ISSN 2348-313X (Print)
International Journal of Life Sciences Research ISSN 2348-3148 (online)
Vol. 12, Issue 1, pp: (1-10), Month: January - March 2024, Available at: www.researchpublish.com

Performance Response and Physiology of Goat Nut Given Durian Fruit Seeds (Durio zibethinusMurr) Which Is Fermented with Tape Yeast (Saccharmyces Cerevisiae) And Tempe Yeast (Rhizopus Oligosporus)

Nur Rahma Rasyid[1], Sirajuddin H. Abdullah[2], Mohammad Ismail[2]

[1] Lecturer in Master of Agriculture Science, Postgraduate Tadulako University

[2]Lecturer in Master of Agriculture Science, Postgraduate Tadulako University, Palu, Indonesia

DOI: https://doi.org/10.5281/zenodo.10566790

Published Date: 25-January-2024

Abstract: **This study aims to determine interaction effect, type and level of fermented durian fruit seed flour on the Performance and Physiological Response of goat Kacang. The experimental design used was a group randomized factorial pattern repeated 4 times.TBDF1: concentrate 1% + TBDF (Average 0.25%) 0.5% of concentrate TBDF2: concentrate 1% + TBDF (Average 0.50%) 0.5% of concentrate TBDF3: concentrate 1% + TBDF (Average 0 .75%) 0.5% of concentrate TBDF4: concentrate 1% + TBDF (Rte 0.25%) 0.5% of concentrate TBDF5: concentrate 1% + TBDF (Rte 0.50%) 0.5% of concentrate TBDF6: concentrate 1% + TBDF (Rte 0.75%) 0.5% of concentrate. The variables are Performance and Physiological. The results are interaction between fermented durian fruit seed flour had no effect on performance and physiology. Giving fermented durian fruit seed flour does not have a real effect on weight gain, efficiency, respiration and pulse but has a real effect on dry matter consumption and rectal temperature. While the level of giving fermented durian fruit seed flour has a significant effect on body weight gain, rectal temperature and pulse. However, it has no real effect on dry matter consumption, efficiency and respiration. Based on the results, it can be concluded that the use of fermented durian fruit seed flour does not have a real effect but is still within the normal range of the performance and physiological response of goat Kacang.**

Keywords: **Performance, Faali Status, Duria Fruit Seeds, Fermentation.**

I. INTRODUCTION

Goatplays a very important role in human life. Because goats are meat-producing livestock and are sought after by local people.Due to its great potential as a meat producer, goats are experiencing increasing demand. BPS (2019) and (2021), goat meat production in Central Sulawesi varied between 1,396.09 and 1,748.69 tons, according to BPS data.

WrongOne way to optimize livestock production is to use concentrate which aims to increase production and shorten the fattening period.Concentrate feed aims to meet the nutritional needs of livestock. Generally concentrate is given to increase body weight optimally and concentrate feed is easy to digest and can be eaten immediately. and contains additional nutrients that are not usually found in fresh forage. Concentrate for livestock based on grainhas quite good nutritional content. Among them are durian fruit seeds which are agricultural waste that is still underutilized. "Durian seeds can be used as an alternative feed with sufficient availability and have sufficient nutritional value for livestock."

"Based on data from the Central Statistics Agency and the Directorate General of Horticulture, durian production in Central Sulawesi from 2018-2020 ranged from 13,944.00-19,382.00 tonnes. "In durian fruit, the part that is often consumed is the flesh of the durian fruit, the percentage of which is only around 20-35%, which means that the seeds, 5-15%, and the skin, 60-75%, have not been utilized optimally (Wahyono, 2009)." Furthermore, Wahyono., (2009) said that Durian seeds contain 30% carbohydrates, 0.9% phosphorus, 9.79% protein and 0.27% calcium. However, apart from its good nutritional content, there are several limiting factors, namely the presence of anti-nutritional substances which can cause delays in shelf life and livestock growth. "A number of Previous research has used steam techniques to reduce anti-nutrient levels, starvation techniques to extend shelf life, and fermentation to improve nutritional quality."

