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**Submission date:** 19-May-2020 10:12PM (UTC+0700)

**Submission ID:** 1327778527

**File name:** 15630-Article\_Text-23268-1-10-20200515\_2.pdf (305.56K)

**Word count:** 4768

**Character count:** 23269

## The Use of Fermented Feed Based on Swamp Buffalo Rumen Fluid to Increase the Growth and Conditions Psychology of Goats

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### Abstract

This study aims to determine the effect of using rumen fluid bacteria of swamp buffalo on the growth rates and physiological conditions of goats. The sample consists of 24 male goats (8 weeks old), with an average weight of  $4.9 \pm 0.8$ . The sample was further divided into 2 equal groups with 12 goats each. The first factor was based on cattle inoculated with rumen fluid bacteria of swamp buffalo. The second was a feed type that consists of the following (TR0), (TR1), 25% rumen fluid-based feed + 75% TR0. (TR2), 50% rumen fluid-based feed + 50% TR0, and (TR3), 75% rumen fluid-based feed + 25% TR0. Data were obtained using the 2X4 factorial, completely randomized design with three repetitions and statistically analyzed using ANOVA. Meanwhile, the difference between treatments was tested with Duncan's New Multiple Range Test. The results showed that the use of inoculation with rumen fluid bacteria of swamp buffalo increased the growth rate of livestock and physiological stability of goat by 75%. In conclusion, the growth rate of young goats tends to increase significantly, with the administration of rumen fluid bacteria.

**Keywords:** Rumen fluid, growth, physiological, quality

### 1. Introduction

The use of feed, as sources of fiber in young goats, is associated with significant health defects such as diarrhea, distended stomachs, retarded growth, and an increase in mortality rate. The accelerated adaptation of young ruminant animals to fiber needs to be carried out through rumen bacteria inoculation, and this naturally occurs in young goats at four months [1]. Furthermore, the use of this technique shortens the weaning period, calving interval, saves milk, and reduces the occurrence of digestive disorders in goats. The superior inoculant is estimated to be obtained from the rumen of adult ruminants, such as swamp buffalos.

According to Ginting et al. [2], this animal, generally has a large number of cellulolytic bacteria compared to cattle. Buffalo's rumen bacteria include *Ciniclasicumruminis*, *Acetovibriocellulolyticus*, *Streptococcus* sp., *Minococcuscallidus*, *Prevotellaruminicola*, *Bacteroidesfragilis*, and *Treponema* [3]. These bacteria act as a potential source of probiotics for goats with a total fluid of  $13.20 \times 10^8$ /ml and  $16.20 \times 10^8$ /ml in cattle. Furthermore, the percentage of cellulolytic bacteria in cattle is 19.5%, while those in buffaloes are 42.3% [4]. Rostini et al. [5] stated that the rumen fluid bacteria of swamp buffalo contains lactic, propionic, butyric, isovalerate, of 58.47 ml/mol, 25.36 ml/mol, 11.46 ml/mol, and 2.36 ml/mol, respectively. Rumen fluid bacteria of swamp buffalo are expected to improve productivity and fermentability in the rumen of goat kids.

The ability of rumen bacteria to degrade high-fiber feed ingredients is possible in the tropical regions due to the abundance of agricultural waste with high lignocellulose content [3]. Pradhan [4] stated that the total number of rumen in buffalo is higher than cattle ( $18.45 \times 108\text{CFU/ml}$  vs  $11.62 \times 108\text{CFU/ml}$ ) with seglulolytic bacteria are 2-3 times greater ( $6.86 \times 108\text{CFU}$  vs  $2.58 \times 108\text{CFU/ml}$ ).

The number of microbes in the rumen is significant in determining the production of fibrous feed from waste food substances. This waste products, consists of ammonia, which is the main source of nitrogen and is very important for protein synthesis of rumen microbes, and carbohydrates as an energy source. An increase in the population of microbes, especially bacteria, rises the digestibility of fibrous feed, which is also a source of high-quality protein for ruminants. Microbial protein contributes up to 90% of amino acid required in goats [6].

