight tends to increase. This is consistent with the statement [11] which says that the skin weight and blood volume in sheep is directly proportional to the weight of the cut.

3.4 Percentage of Tail Without Skin

The percentage of tail without skin is obtained from weight of tail without skin divided by empty body weight multiplied by 100%. The average percentage of tail without skin can be seen in Table 8.

Table 8. Percentage of tail without skin (%)

| Treatments | Repetition | | Average \pm sd |
|------------|------------|------|-------------------------------|
| | I | II | |
| T0 | 0,19 | 0,18 | 0,18 ^{tn} \pm 0,01 |
| T1 | 0,25 | 0,24 | 0,24 ^{tn} \pm 0,01 |
| T2 | 0,22 | 0,30 | 0,26 ^{tn} \pm 0,06 |
| T3 | 0,19 | 0,30 | 0,24 ^{tn} \pm 0,08 |

From Table 8. it can be seen that the average weight percentage of skinless tails in sheep fed with kepok banana peels ranged from 0.18 ± 0.01 to $0.26 \pm 0.06\%$. The same thing happened in [7] in his research obtained the percentage of the weight of sheep given fermented cocoa skin ranged from $0.46 \pm 0.10\%$ to $0.70 \pm 0.23\%$. Based on the results of the study, it was found that the percentage of the tail weight without skin of sheep that was given the fermented kepok banana peel was higher than the percentage of the weight of the sheep which was given waste kepok banana skin without fermentation. This is because the weight of lamb pieces given by fermented banana peel waste is higher than the weight of lamb pieces given given banana peel waste waste without fermentation so that the tail weight is also higher. In addition, fat accumulation is not found in the tail but in the subcutaneous section so that there is no significant different effect on the percentage of the tail weight of the sheep. This is consistent with the opinion of [11] which states that fat deposition in local sheep is not in the tail, but in other parts such as viscera and under the skin.

3.5 Percentage of Trachea and Lungs

The percentage of trachea and lungs is obtained from weight of trachea and lungs divided by empty body weight multiplied by 100%. The average percentage of trachea and lungs can be seen in Table 9.

Table 9. Percentage of trachea and lungs (%)

| Treatments | Repetition | | Average \pm sd |
|------------|------------|------|-------------------------------|
| | I | II | |
| T0 | 1,49 | 1,83 | 1,66 ^{tn} \pm 0,24 |

| | | | |
|----|------|------|---------------------------|
| T1 | 2,24 | 1,74 | 1,99 ^{tn} ± 0,35 |
| T2 | 1,99 | 2,13 | 2,06 ^{tn} ± 0,10 |
| T3 | 2,08 | 1,21 | 1,64 ^{tn} ± 0,62 |

From Table 9. it can be seen that the average percentage of trachea and lungs weights in sheep given kepok banana peels ranged from 1.64 ± 0.62 to $2.06 \pm 0.10\%$. Based on the results of [12] the percentage of tracheal and lung weights in local sheep fed pods of fermented cocoa in the ration ranged from 2.67 to 2.88% higher than the percentage of tracheal and lung weights of local sheep given pods of cocoa without fermentation in the ration that is equal to 2.72%.

Based on the results of various analyzes that giving fermented kepok banana peel does not have a significant effect on the percentage of trachea and lung weights, however, the percentage tends to increase. This is because the slaughter weight and daily body weight gain of sheep given the fermented kepok banana peel waste is higher than that of sheep given the kepok banana peel waste without fermentation, so that the weight of the trachea and the lungs also differ. In addition, because the growth of the lungs has the same growth rate as other organs where if the age of cattle is younger then the growth of the lungs will increase so that the growth reaches adulthood. This is consistent with the statement [13] that the percentage of liver and lung weight decreases at an older age, due to the tendency for the growth of the liver and lungs that enter the early cooking class.

3.6 Percentage of Heart

The percentage of liver is obtained from weight of heart divided by empty body weight multiplied by 100%. The average percentage of heart can be seen in Table 10.

