Performance of Kacang Goat Fattening Intensive Using Complit Feed with Different Levels of Liquid Smoke

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Abstract

Kacang goat are native to Indonesia. The productivity of Kacang goats can be optimized if given a good enough feed and is available continuously. The purpose of this study was to evaluate carcass performance and carcass composition as well as Kacang goat. A total of 16 young male goats were divided into 4 treatments. Each treatment consisted of 4 replications. The design used was a completely randomized design with 4 feed formulas as a treatment and each treatment was repeated 4 times. P1 is a liquid smokeless feed formula, P2 is a feed formula with 1% liquid smoke, P3 feed formula with 2% liquid smoke and P4 feed formula with 3% liquid smoke. Cattle are kept in individual cages given ad libitum complete feed and water according to treatment. After being kept for three months the next cut. The parameters measured were the percentage of carcass, commercial carcass pieces and carcass composition. Data analysis showed that livestock given complete feed containing 1% liquid smoke (P2) had the highest percentage of carcass and front carcass from other treatments but had the lowest percentage of non-carcass, while the highest rear carcass was P4. The highest cutting weight is P3 treatment. Leg commercial cuts and loin + tender loin entered in quality I were highest in treatment P3 while the lowest was P1. The highest cut of the neck quality II in P2 Rack treatment and the highest shoulder percentage is P1. Commercial cut of quality III are the highest breasts in treatment P3, the highest shank and flank on P1. The highest percentage of meat in treatment P4 and the lowest was treatment P1 while the highest fat percentage was in treatment P3 and the highest bone was P1. In conclusion, the higher the level of liquid smoke in complete feed, the higher the percentage of rear carcass and meat percentage. The provision of complete feed containing liquid smoke has a positive influence on increasing the percentage of carcass and increasing the percentage of commercial quality I.

Key words: Kacang Goat, Complete Feed, Liquid Smoke, Carcass, Non-Carcass (Offal)

INTRODUCTION

Kacang Goat is goat local native to Indonesia and scattered throughout provinces in Indonesian [35], the population the most between type others [9] [30]. Kacang Goat has value carcass percentage ranges from 43-44% [33] [18/19]. Indonesian has two season that is season dry between In April-October and season rainy day between month October - April. So that quantity and quality feed fluctuate [32] For that needed feed Complete formulation that capable hit he needs nutrition /feed livestock. Utilization of waste agriculture combined with industrial waste and the rough tree is wrong one solution provision feed in a manner continuous. Liquid smoke is one of the materials that can be used as animal feed because it has components including phenol, acids, and carbonyl. These substances for the prevention of free radicals, so that the feed nutrients are not degradation.

According to [13] polyphenols and tannins are able to bind proteins to avoid degradation of microbial enzymes and protease enzymes in the rumen. Tannin is also able to precipitate proteins with functional bonds to produce complex crosslinking into tannin proteins [6]. Liquid smoke containing VFA, it is precursor source energy for bacteria and the host. The presence framework carbon for rumen microbes so able to forming microbial proteins more many for ruminants. The components possessed by liquid smoke are expected to be able to improve carcass, commercial cut carcass and carcass composition of Kacang goat.

The use of liquid smoke up to 1% of the feed can improve the quality of meat, the amount of albumin in the blood of broiler chickens [38] and increase the performance of mice up to a dose of 15 g / kg of feed [5]. Concentration of liquid smoke in UMB unpacking feed supplement Bali cattle capable for increases brightness meat of muscle Longissimus dorsi[2]. The purpose of this study is to analyze the percentage of carcass, carcass composition and commercial carcasses percentage of Kacang goats through intensive fattening using complete feed added with liquid smoke.

MATERIALS AND METHODS

Research has been carried out for approximately 7 months with the distribution of activities and time and place as follows: Feed making and livestock raising in the Laboratory of Animal Husbandry, in April - November 2018.
A total of sixteen young male goats were divided into 4 treatments. Each treatment consisted of 4 replications. The design used was a completely randomized design with 4 feed formulas as a treatment and each treatment was repeated 4 times. P1 is a liquid smokeless feed formula, P2 is a feed formula with 1% liquid smoke, P3 feed formula with 2% liquid smoke and P4 feed formula with 3% liquid smoke [31]. The animals are kept in individual cages given ad libitum complete feed and water according to treatment. After being kept for three months the next slaughtered. The parameters measured were the percentage of carcass, commercial cut carcass percentage and carcass composition percentage.