This study therefore aims to determine the inoculation effect of buffalo rumen in goats and its use in producing fermented feed used for digestion, weight gain, and to improve their physiological conditions.

## 2. Materials and Methods

The study population consists of a total of 24 young male goats (8 weeks old) with an average weight of  $4.9 \pm 0.8$  kg. The goats were randomly divided in groups of 12, with the bacteria rumen fluid administered in one. Each goat was placed in an individual cage of  $1 \text{ m} \times 1.5 \text{ m}$  in size by 24 units, made up of feedlots (basin), drinking buckets, and tags. The study was conducted for 12 weeks with the goats previously inoculated with rumen fluid bacteria of swamp buffalo for an adaptation period of 2 weeks. At first, a 5 ml culture of rumen fluid bacteria of swamp buffalo was mixed with sterile milk media and incubated at room temperature for 48 hours. The output was a curd, which was further shaken in a tube with milk and administered on goats. Each kid was given milk of 1 liter/day till it was 6 weeks old, before switching to 0.5 liters till it was 8 weeks old. The goat group, which was administered 5ml/day, was fed using a syringe at a concentration of  $5.65 \times 108 \text{ cfu/ml}$ . During the lactation period, all goat kids were provided with starter feed and drinking water in adlibitum. Furthermore, after the age of 8 weeks, they were provided with treatment feed-in adlibitum until the age of 20 weeks

The treatment consists of the following: (TR0), feed that is usually given by farmers. (TR1), 25% rumen fluid-based feed + 75% TR0.(TR2), 50% rumen fluid-based feed + 50% TR0.(TR3), 75% rumen fluid-based feed + 25% TR0. The study was conducted at the cage of the Faculty of Agriculture, Islamic University of Kediri, the Feed Technology Laboratory of Bogor Agricultural Institute, and the Post Harvest Laboratory of Cimanggu, Bogor. The buffalo rumen was used with the nutrient content shown in Table 1.

**Table 1.Feed Nutrient Composition**

Feed	TR0	TR1	TR2	TR3
Field Grass (%)	60	45	30	15
Legumes	40	30	20	10
Fermented feed	0	25	50	75
Amount	100	100	100	100
Nutrition Composition				
Dry matter	23.22	29.31	35.39	41.48
Crude protein	12.89	13.03	13.16	13.29

Coarse Fiber	24.35	24.17	23.99	23.82
Fat	1.76	1.89	2.03	2.16
Bet-N	49.97	49.5	49.03	48.56
TDN	52.2	52.83	53.44	54.06
NDF	61	59.49	57.61	55.73
ADF	42.46	41.74	41.01	39.79
Ca	0.45	0.53	0.6	0.67
P	0.68	0.7	0.72	0.73

### 2.1. Producing the Fermented Feed Based on Swamp Buffalo Rumen Fluid

This fermentation process was carried out by using the anaerobic method for 7 days, with rumen fluid used as the fermenter. Before this process, the forage was cut into sizes of 2-5 cm and dried for 5 hours till it reduced by 60%. The fermentation composition consists of the following: forage, 1.5% bran, 0.5% urea, molasses, and 10% rumen fluid.

### 2.2. Data Collection and Sample Analysis

The variables measured were nutrient/feed consumption and digestibility, body weight gained, blood profile, physiology of livestock, namely heart rate, respiratory rate, rectal temperature, as well as the Ca and P mineral absorption. Data were analyzed using ANOVA, with further tests conducted assuming there are significant differences [7].