"Because it is safer, more cost-effective, and less harmful to the environment to use waste materials in the fermentation process rather than chemicals, this method is increasingly popular (Winarno et al., 2004)." Because microbes simplify difficult-to-digest molecules, fermented ingredients tend to be healthier than raw ingredients. Fermentation can reduce the concentration of dangerous substances such as phytic acid, cyanide and oxalic acid, according to Sasongko (2009). "Tempeh yeast (Rhizopus oligosporus) and tape yeast (Saccharomyces cerevisiae) are generally used to increase livestock production."ButIn some cases, Saccharomyces cerevisiae can cause a disease called 'saccharomycosis' so the level of use still needs to be considered. This disease is caused by the number of Saccharomyces cerevisiae exceeding the number of other microorganisms which can disrupt the system.

"Lots"research shows that the use of the microorganisms Saccharomyces cerevisiae and Rhizopus oligosporus during the fermentation process increases the nutritional value of feed and can also balance the microbial content in the rumen and can increase digestibility."Feed containing higher nutrients can increase livestock body weight gain (Rudiah, 2011)

Based on the description above, research will be carried out to "To find out the physiological response of local goats given durian seeds fermented with tempe yeast (Rhizopus oligosporus) and tape yeast (Saccharomyces cerevisiae) and it is hoped that there will be interactions at various levels and can improve the nutritional value of durian seed flour.".

II. RESEARCH METHODS

Research Place & Time

An experimental cage served as a place for this research. "This activity was carried out in the CV experimental cage. Prima BREED in Tondo, Mantikulore District, Palu City, Central Sulawesi Province, Indonesia, from January to March 2023. The implementation of this research consists of two stages, namely the preparation stage and the treatment stage."

"The aim of the preliminary stage according to Ranjhan (1981) is the adaptation period for experimental livestock":

1. "Getting livestock used to the new environment."

2. "Getting the livestock used to the new feed (the feed given at the time of the research)."

3. "Eliminates the influence of previously existing feed."

Eight weeks were spent on the treatment or data collection phase.

Research Materials

Experimental Livestock

"The livestock used during this research treatment were 24 local male goats aged ± 10 months with a body weight range between 10 kg to 15kg. The age of the livestock is determined by the condition of the goat's incisors, which are still temporarily loose. "The livestock belong to CV. Prima BREED, Tondo Village, Mantikulore District, Palu City, Central Sulawesi Province."

Pen

"The research cage used during the research was a stilt cage with a tin roof, wooden floor and walls made of boards measuring 7 x 20 meters. The cage was divided into 24 plots measuring 1.0 x 1.75 meters per plot, and each plot was occupied by one experimental animal. Each plot is equipped with a board feeder for drinking. "Before using the cage, it must be cleaned and sprayed with Rhodalone by diluting 15 ml of Rhodalone in 10 liters to make it sterile."

ISSN 2348-313X (Print)
International Journal of Life Sciences Research ISSN 2348-3148 (online)
Vol. 12, Issue 1, pp: (1-10), Month: January - March 2024, Available at: www.researchpublish.com

Animal feed

"The feed used in this research is scabbard grass (Panicum sarmentosum) concentrate & Fermented Durian Fruit Seed Flour (TBDF) as treatment. Concentrate is a mixture of several ingredients in the form of ground soybeans, ground corn, rice bran. Concentrate is given as much as 1.0% of body weight based on dry matter and Fermented Durian Fruit Seed Flour according to the treatment level as much as 0.5% of body weight based on dry matter at 07.30 in the morning, while as a forage source, scabbard grass (Panicum sarmentosum) is given.) ad libitum."

Table 1. Nutrient Content & Feed Ingredients Used During Research

Feed Ingredients	BK %	PK %	SK %	LK %	TDN
Ground Soybeans	16.58	5.64	1.75	2.10	10.98
Ground Corn	29.54	3.24	1.67	2.82	23.74
Rice Bran	89.92	10.67	18.39	4.64	86.82
TBDF (RTe 0.25%)	90.24	8.88	17.25	2.08	44.24
TBDF (RTe 0.50%)	89.40	7.68	17.11	2.45	46.30
TBDF (RTe 0.75%)	85.30	8.85	16.87	2.17	47.98
TBDF (RTa 0.25%)	97.03	8.30	16.34	2.25	57.49
TBDF (RTa 0.50%)	96.37	8.95	16.24	2.59	58.86
TBDF (RTa 0.75%)	95.32	9.25	16,19	2.89	56.27
Panicum sarmentosum	26.29	11.51	30.20	1.90	59.54