The slaughter livestock do it halal to cut neck ventral section, pulse jugular vein, esophagus, and the trachea was cut off. Then do the finishing, next the carcass is divided into eight commercials [26] [8]. All commercial cut carcass and carcass component were weighed to measure the weight of each.

### Statistical analysis

Data from four treatment were analyzed using the procedure variance analysis (one-way ANOVA) of SPSS Version 16 for Windows. The package program according to the following models: $Y_{ij} = \mu + T_i + \epsilon_{ij}$. $Y_{ij}$ = Observation from the second converter with jth test, $\mu$ = General average (midpoint of observation) $T_i$ = Effect of second treatment $(i = 1, 2, 3, 4)$ $\epsilon_{ij}$ = Effect of experimental error from the first treatment and on the jth observation $(j = 1, 2, 3, 4)$.

### RESULTS AND DISCUSSION

#### Carcasses and Non-carcasses Performance of Peanut Goats

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Treatment</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Carcass</td>
<td></td>
<td>34.8 ± 2.03</td>
<td>19.17 ± 1.44</td>
<td>19.86 ± 2.67</td>
<td>18.70 ± 0.46</td>
</tr>
<tr>
<td>2</td>
<td>Non carcass</td>
<td></td>
<td>65.17 ± 2.03</td>
<td>60.83 ± 1.43</td>
<td>61.04 ± 2.66</td>
<td>61.30 ± 0.46</td>
</tr>
<tr>
<td>3</td>
<td>Fore carcass</td>
<td></td>
<td>55.33 ± 0.11</td>
<td>56.58 ± 0.67</td>
<td>55.25 ± 0.41</td>
<td>54.94 ± 0.27</td>
</tr>
<tr>
<td>4</td>
<td>Hind Carcass</td>
<td></td>
<td>44.67 ± 0.11</td>
<td>43.43 ± 0.67</td>
<td>44.75 ± 0.41</td>
<td>45.06 ± 0.27</td>
</tr>
<tr>
<td>5</td>
<td>Cut weight (kg)</td>
<td></td>
<td>14.50 ± 0.68</td>
<td>15.69 ± 1.86</td>
<td>16.14 ± 2.35</td>
<td>14.55 ± 0.38</td>
</tr>
</tbody>
</table>

Based on Table 1. It is known that the slaughter weight of livestock ranges from 14.5 kg to 16.14 kg. The different results reported by [34] that the slaughter weight of 2-year-old Kacang goat is 24.23-24.27. This difference is caused by differences in age. The results of cutting the four treatments P1, P2, P3, and P4 yielded, off, front carcass and rear carcass respectively 34.8 ± 2.03, 39.17 ± 1.44, 38.96 ± 2.67, and 38.70 ± 0.46 for carcasses, 65.17 ± 2.03, 60.83 ± 1.43, 61.04 ± 2.66, and 61.30 ± 0.46 for offal, while the front carcass and rear carcass were produced as follows: 55.33 ± 0.11, 56.57 ± 0.67, 55.25 ± 0.41, 54.94 ± 0.27, 44.67 ± 0.11, 43.43 ± 0.67, 44.75 ± 0.41, 45.06 ± 0.27. This result descriptively shows that the percentage of goat carcasses given complete feed without the addition of liquid smoke is always lower when compared to those given complete feed containing liquid smoke at 1%, 2%, and 3%. If all three treatments P1, P2, and P3 are rounded, they will produce 39%. But the highest is treatment with 1% liquid smoke, other factors that influence the percentage of the carcasses are a nation, sex, slaughter weight and feed [34]. Furthermore, it was reported that the percentage of goat carcasses was 39.39% - 42.48% and 44.68-45% [23].

Local goats with weaning age (6-18 months) with a range of weights of 10-23.5 kg (mean 15.99 kg) produce carcass weight from 4.5 to 10 kg (mean 7.05 kg) and carcass percentage 46.68-45% (average 44.09%). These results are who observed goats in Majalengka and Bandung regencies with live weights of 14.99-18 kg (6.3-22.1 and 16-21 kg) resulting in carcass weight 7.23-7.58 kg and carcass percentage 48.23-42.10 percent [23].

Non carcasses produced from treatment P1, P2, P3, and P4 if rounding is done will produce 39%. However, if viewed in terms of quality, the highest is P4 because it has the highest rear carcass. We know that meat that occupies the position of quality I am meat found in the rear carcass. So economically it is best to treat P4.