## 3. Results and Discussion

### 3.1. Consumption and Digestibility of Feed Nutrient

Statistical test showed the interactions between the various types of feed and inoculation of rumen fluid bacteria of swamp buffalo that significantly influenced ( $P < 0.05$ ) the feed consumption of kacang goat, as shown in Table 2. There are interactions in the inoculation of buffalo rumen and the fermented feeds in the consumption of dry matter. The group of uninoculated livestock significantly reduced the consumption of dry matter by 0.05. However, fermented foods increased the consumption rate of goats by 75%.

Consumption and digestibility of goats inoculated with the bacteria were higher, with the ability to increase the consumption and digestibility of goats. This showed that the provision of buffalo rumen-fluid bacteria was able to improve the digestive condition and protect goats from the pathogen.

Inoculation with this bacteria significantly influenced ( $P < 0.05$ ) the consumption and digestibility of crude protein in goats with higher weight compared to those administered with TR0 treatment (control). This was due to the fact that livestock that was fed with rumen fluid-based feed was significantly able to produce better utilization efficiency with low consumption levels. Moreover, ration in the treatment of TR3, using buffalo rumen fluid has the ability to increase the final weight, due to cellulolytic bacteria that improve the health of the digestive tract and the digestibility of nutrients, such as crude fiber. According to Bidura et al. [8], the supply of nutrients for livestock tends to increase the overall goat body weight per day, ultimately.

**Table 2. Consumption and Digestibility of Goat Nutrients Incubated with Bacteria of Swamp Buffalo Rumen Fluid**

Variable	Treatment						
	Conditions of Livestock	TR0	TR1	TR2	TR3	Average	STD
Consumption of dry matter (g/head/day)							
	Inoculated	380.21 <sup>a</sup>	378.32 <sup>b</sup>	420.62 <sup>c</sup>	489.43 <sup>d</sup>	416.12 <sup>B</sup>	2.17
	Without inoculation	270.54 <sup>a</sup>	280.68 <sup>a</sup>	300.85 <sup>b</sup>	340.12 <sup>c</sup>	305.33 <sup>A</sup>	1.44
	Average	325.37 <sup>A</sup>	329.50 <sup>A</sup>	360.73 <sup>B</sup>	414.57 <sup>C</sup>		
Consumption of protein (g/head/day)							
	Inoculated	64.14 <sup>a</sup>	68.05 <sup>b</sup>	70.23 <sup>c</sup>	72.17 <sup>d</sup>	68.44 <sup>B</sup>	0.12
	Without inoculation	52.56 <sup>a</sup>	54.08 <sup>ab</sup>	57.23 <sup>b</sup>	60.12 <sup>c</sup>	56.09 <sup>A</sup>	0.12
	Average	58.35 <sup>A</sup>	61.06 <sup>B</sup>	63.53 <sup>B</sup>	66.14 <sup>C</sup>		
Consumption of TDN (g/head/day)							
	Inoculated	334.02 <sup>a</sup>	354.12 <sup>b</sup>	362.93 <sup>c</sup>	389.22 <sup>d</sup>	359.12 <sup>B</sup>	0.95
	Without inoculation	272.34 <sup>a</sup>	287.21 <sup>b</sup>	280.95 <sup>ab</sup>	310.52 <sup>c</sup>	290.15 <sup>A</sup>	0.66
	Average	303.18 <sup>A</sup>	320.46 <sup>B</sup>	321.94 <sup>B</sup>	349.87 <sup>C</sup>		
Digestibility of dry matter (%)							
	Inoculated	68.72 <sup>a</sup>	71.48 <sup>b</sup>	73.36 <sup>b</sup>	77.82 <sup>c</sup>	72.42 <sup>B</sup>	0.04
	Without inoculation	61.12 <sup>a</sup>	65.21 <sup>b</sup>	68.04 <sup>c</sup>	70.04 <sup>c</sup>	66.10 <sup>A</sup>	0.14
	Average	64.92 <sup>A</sup>	68.34 <sup>B</sup>	70.70 <sup>C</sup>	73.93 <sup>D</sup>		
Digestibility of protein (%)							
	Inoculated	70.23 <sup>a</sup>	72.65 <sup>a</sup>	74.08 <sup>b</sup>	76.12 <sup>b</sup>	73.34 <sup>B</sup>	0.10
	Without inoculation	62.21 <sup>a</sup>	65.26 <sup>a</sup>	68.34 <sup>b</sup>	69.35 <sup>b</sup>	66.29 <sup>A</sup>	0.12
	Average	66.22 <sup>A</sup>	65.26 <sup>A</sup>	71.21 <sup>B</sup>	72.53 <sup>B</sup>		
Digestibility of TDN (%)							
	Inoculated	65.45 <sup>a</sup>	66.72 <sup>a</sup>	67.98 <sup>ab</sup>	69.24 <sup>b</sup>	67.35 <sup>B</sup>	1.93
	Without inoculation	60.12 <sup>a</sup>	62.37 <sup>a</sup>	63.08 <sup>ab</sup>	65.82 <sup>b</sup>	62.85 <sup>A</sup>	0.67
	Average	62.78 <sup>A</sup>	64.54 <sup>A</sup>	65.53 <sup>B</sup>	67.53 <sup>B</sup>		