Table 10. Percentage of heart (%)

| Treatments | Repetition | | Average ± sd |
|------------|------------|------|---------------------------|
| | I | II | |
| T0 | 2,34 | 1,96 | 2,15 ^{tn} ± 0,27 |
| T1 | 2,32 | 2,17 | 2,24 ^{tn} ± 0,11 |
| T2 | 2,34 | 2,41 | 2,37 ^{tn} ± 0,05 |
| T3 | 2,68 | 1,71 | 2,19 ^{tn} ± 0,69 |

From Table 10. it can be seen that the average percentage of heart weight in sheep given kepok banana peels ranged from $2.15 \pm 0.27\%$ to $2.37 \pm 0.05\%$. This result is higher compared to the results of [9] which in his study obtained the percentage of weight of sheep heart which was given cassava skin tuber fermentation ranged from 1.74 to 2.28% and the percentage of weight of sheep heart which was given skin of cassava without cassava fermentation of 1.60%.

Based on the results of variations in the provision of fermented kepok banana peels in feed did not have a significant effect on the percentage of heart weight of local male sheep. This is because the consumption of sheep feed fed with fermented kepok banana peels does not have a real effect. However, the results of this study are higher than the results of [9]. In his study, the results obtained showed that the percentage of sheep liver weight given cassava peel skins ranged from 1.74 to 2.28% and the percentage of heart weight of sheep given tuber skin

unfermented cassava by 1.60%. According to [8] states that consumption of high nutrients increases the weight of the liver, lungs, heart, kidneys, rumen, omasum, large intestine, small intestine, and total digestive apparatus.

3.7 Percentage of Liver

The percentage of liver is obtained from weight of liver divided by empty body weight multiplied by 100%. The average percentage of liver can be seen in Table 11.

Table 11. Percentage of liver (%)

| Treatments | Repetition | | Average \pm sd |
|------------|------------|------|------------------------------|
| | I | II | |
| T0 | 0,69 | 0,64 | 0,66 ^m \pm 0,04 |
| T1 | 0,56 | 0,59 | 0,57 ^m \pm 0,02 |
| T2 | 0,57 | 0,77 | 0,67 ^m \pm 0,14 |
| T3 | 0,73 | 0,62 | 0,68 ^m \pm 0,08 |

From Table 11. it can be seen that the average percentage of liver in sheep fed with kepok banana peels ranges from 0.57 ± 0.02 % to 0.68 ± 0.08 %. The results of this study are higher than the results of [9]. Based on the results [9] in his study sheep given cassava tuber skin fermentation in rations obtained the percentage of heart weight ranges from 0.59 to 0.62% and the percentage of heart weight of sheep given cassava skin peel without fermentation in the ration by 0.57%.

Based on the analysis of variance results obtained that the administration of kepok banana peel did not have a significant effect. This is because the consumption of sheep feed fed with fermented kepok banana peels does not have a real effect. In addition, according to the statement of [6] which states that sheep that consume feed with high energy content, have a heavier heart than sheep who consume feed with low energy content under conditions of maintenance in individual cages.

3.8 Percentage of Blood

The percentage of blood is obtained from weight of blood divided by empty body weight multiplied by 100%. The average percentage of liver can be seen in Table 13.

Table 13. Percentage of blood (%)

| Treatments | Repetition | | Average \pm sd |
|------------|------------|------|------------------------------|
| | I | II | |
| T0 | 3,72 | 4,30 | 4,01 ^b \pm 0,41 |
| T1 | 5,01 | 4,98 | 4,99 ^a \pm 0,02 |
| T2 | 4,26 | 4,80 | 4,63 ^a \pm 0,38 |
| T3 | 5,46 | 5,22 | 5,34 ^a \pm 0,17 |

From Table 12 it can be seen that the average percentage of blood weight in sheep given kepok banana peels ranged from 4.01 ± 0.41 % to 5.34 ± 0.17 %. Based on the results of [7], the percentage of sheep blood weight given the skin of fermented cocoa ranged from 4.28 ± 0.22 to 4.35 ± 0.41 .