Table 2. Composition of Concentrate Materials Used

Feed Ingredients	Composition %
Ground Soybeans	18
Rice Bran	48
Ground Corn	34
Total	100

How to Make Fermented Durian Seed Flour (TBDF)

"Durian seed waste used in this research was fermented with tempeh yeast (Rhizopus oligosporus) and tape yeast (Saccharomyces cerevisiae). In the first stage of fermentation, durian seeds and corn flour are steamed in a simple steamer with a ratio of 3::1 for 30 minutes. Cool the steamed durian seeds to room temperature. culture by mixing 0.25%, 0.50 and 0.75% of each type of yeast based on the weight of the durian seeds depending on the treatment and homogenizing until smooth." Put the durian seeds that have been cultured with yeast into a container, close tightly, cover with thin cloth and leave for 72 hours. Finally, the durian seeds are dried in the sun. To determine the nutritional content in each treatment, durian seeds are dried and then tested in the laboratory (proximate analysis).

Research Equipment

The research tools used during treatment are:

1. "ForWeighing livestock uses a digital scale with a capacity of 50 kg and an accuracy of 10 g. "To weigh feed, we use Chiyo brand digital scales made in Japan with a capacity of 3000 g and an accuracy of 1 g, as well as a Camry scale with a capacity of 610g and an accuracy of 0.1g."

2. "A machete for chopping Panicum sarmentosum with a length of ± 2 cm."

Research Procedures and Methods for Measuring Variables

Feed Ingredients and Concentrate Preparation

"The ingredients that make up the concentrate and fermentation materials for Durian Fruit Seeds are purchased from the market, Durian Fruit Seeds are collected from durian traders in Palu City. "The collected materials are processed based on the percentage of each material multiplied by the amount of concentrate produced."

Experimental design

InThis treatment used RAK (Randomized Block Design) factorial pattern with the first factor being two types of yeast used for fermenting Durian Fruit Seeds and the second factor being three levels of treatment. Each treatment will be repeated four times. The treatments tried were:

TBDF1: 1% concentrate + TBDF (Rta 0.25%) 0.5% of concentrate

TBDF2: 1% concentrate + TBDF (Avg. 0.50%) 0.5% of concentrate

TBDF3: 1% concentrate + TBDF (Avg. 0.75%) 0.5% of concentrate

TBDF4: 1% concentrate + TBDF (Rte 0.25%) 0.5% of concentrate

TBDF5: 1% concentrate + TBDF (Rte 0.50%) 0.5% of concentrate

TBDF6: 1% concentrate + TBDF (Rte 0.75%) 0.5% of concentrate

Variables and how to measure them

Several dependent (bound) variables observed in this research are:

Increase in Body Weight

"Body weight gain was calculated as the difference between the final weight and the initial weight divided by the observation time. Goat weight is measured every week before feeding to livestock. This calculationusing the Soeparno (1992) formula; Bogart and Taylor (1983) as follows: "

$$\text{PBBH (g/head/day)} = \frac{W_2 - W_1}{T_2 - T_1}$$

Information :

PBBH	=	Daily body weight gain
W1	=	Initial weighing weight
W2	=	Final weighing weight
Q1	=	Beginning of weighing time (days)
Q2	=	End of weighing time (days)

Concentrated Dry Material Consumption

"Concentrated dry matter consumption is obtained by multiplying the dry matter from the concentrate analysis by the specified amount of concentrate and subtracting the dry matter product from the feed residue analysis and the amount of feed residue, expressed in g/head/day."

Efficiency of Concentrate Use

"The efficiency of concentrate use is calculated from the quotient of daily weight gain and daily concentrate dry matter intake."

Body temperature

"Measuringwith a thermometer. First, swish the thermometer to lower the temperature, then insert the tip of the thermometer into the mucous membrane of the rectum and anus for 1 minute. "Measurements are taken every 3 days, the lowest temperature is from 01.00 to 03.00 and the highest temperature is from 12.00 to 13.00."

Respiration Frequency

"Respiratory rate is measured by placing the back of the hand on the goat's nose and counting the exhales or short breaths over a 1 minute period. Measuring respiratory rate is done in the same way as measuring body temperature."

ISSN 2348-313X (Print)
International Journal of Life Sciences Research ISSN 2348-3148 (online)
Vol. 12, Issue 1, pp: (1-10), Month: January - March 2024, Available at: www.researchpublish.com

Pulse Frequency

"Pulse measurement is carried out by feelingfemoral artery on the inside of the left thigh for 1 minute. You can feel the arteries with your fingertips.Timemeasuring the pulse is also taken into account, as is measuring body temperature and respiratory rate."