Note TR0: feed that is usually given by farmers. TR1: 25% rumen fluid-based feed + 75% TR0. TR2: 50% rumen fluid-based feed + 50% TR0. TR3: 75% rumen fluid-based feed + 25% TR0. Values with the same lowercase letters in the same row are not significantly different. Values with the same uppercase letter in the same row or column are not significantly different ( $P > 0.05$ ). The interaction between TDK and KN was significant ( $P < 0.05$ ).

### 3.2. Body Weight Gain of Goat

The body weight gain did not show interactions between types of feed and inoculated livestock. However, the rumen fluid bacteria of swamp buffalo was highly significant ( $p < 0.05$ ) on goat UNH, as shown in Table 3. The body weight gain of goats inoculated was heavier by 73.46 g/head/day whereas control livestock (without inoculation) was lighter by 41.45g/head/day. It is thought that the increase in goat kid's daily body weight gain is a direct impact of the final weight due to cellulolytic bacteria from buffalo rumen fluid, which is a fiber degradation that functions to maintain microbial balance in the digestive tract. The use of 5% fluid bacteria was able to produce a higher body weight gain. Therefore, the cellulolytic probiotic bacteria tend to improve the health of the digestive tract and nutrients of crude fiber. Therefore, the supply of nutrients for livestock



increases, the bodyweight of livestock. This is suspected that the use of inoculation with swamp buffalo rumen fluid bacteria in goat kids has the ability to increase the number of rumen bacteria due to its softer and easier digestive ability. This is in line with Hungate [9], which stated that the additive composition largely determines fermentation activity because each of these microbes/bacteria plays a precise role in degrading feed. Toharmat et al. [10] stated that the type of feed tends to influence the consumption of dry matter and other nutrients, which subsequently affects the performance of livestock.

**Table 3. Initial, Final Body Weight Gain of Goats Inoculated with Buffalo Rumen Fluid Bacteria**

Description	Treatment						
	Condition	TR0	TR1	TR2	TR3	Average	Std
Initial body weight (kg/head)							
	Inoculated	4.54	5.14	4.85	5.12	4.91	0.28
	Without inoculation	5.1	5.26	4.65	5.05	5.13	0.36
	Average	4.82	5.2	4.75	5.31		
Final body weight (kg/head)							
	Inoculated	8.42	9.24	9.64	9.98	9.32 <sup>B</sup>	0.59
	Without inoculation	6.98	7.54	7.64	8.42	8.65 <sup>A</sup>	0.59
	Average	8.7	9.39	9.64	10.2		
Body Weight Gain (kg/head/day)							
	Inoculated	3.88	4.1	4.79	4.86	4.41 <sup>B</sup>	0.49
	Without inoculation	1.88	2.28	2.99	2.92	2.52 <sup>A</sup>	0.53
	Average	2.88	3.19	3.89	3.89		
Daily Body Weight Gain (g/head/day)							
	Inoculated	64.67	68.33	79.54	81.00	73.46 <sup>B</sup>	0.46
	Without inoculation	31.33	36.00	49.83	48.67	41.45 <sup>A</sup>	0.49
	Average	48.0	52.16	64.68	64.83		