Based on the results of analysis of variance, it was found that the administration of the skin of the fermented kepok banana peels had a significant effect on the percentage of blood weight. This is because the higher the slaughter weight of the sheep, the higher the percentage of the sheep's blood weight. It is known from the results of the study that the daily body weight gain and slaughter weight of the sheep given by the fermented kepok banana peel had a significant effect and the percentage tended to increase. This is consistent with the statement [11] which states that the weight of the skin and blood volume in sheep is proportional to the weight of the cut.

3.9 Percentage of Intestine

The percentage of intestine is obtained from weight of intestine divided by empty body weight multiplied by 100%. The average percentage of intestine can be seen in Table 15.

Table. 15 Percentage of intestine (%)

| Treatments | Repetition | | Average \pm sd |
|------------|------------|-------|-------------------------------|
| | I | II | |
| T0 | 9,16 | 10,36 | 9,76 ^b \pm 0,85 |
| T1 | 12,64 | 11,40 | 12,02 ^b \pm 0,88 |
| T2 | 11,23 | 11,43 | 11,33 ^b \pm 0,14 |
| T3 | 14,27 | 12,64 | 13,45 ^a \pm 1,15 |

From Table 15 it can be seen that the average percentage of intestinal weight in sheep fed with kepok banana peels ranged from $9.76 \pm 0.85\%$ to $13.45 \pm 1.15\%$. Based on the results of [12] it was found that the percentage of intestine weight of sheep fed pods without fermentation was 5.72%, lower than the percentage of intestinal weight of sheep given pods of fermented cocoa, which ranged from 5.44 to 5.77%.

Based on the analysis of variance, it is known that the administration of fermented kepok banana peels has a significant effect on the percentage of intestinal weight. This is because the growth rate is in line with the increase in the weight of the digestive tract of sheep. The results of the study showed that the weight of sheep cut given a fermented kepok banana peel was higher than the cut weight of sheep given a kepok banana peel without fermentation. In addition, sheep fed with fermented kepok banana skin get good nutrition, because the fermentation process aims to increase the nutritional content of the feed. This is in accordance with the statement of [14] which states that the rate of growth of some non carcass components is almost the same as the rate of growth of the body, for example abomasum and large intestine reach maturity almost the same as the body.

3.10 Percentage of Compound Stomach

The percentage of compound stomach is obtained from weight of compound stomach divided by empty body weight multiplied by 100%. The average percentage of compound stomach can be seen in Table 17.

Table 17. Percentage of compound stomach (%)

| Treatments | Repetition | | Average \pm sd |
|------------|------------|-------|-------------------------------|
| | I | II | |
| T0 | 24,19 | 28,03 | 26,11 ^b \pm 2,72 |
| T1 | 36,23 | 32,08 | 34,15 ^a \pm 2,93 |
| T2 | 34,11 | 33,70 | 33,90 ^a \pm 0,29 |
| T3 | 43,55 | 37,93 | 40,74 ^a \pm 3,97 |

From Table 17, it can be seen that the average percentage of compound stomach weights in sheep fed with banana skins ranged from $26.11 \pm 2.72\%$ to $40.74 \pm 3.97\%$. Based on the results of [12], the percentage of compound belly weight of sheep given pod without fermentation was 6.53% lower than the percentage of compound belly of sheep given pod of fermented cocoa, which ranged from 6.22 to 6.81%. Based on the analysis of variance, it is known that the administration of fermented kepok banana peels has a significant effect on the percentage of compound stomach weights. This is because the cut weight gives a real influence and tends to increase and the growth rate is in line with the weight of the digestive tract of sheep. This is in accordance with [14] who said that the rate of growth of some non carcass components is almost the same as the rate of body growth rate, for example abomasum and large intestine reach maturity almost simultaneously with the body. The small intestine grows faster than the large intestine and abomasum. The weight of the rumen, reticulum and omasum increases rapidly in early postnatal life. Nevertheless the total weight of the digestive tract decreases when it reaches maturity.

4 Conclusion

Utilization of fermented kepok banana peels as feed does not influence the percentage of headless skin weights, skinless legs, skinless tails, skin, trachea and lungs, heart, and liver, but gives a difference to the percentage of blood weight, intestines, and compound stomach weights local male sheep.

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