Analysis

"DataThe observations obtained were analyzed using analysis of variance (F test) according to the instructions of Steel & Torrie (1991). The mathematical model is as follows: "

$Yijk=\mu+\alpha i+\beta j+\alpha\beta ij+\varepsilon ijk$

Information :

$Yijk$= Observation value

μ= General average

αi= Main effect of factor A

βj= Main effect of factor B

$\alpha\beta ij$= Effect of interaction of factors A and B

εijk= Experiment error

"Treatments that have a real effect are followed by the BNT Test (Least Significant Difference) according to the instructions of Steel and Torrie (1991) to determine the average difference in the effect of the treatment."

III. RESULTS AND DISCUSSION

1. Weight GainBody

Average results of observations of the effect of giving fermented durian seed flour on weight gaingoat body Nuts in table 4-1.

Table 4-1 Average Results of Measuring Body Weight Gain in Peanut Goats During the Research (g/head/day)

Types of Yeast	Giving Level			Average
	0.25%	0.50%	0.75%	
Tape	58.13	62.46	69.51	63.36a
Tempeh	60.47	65.09	69.96	65.17a
Average	59.30a	63.77ab	69.73b	

"Note: Numbers followed by different letters indicate a real difference in the 0.5% BNT test."

"The average measurement results in table 4-1 show that the highest average increase in body weight was when given TBDF yeast tempeh and the lowest was given TBDF yeast tape durian fruit seeds." The durian seed fermentation level of 0.75% (69.73) gave the highest average, followed by the fermentation level of 0.50% (63.77) & the lowest average was the fermentation level of 0.25% (59.30).

"Based on the analysis of variance, it shows that the interaction between treatment level and type of yeast does not have a significant effect (P>0.05) on the increase in body weight of bean goats, nor does the type of yeast have a significant effect (P>0.05), while the level of fermentation at different TBDs had a very significant effect (P<0.01) on the increase in body weight of peanut goats. Based on the Least Real Difference Test (BNT), it shows that the 0.75% level is significantly higher than the 0.25% level but is not different from the 0.50% level, while the 0.50% level and the 0.25% level do not show yes. real difference to the body weight gain of Kacang goats."

This shows that giving fermented durian seed flour has a relatively similar effect on increasing body weight of peanut goats. This also shows that goats use the food consumed for basic living needs and production is not the same, because the level

of feed provided by livestock has not been able to increase nutrients so that it has not achieved maximum growth. “Hasnudin and Wahyuni (2005) stated thatIncreaseInsignificant body weight can also be caused by insignificant feed consumption by livestock.”

"The large amount of feed consumed by livestock is an important factor that has a direct influence on livestock productivity, such as increase in body weight. This refers to the evaluation of livestock weight gain in relation to the feed consumed. (Nursasih, 2005). Followed by Parakkasi's statement (1999) WrongOne factor that influences weight gain is thought to be feed intake. The greater the amount of feed consumed, the higher the livestock growth rate."

The average TBDF (Rte) is higher than TBDF (Rta) because during the fermentation process durian seeds fermented with tape yeast experience a decrease in fat and starch because they are used to meet the needs of the yeast in line with "Ardhana (1982) in Definiati (2017) statematerialThe organics that break down during fermentation are starch and fat. This is because these are used to meet the energy needs of the yeast.”

2. Dry Ingredient Consumption

The average results of observations on the effect of giving fermented durian seed flour at different levels on dry matter consumption are shown in table 4-2

Table 4-2 Average Results of Measuring Dry Ingredient Consumption of Peanut Goat Feed During the Study (g/head/day)

Types of Yeast	Giving Level			Average
	0.25%	0.50%	0.75%	
Tape	521.50	569.73	571.22	554.15a
Tempeh	586.32	647.77	650.14	628.07b
Average	553.91a	608.75a	610.68a	

"Note: Numbers followed by different letters indicate a real difference in the 0.5% BNT test."

The average measurement results in table 4-2 show that the highest average dry matter consumption of feed was during feedingTBDF tempeh yeast and the lowest TBDF yeast tape. The durian seed fermentation level of 0.75% (610.68) gave the highest average followed by the fermentation level of 0.50% (608.75) & the lowest average was the fermentation level of 0.25% (553.91).