Note: (TR0), feed that is usually given by farmers (TR1) 25% rumen fluid-based feed + 75% TR0. (TR2), 50% rumen fluid-based feed + 50% TR0. (TR3) 75% rumen fluid-based feed + 25% TR0. Values with the same lowercase letters in the same row are not significantly different. Values with the same uppercase letter in the same row or column are not significantly different (P > 0.05). The interaction of TDK and KN was significant (P < 0.05)

### 3.3. Blood Profile of Goat

The blood profile shows the physiological conditions of livestock such as the presence of disease, mineral content in livestock, and leukocytes, or white blood cells that function to help the body ward off various types of diseases caused by infections in livestock bodies. The blood profile of goats administered with a buffalo rumen fluid-based feed is shown in Table 4.

**Table 4. Analysis of Packed Cell Volume (PCV) and Hemoglobin (Hb) Blood Profile as Well As Lymphocytes, Basophils, Monocytes and Neutrophils of Goats**

Description	Condition	Treatment				Average	Std
		TR0	TR1	TR2	TR3		
<b>Hemoglobin (g %)</b>							
	Inoculated	8.02	8.64	9.12	10.19	9.05	1.02
	Without inoculation	7.45	7.86	8.03	8.76	8.03	0.55
	Average	7.74	8.25	8.58	9.60		
<b>PCV (%)</b>							
	Inoculated	24.15	25.76	26.22	28.65	26.19	1.86
	Without inoculation	20.64	21.05	21.84	22.87	21.6	0.98
	Average	22.40	23.41	24.03	25.76		
<b>Lymphocytes (%)</b>							
	Inoculated	50.24	51.06	52.53	53.76	51.90	1.56
	Without inoculation	40.12	41.11	41.85	42.64	41.43	1.07
	Average	45.18	46.09	47.19	48.20		
<b>Basophils (%)</b>							
	Inoculated	0.83	0.96	1.04	1.16	1.00	0.14
	Without inoculation	0.64	0.72	0.79	0.86	0.75	0.09
	Average	0.74	0.84	0.92	1.01		
<b>Monocytes (%)</b>							
	Inoculated	2.42	2.86	3.16	3.64	3.02	0.51
	Without inoculation	1.98	2.01	2.46	2.89	2.34	0.43
	Average	2.20	2.44	2.81	3.27		
<b>Neutrophils (%)</b>							
	Inoculated	38.24	39.04	39.68	40.05	30.09	19.00
	Without inoculation	36.52	36.82	37.26	37.96	37.14	0.63
	Average	19.06	37.93	38.47	39.01		

Note: (TR0), feed that is usually given by farmers (TR1) 25% rumen fluid-based feed + 75% TR0. (TR2), 50% rumen fluid-based feed + 50% TR0. (TR3) 75% rumen fluid-based feed + 25% TR0. Values with the same lowercase letters in the same row are not significantly different. Values with the same uppercase letter in the same row or column are not significantly different ( $P > 0.05$ ). The interaction of TDK and KN was significant ( $P < 0.05$ )

There was no significant interaction between the type of feed and inoculation of rumen fluid bacteria of swamp buffalo on the blood profile of kacang goat. However, there was a significant influence of 5% ( $P < 0.05$ ) between goats that were inoculated and those without its administration, as shown in Table 4, and between 08-12% with PCV levels ranging from 24-48% in the blood. In addition, age difference tends to influence the amount of Hb and PCV in goats as the younger ones have lower Hb and PCV than the juveniles. There is a tendency for the livestock to be unhealthy, assuming Hb and PCV are below normal levels. This tends to occur when the administered feed rations are unable to fulfill the needs of calcium and phosphorus for livestock, thereby leading to calcium and phosphorus deficiency, which is characterized by a decrease in red blood cells (Hb) and PCV [11].