Based on the overall matrix, it can be seen that the best treatment is treatment P3 where in terms of carcass P3 and P4 are relatively the same, namely 61%. This means that parts of the carcass that have the highest low economic value in treatment P1. When viewed in terms of carcass, the best treatment is treatment P2 where the total carcass is the highest. Whereas if viewed in terms of quality, the highest is P4 because it has the highest rear carcass. We know that meat that occupies the position of quality I am meat found in the rear carcass. So economically it is best to treat P4.

#### Commercial Cut

Table 2. Mean Commercial Cut carcass goat on different Level Liquid Smoke

<table>
<thead>
<tr>
<th>Quality</th>
<th>Variable</th>
<th>Treatment (liquid smoke)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P1 (0%)</td>
<td>P2 (1%)</td>
</tr>
<tr>
<td>I</td>
<td>Leg</td>
<td>26.38 ± 9.61</td>
</tr>
<tr>
<td>I</td>
<td>Loin+ Tender loin</td>
<td>5.69 ± 0.50</td>
</tr>
<tr>
<td>II</td>
<td>Neck</td>
<td>10.96 ± 0.58</td>
</tr>
<tr>
<td>II</td>
<td>Rack</td>
<td>11.0 ± 0.29</td>
</tr>
<tr>
<td>II</td>
<td>Shoulder</td>
<td>27.37 ± 0.58</td>
</tr>
<tr>
<td>II</td>
<td>Breast</td>
<td>6.63 ± 0.29</td>
</tr>
<tr>
<td>II</td>
<td>Shank</td>
<td>4.97 ± 0.28</td>
</tr>
<tr>
<td>II</td>
<td>Flank</td>
<td>6.38 ± 0.11</td>
</tr>
</tbody>
</table>

The distribution of the quality of commercial pieces divided based on the Australian method and SNI can be seen in Table 2. Based on Table 2 it is known that the percentage of leg pieces loin plus tenderloin increases with increasing levels of liquid smoke in the feed. This is due to muscle growth and supporting tissue increases with increasing levels of liquid smoke. Whereas Neck, rack, and shoulder decreases. This is because this part is dominated by bone and fat accumulation has not occurred. This part of the muscle is not well developed because muscle development starts from the front foot and from the back of the animal's body and ends at the center. Breast, shank and relatively stable.

The feed is a factor that environment have influence enough big to composition carcass, specifically proportion fat [27] [37]. While difference rate growth relatively each component network carcass influenced by species, age and feed [27]. The cutter leg Kacang goat is the leg 30.08%, loin 11.98%, rib 9.32%, shoulder 27.7%, neck 8.11%, shank 4.11%, break 7.01% and flank 1.67% [37].

This to show that cut the leg on research same, so too with a shank. The shoulder on feed control has percentage same with results research [37] who use feed natural and pure breeds. While on use smoke liquid in feed cause shoulder less developing but more developing are leg and loin. This means that use the smoke liquid in feed cause muscle part back more developing in the appeal.
Carcass Composition

Table 17: Carcass composition Kacang Goat analysis results of research on Level liquid smoke different.

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>P1</td>
</tr>
<tr>
<td>1</td>
<td>Meat</td>
<td>60.58 ± 0.13</td>
</tr>
<tr>
<td>2</td>
<td>Fat</td>
<td>10.89 ± 0.25</td>
</tr>
<tr>
<td>3</td>
<td>Bone</td>
<td>28.53 ± 0.12</td>
</tr>
</tbody>
</table>

Table 17 shows that the higher the level of liquid smoke the higher the percentage of meat, the more stable the percentage of bone. While the percentage of carcass fat decreases. This shows that liquid smoke has an influence on the growth of livestock especially the addition of the percentage of meat and lowering the percentage of fat. This may be due to the presence of fatty acids such as acetic acid, propionate, and valeric acid as microbial energy sources. Propionate acid is the main ingredient in the synthesis carbohydrate castor oil and liquid smoke. Tannin is able to protect feed proteins so it doesn't bear degradation by microbes (protein bypass) [29]. Carcass composition is influenced by age and type of livestock. Meat production will change from young livestock to adult cattle [12], [16], [7] influenced by various factors such as: nation and type of livestock [11], [21], [14], [7], [4], [25], gender [28], [20], [24], [10], [1], feed [36], [14], [15], [17], [22], and body weight and age [1].

CONCLUSION

Based on the results and discussion, it can be concluded that the addition of 2% liquid smoke to complete feed can increase carcass percentage and commercial cut carcass percentage leg and loin on Kacang goat. The addition of liquid smoke in complete feed can increase the percentage of Kacang goat meat that is intensively preserved.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

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