"Based on the analysis of variance, it shows that the interaction between treatment level and type of yeast does not have a significant effect (P>0.05) on dry matter consumption of peanut goats, but the type of yeast has a significant effect (P<0.05), while the level of fermentation on TBD The different methods did not have a significant effect (P>0.05) on the dry matter consumption of peanut goats. Based on the Least Real Difference Test (BNT), it shows that the 0.75% & 0.50% level is significantly higher than the 0.25% level, but the 0.50% & 0.75% level shows there is no real difference in material consumption. dry goat Beans.”

"According to Devandra and Burnus (1994),AmountThe dry matter ingested by goats is a very important factor, because their ability to actively consume feed is a fundamental limiting factor in feed conversion.Tillman et al. (1991), states thatFeedwith the same protein, dry matter and energy content will result in the same dry matter consumption.”

"The average consumption value of male peanut goats in table 4-2 shows that the average consumption value of dry matter feed reached 553.91, 608.75 and 610.68 g/head/day. The feed consumption value did not change from each treatment, indicating that the fermented durian seed flour used for this treatment, the level of food liking and palatability did not differ significantly between treatments, as long as it was not statistically significant, did not show any differences in each treatment.IntakeFeed is an indicator of whether livestock likes the forage. "The higher the level of consumption, the higher the level of palatability of the feed given to livestock."

The average consumption of dry matter in the TBDF (Tempeh yeast) treatment was higher than in the TBDF (Tape yeast) treatment, this is because tempeh yeast contains aspartate protease which can be used.for supplements that help the process of digestion of food. hydrolysis of peptide bonds into short oligopeptides and amino acids can be catalyzed by protease enzymes (Lopez otin and Bond, 2008). Feed is easier to digest if it contains bioactive peptides and results in the breakdown of carbohydrates and proteins by enzyme activity from Rhizopus sp.

ISSN 2348-313X (Print)
International Journal of Life Sciences Research ISSN 2348-3148 (online)
Vol. 12, Issue 1, pp: (1-10), Month: January - March 2024, Available at: www.researchpublish.com

3. Feed Use Efficiency

The average results of observations on the effect of giving fermented durian seed flour at different levels on the efficiency of feed use are shown in table 4-3

Table 4-3 Average results of measuring the efficiency of using peanut goat feed during the study (g/head/day)

Types of Yeast	Giving Level			Average
	0.25%	0.50%	0.75%	
Tape	0.121	0.123	0.125	0.123a
Tempeh	0.104	0.107	0.109	0.107b
z	0.113a	0.115a	0.117a	

"Note: Numbers followed by different letters indicate a real difference in the 0.5% BNT test."

Durian seed flour fermented with tape yeast has the best average feed use efficiency, based on the measurement results averaged in Table 4-3. Durian seed flour fermented with tempeh yeast had the worst feed efficiency. In terms of averages, the optimal fermentation rate for durian fruit seeds was 0.75% (0.117), followed by 0.50% (0.115), and 0.25% (0.113), which yielded the lowest averages.

There was no significant effect of treatment level and type of yeast on the efficiency of using peanut goat feed (P>0.05) based on analysis of variance. However, the type of yeast had a significant effect (P>0.05), and the level of fermentation at different TBDs also had no significant effect (P<0.05). Based on the BNT test (least significant difference test), there is no real difference in the efficiency of using peanut goat feed between the 0.50% and 0.25% levels, and between the 0.75% and 0.25% levels there is a significant difference compared to with a level of 0.50%.

This is due to the fact that the feed use efficiency findings are not meaningful because the average intake rate and body weight gain are identical. The feed efficiency values for male peanut goats reached 0.131, 0.115, and 0.117 gr/head/day for each treatment. The increase in body weight as a percentage of dry matter ingested is known as feed conversion efficiency. Feed utilization becomes more efficient as the feed efficiency value increases. This was stated by Hamzah in 2019. When dry matter consumption increases, feed efficiency also increases proportionally, according to Maurya et al. (2004).

Treatment with TBDF (Yeast tape) resulted in better feed use efficiency on average compared to treatment with TBDF (Yeast temperature). Based on table 3-1, durian seeds fermented with tape yeast have greater nutritional value than seeds fermented with tempeh yeast, so they are more efficient. If the feed provided is of high quality, livestock will thrive and feed efficiency will increase (Tarmidi, 2004). Reducing feed consumption which causes an increase in body weight will maximize feed efficiency.