Neutrophils are related to the body's defense against bacterial infections and other minor inflammatory processes and tend to provide the first response. The number of neutrophils

in goats is between 35 - 40% of the total leukocytes. The results of the study did not show interactions between types of feed and inoculation of rumen fluid bacteria ( $p < 0.05$ ) however, it showed that the percentage of neutrophils was within the normal limits,  $36.52 \pm 4.72\%$  and  $40.15 \pm 0.75\%$ . This was because goats that incubated and consumed rumen fluid bacteria-based feed tend to increase the amount of feed digestibility. Therefore, it ultimately influences the nucleus of each cell divided into lobes or segments of the parent and kid goat that are appropriately connected by the filament, thereby producing a normal nucleus in neutrophils [11]. Segment cells or monocytes are also known as macrophages after they leave the bloodstream and enter the tissue. Monocytes divide the function of "vacuum cleaners" (phagocytosis) from neutrophils and live with the additional task, by providing pieces of pathogens to T cells. Therefore, the pathogens are memorized and killed, or produces responsive antibodies.

### 3.4. The Physiological Conditions of Livestock

The physiology condition of the goat was evaluated based on its temperature, heart, and respiratory rates. Table 5 failed to show any interaction between feed types and inoculation of buffalo rumen ( $P < 0.05$ ) to the physiological condition of livestock.

**Table 5. Physiological Condition of Goats That were Given the Buffalo Rumen Fluid-Based Feed**

		Treatment					
Condition of Livestock		TR1	TR2	TR3	TR4	Average	Std
Heart Rate (times/minute)							
Inoculated		78.45±2.5	79.87±2.5	80.17±4.2	80.64±1.8	79.78±2.7	0.94
Without inoculation		77.22±3.4	78.04±1.4	78.95±3.7	79.05±2.1	78.32±2.6	0.86
Average		77.84±2.9	78.96±1.9	79.56±3.9	79.85±1.9		
Respiratory rate (times/minute)							
Inoculated		61.24±2.1	62.65±3.2	63.72±1.2	64.32±2.2	62.98±2.2	1.35
Without inoculation		60.02±1.8	61.05±2.6	61.78±1.3	62.66±1.1	61.38±1.7	1.12
Average		60.63±1.9	61.85±2.9	62.75±1.2	63.49±1.6		
Rectal Temperature(°C)							
Inoculated		39.12±1.2	39.15±2.2	38.93±1.4	39.67±1.2	39.22±1.5	0.32
Without inoculation		39.02±1.8	38.16±2.8	38.65±2.1	39.42±1.4	38.81±2.0	0.54
Average		39.07±1.5	38.66±2.5	38.79±1.7	39.55±1.3		

Note: (TR0), feed that is usually given by farmers (TR1) 25% rumen fluid-based feed + 75% TR0. (TR2), (TR2), 50% rumen fluid-based feed + 50% TR0. (TR3) 75% rumen fluid-based feed + 25% TR0. Values with the same lowercase letters in the same row are not significantly different. Values with the same uppercase letter in the same row or column are not significantly different ( $P > 0.05$ ). The interaction of TDK and KN was significant ( $P < 0.05$ )

The heart and respiratory rates of inoculated and uninoculated cattle failed to show a significant interaction ( $P < 0.05$ ). However, the cattle inoculated with the rumen fluid bacteria of swamp buffalo had higher heart rates compared to those without its content. This increase was due to a rise in environmental temperature.