4. Rectal Temp

The average results of observations of the effect of giving fermented durian seed flour at different levels on body temperature are shown in table 4-4

Table 4-4 Average Body Temperature Measurement Results (o C) of Peanut Goats During the Research

Types of Yeast	Giving Level			Average
	0.25%	0.50%	0.75%	
Tape	38.80	38.90	38.92	38.87a
Tempeh	38.66	38.67	38.85	38.72b
Average	38.73a	38.79ab	38.88a	

"Note: Numbers followed by different letters indicate a real difference in the 0.5% BNT test."

The average temperature of the goats at each level ranged from 38.73-38.88ºC. Based on the results of measurements, the goat's body temperature is still within the normal range. "This is in line with the opinion of Yusuf (2007) cited by Pramono (2014) which states that the normal temperature for goats is in the range of 38.5°C to 40°C."

ISSN 2348-313X (Print)
International Journal of Life Sciences Research ISSN 2348-3148 (online)
Vol. 12, Issue 1, pp: (1-10), Month: January - March 2024, Available at: www.researchpublish.com

"Based on analysis of variance, it shows that the interaction between treatment level and type of yeast does not have a significant effect (P>0.05) on the body temperature of peanut goats, but the type of yeast has a very significant effect (P<0.01), while the level of fermentation on TBD different ones had a significant effect (P<0.05) on the body temperature of peanut goats. Based on the Least Real Difference Test (BNT), it shows that the 0.75% level is significantly higher than the 0.25% level but is not different from the 0.50% level, while the 0.50% level and the 0.25% level do not show any real difference to the body weight gain of Kacang goats."

One of the heat productions produced by the body through metabolic processes and which can affect the body temperature of goats is feed consumption, while the average amount of BK (dry matter) feed consumption is the highest at the level of 0.75% (610.68 g/head/day) followed by level of 0.50% (608.75 g/head/day) and the lowest DM consumption was at the level of 0.25% (553.91 g/head/day). The difference in the amount of dry material consumed was able to influence the body temperature of male peanut goats in the three treatments. This shows that Kacang goats are very easy to adapt to changes in feed type. in accordance with the opinion of Harmoko and Padang (2019) which states that if livestockGoatThe nuts used in the research were livestock from the area where the research was conducted. Therefore, goats are able to adapt well to changes in environment and diet, without affecting their body temperature.

of each treatment.

5. Respiration Frequency

The average results of observations of the effect of giving fermented durian seed flour at different levels on respiration frequency are shown in table 4-5

Table 4-5 Average Results of Respiration Frequency Measurements (times/minute) of Peanut Goats During the Research

Types of Yeast	Giving Level			Average
	0.25%	0.50%	0.75%	
Tape	36.40	36.77	37.35	36.84a
Tempeh	35.67	35.75	36.11	35.84a
Average	36.03a	36.26a	36.73a	

"Note: Numbers followed by different letters indicate a real difference in the 0.5% BNT test."

The average respiration of goats at each level ranges from 36.03-36.73 times/minute based on the results of measurements of the respiration frequency of peanut goats, which is still in the normal range. The average respiratory frequency of peanut goats is between 20.30 to 38.25 times per minute, according to Pamungkas (2006).

From the results of the analysis of variance, there was no significant effect (P>0.05) of either treatment level or type of yeast on the respiratory frequency of peanut goats. Likewise, there was no effect (P>0.05) of fermentation levels at different TBDs on respiration frequency in peanut goats. The results of the Least Significant Difference (BNT) test showed that there was no real difference in the body weight growth of Kacang goats between the 0.50% and 0.25% levels, and the 0.75% level was much greater than the 0.25% level but no different from the 0.50% level. According to Wuryanto et al. (2010), the respiration rate and metabolic rate of ruminants can be influenced by feed intake, which causes an increase in body heat. Because there were no significant changes between treatments, it can be concluded that the addition of 0.5% TBDF to the diet of male Kacang goats did not affect the respiration rate.

This is because, before being added to goat feed, durian seeds undergo fermentation so that the nutrients are more easily absorbed and do not interfere with the animal's metabolic processes. Nurmi (2016) stated that animal respiration rates can be influenced by feed fermentation. In addition, factors such as age, activity level, level of rumen fullness, body weight, and fatigue also influence respiration rate (Suwignyo et al., 2016).

6. Pulse Frequency

The average results of observations of the effect of giving fermented durian seed flour at different levels on the frequency of pulsus are shown in table 4-6

Table 4-6 Average Pulse Frequency Measurement Results (times/minute) of Peanut Goats During the Research

Types of Yeast	Giving Level			Average
	0.25%	0.50%	0.75%	
Tape	90.48	92.20	92.35	91.68a
Tempeh	89.12	91.75	93.14	91.34a
Average	89.80a	91.98ab	92.75a	

"Note: Numbers followed by different letters indicate a real difference in the 0.5% BNT test."

The average frequency of bean goat pulsus at each level ranged from 89.80-92.75 times/minute based on the results of measuring the frequency of bean goat pulsus in this study which was said to be higher. The results of this study are not in line with the opinion of Hamdan et al. (2018) that the normal pulse rate for a goat is 70 to 80 beats per minute.

Based on the analysis of variance, it shows that the interaction between treatment level and type of yeast did not have a significant effect (P>0.05) on the frequency of goat bean pulsus, nor did the type of yeast have a significant effect (P>0.05), but the level of fermentation on TBD different ones had a significant effect (P<0.05) on the frequency of peanut goat pulsus. Based on the Least Real Difference Test (BNT), it shows that the 0.75% level is significantly higher than the 0.25% level but is not different from the 0.50% level, while the 0.50% level and the 0.25% level do not show any significant difference in the frequency of Pulsus in Kacang goats. Neither the TBDF Ragi Tape nor TBDF Ragi Tempe treatments had any effect on the livestock's pulse rate, because there was no difference in the amount of feed consumed in each treatment, so there was no difference in pulse frequency between treatments. "This is as stated by Aryanto (2012) cited by Hamdan et al. (2018) thatFrequencyPulse rate is closely related to the metabolic rate of livestock. "Factors that influence the pulse rate in livestock include gender, muscle activity, environmental temperature, and feed consumption."

"The research results show that the pulse frequency ranges from 89.80-92.75 times/minute. This shows that when the livestock are being treated, a heat release process occurs which aims to ensure that the animal's body temperature is always within normal limits. The increase in pulse rate is intended to regulate blood pressure and support the circulation of heat from the body's organs to the surface of the body. (Qisthon & Widodo, 2015). The pulse rate was high in this study. This is influenced by various factors such as type of livestock, gender, age, season, body temperature and environmental temperature, resulting in different pulse rate measurements. The normal pulse rate of a goat is 70 to 80 beats per minute. (Hamdan et al, 2018)."

IV. CONCLUSION

Research shows that dry matter consumption and rectal temperature of peanut goats are significantly influenced by the type of fermented durian seed flour, but body weight gain, feed use efficiency, respiration rate and frequency are not affected. The amount of fermented durian seed flour has a significant effect on rectal temperature, pulse frequency, and weight gain. In terms of the concentration of fermented durian seed flour, the type of yeast does not have much effect.

REFERENCES

[1] Badan Pusat Statistik dan Direktorat Jendral Hortikultura 2019. Produksi buah durian menurut Provinsi Sulawesi Tengah Tahun 2015-2019.

[2] Wahyono. 2009. Karakteristik adible film berbahan dasar kulit dan pati biji durian (*Durio sp*) untuk pengemasan buah strowberry, Skripsi, UMS, hal 1-9.

[3] Winarno, F.G. 2004. Kimia pangan dan gizi. Gramedia Pustaka Utama. Jakarta.

[4] Sasongko, P. 2009. detoksifikasi umbi gadung (*Dioscorea hispida dennst.*) proses fermentasi menggunakan kapang mucor racemosus, Jurnal Teknologi Pertanian, 10(3), hal. 205-215.

[5] Rudiah. 2011. Respon kambing kacang jantan terhadap waktu pemberian pakan. Media Litbang Sulteng, 4 (1): 67-74.

[6] Ranjhan, S.K. 1981. Animal nutrien ropies and revised edition. Vikas Publising House PVT LTD, New Delhi.

[7] Bogart, R. and R.E. Taylor. 1983. Scientific farm animal production. Second Edition.Machillan Publishing Company, New York.