There was no interaction between inoculated livestock with feed type, while lower rectal temperature ( $P < 0.05$ ) were seen in a single factor of the rumen fluid bacteria of swamp buffalo. This showed that inoculation with the rumen fluid bacteria of swamp buffalo has



the ability to improve the rectal temperature status of goats compared to cattle, with their rectal temperature within normal limits. Agustin [12] stated that bacterial inoculation in cattle changes the fermentation pattern in the rumen and its metabolism in livestock by producing body heat. Conversely, Prihantoro et al. [13] stated that an increase in body heat of livestock leads to a rise in the respiratory rate.

### 3.5. Mineral Absorption in Goat

Goats need enough minerals for growth, pregnancy, and lactation. Therefore, calcium and phosphorus are essential mineral elements for the proper formation of teeth and bone, protein synthesis, as well as in the creation of enzymatic systems in livestock. However, the results in Table 6 show no interaction between feed type and inoculation of the rumen fluid bacteria of swamp buffalo.

**Table 6. Calcium and Phosphorus Mineral Absorption in Goats**

Condition of livestock	Treatment					
	TR1	TR2	TR3	TR4	Average	Std
Calcium Mineral Absorption (ppm)						
Inoculated	158.86±1.8	159.38±2.1	160.21±2.2	161.86±1.8	160.14 <sup>b</sup> ±1.9	1.28
Without inoculation	140.61±2.1	142.76±1.6	143.86±1.5	144.26±2.0	142.87 <sup>a</sup> ±1.8	1.64
Average	149.74±1.9	151.19±1.8	152.04±1.8	153.06±1.9		
Phosphorus Absorption (ppm)						
Inoculated	0.28±0.2	0.3±0.3	0.31±0.1	0.33±0.1	0.31±0.3	0.02
Without inoculation	0.26±0.1	0.27±0.4	0.28±0.2	0.3±0.1	0.28±0.2	0.02
Average	0.27±0.1	0.29±0.3	0.30±0.1	0.32±0.1		

Note: (TR0), feed that is usually given by farmers (TR1) 25% rumen fluid-based feed + 75% TR0. (TR2), 50% rumen fluid-based feed + 50% TR0. (TR3) 75% rumen fluid-based feed + 25% TR0. Values with the same lowercase letters in the same row are not significantly different. Values with the same uppercase letter in the same row or column are not significantly different ( $P > 0.05$ ). The interaction of TDK and KN was significant ( $P < 0.05$ )

A single factor of inoculation with the fluid showed a significant difference ( $P < 0.05$ ) of calcium absorption compared to cattle without inoculation. Furthermore, it tends to have a greater number of rumen bacteria, however, these bacteria tend to be more easily digested in goats compared to cattle. Calcium in the blood of livestock is influenced by the amount provided by the feed. The intestine absorbs it from the surface by cells located in microvilli, before entering the extracellular fluid-related with capillaries.

The phosphorus absorption in goat failed to show an interaction between the type of feed and inoculation. A single factor of the rumen fluid also showed no significant difference ( $P < 0.05$ ), however, there was a tendency for an increase in phosphorus absorption in livestock with bacterial inoculation. The phosphorus absorption in a growing goat was high and used for the formation of skeletal tissues, bones, and teeth. This was influenced by feed consumed by livestock, where rumen-based feed was easy to digest and had 2% phosphorus content in the feed, which was sufficient. Lack of phosphorus and potassium content in feed tends to influence the physiology of its consumers. This is in line with the research conducted by Linder [14], which stated that the mineral absorption in livestock was strongly influenced by the type of feed and the age of livestock.

#### 4. Conclusion

As conclusion, the administration of swamp buffalo rumen fluid bacteria has the ability to increase the growth rate of livestock and physiological stability of goats by 75%.

#### 5. Acknowledgments

The authors are grateful to the Director-General of Higher Education, for providing the research funds in the National Competitive Basic Research Grant for the 2018-2019 fiscal year. This research was properly conducted with contract Number: 511/Research contract/K11/KM/2018. Indonesia.

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