[8] Soeparno. 1992. Pilihan produksi daging sapi dan teknologi prosesing daging unggas. Yogyakarta: Fakultas Peternakan. Universitas Gajah Mada.

[9] Steel, R.G.D. dan J.H. Torrie. 1991. Prinsip dan prosedur statistika. Diterjemahkan oleh Bambang Sumantri. PT. Gramedia Pustaka Utama. Jakarta.

[10] Hasnudin dan T.H. Wahyuni. 2005. Pengaruh penggunaan hasil sampingan industri kelapa sawit dan limbah pertanian terhadap performans dan bobot potong domba sei putih. Jurnal Agrebisnis. Vol. 1.1(1): 10.

[11] Nursasih, E. 2005. Kecernaan zat makanan dan efisiensi pakan pada kambing Perankan Etawa yang mendapat ransum dengan sumber serat berbeda. Skripsi. Fakultas Peternakan. Institut Pertanian Bogor. Bogor.

[12] Parakkasi, A. 1999. Ilmu nutrisi dan makanan ternak ruminan. Cetakan Pertama Penerbit UP. Jakarta.

[13] Devendra, C dan M. Burns. 1994 Produksi kambing di daerah tropis. (Diterjemahkan Oleh L.D.K Harya Putri) Penerbit ITB, Bandung.

[14] Tillman, A.D., H. Hartadi, S. Reksohadiprojo, S. Prawirokusumo. dan S. Lebdosoekojo. 1998. Ilmu makanan ternak dasar. Edisi Keenam. Gajah Mada University Press. Yogyakarta.

[15] Yusuf, M.K. 2007. Physiology Stress in Livestock. CRC Press, Inc. Boca Raton. Florida disitasi Pramono. 2014. Respon fisiologis kambing boerawa jantan fase pascasapih di dataran rendah dan dataran tinggi. Fakultas Peternakan. Universitas Pertanian Lampung.

[16] Pramono. 2014. Respon fisiologis kambing boerawa jantan fase pascasapih di dataran rendah dan dataran tinggi. Fakultas Peternakan. Universitas Pertanian Lampung.

[17] Harmoko dan Padang. 2019. Kondisi performa dan status fisiologi kambing kacang dan pemberian pakan tepung daun jarak (*Jatrophagossypifolia*) fermentasi. Jurnal Peternakan Indonesia, Vol. 21 (3): 183-19.

[18] Wuryanto, I. P. R., Darmoatmojo, L. M. Y. D., Dartosukarno, S., Arifin, M. dan Purnomoadi, A. 2010. Produktivitas Respon fisiologis dan perubahan komposisi tubuh pada sapi jawa yang diberi pakan dengan tingkat protein berbeda. Prosiding Seminar Nasional Teknologi Peternakan & Veteriner. Bogor 3-4 Agustus 2010.

[19] Nurmi, A. 2016. Respons fisiologis domba lokal dengan perbedaan waktu pemberian pakan dan panjang pemotongan bulu. Jurnal Eksakta. Vol 1 (1): 58-68.

[20] Suwignyo, B., U. A. Wijaya., R. Indriani., A. Kurniawati., I. Widiyono, dan Sarmin. 2016. Konsumsi, Kecernaan Nutrien, Perubahan Berat Badan danStatus Fisiologis Kambing Bligon Jantan dengan Pembatasan Pakan. Jurnal Sain Veteriner. Vol 34 (2): 210-219.

[21] Aryanto. 2012. Efek Pembatasan dan pemenuhan kembali jumlah pakan terhadap status fisiologi dan kinerja reproduksi Ternak Kambing. Tesis. Fakultas Peternakan Universitas Gadjah Mada. Yogyakarta.

[22] Qisthon, A. dan Widodo, Y. 2015. Pengaruh peningkatan rasio konsentrat dalam ransum kambing peranakan ettawah di lingkungan panas alami terhadap konsumsi ransum, respons fisiologis, dan pertumbuhan. Zootek. Vol 35 (2) 351-360.

[23] Hamdan, A., B. P. Purwanto., D. A. Astuti., A. Atabany, dan E. Taufik. 2018. Respon kinerja produksi dan fisologis kambing peranakan ettawa terhadap pemberian pakan tambahan dedak halus pada agroekosistem lahan kering di kalimantan selatan. Jurnal Pengkajian dan Pengembangan Teknologi Pertanian. Vol 21 (1):73-84.