The Effects of Probiotic and Organic Acid from Hymenache Acutigluma Silage to The Weight of Small Intestine and Caeca in Pegagan Ducks

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Abstract. The aims of the research to determine the effect of probiotics and organic acids from (Hymanachine acutigulma) silage to the percentage of small intestine weights and ceace. This research was held on two months at the experimental fary Faculty of Agriculture, Sriwijaya University. Data analyzed in description by 6 treatments and 4 replications. There is 3 Pegagan duck as a variable unit: P0 (control), P1 (diet + organic acid), P2 (diet + probiotic), P3 (diet + tetracycline), P4 ((diet + organic acids + probiotics)), P5 ((diet + organic acid + probiotic + tetracycline)). The observed variables were small intestine weight, duodenum weight, jejenum weight, ileum weight and ceace weight. The results of this research indicate that the effect of probiotic and organic acid from (Hymanachine acutigulma) silage can increase the weight of the small intestine, duodenum, jejenum, ileum, ceace and total bacteria acid lactat. The conclusion of this research is the provision of probiotics and organic acids from (Hymanachine acutigulma) silage can icrease the weight of the small intenstine, duodenum, jejenum, ileum, ceace and total bacteria acid lactat

Keywords: caeca, pegagan duck, probiotics, small intestine, organic acid

1. Introduction

Pegagan Ducks is germ plasm South Sumatra, who came from villages koto daro II kecamatan Rantau Panjang. Pegagan ducks has advantages such as adult weight ranges 2 kg and heavy eggs ranges 70g This was a type of pegagan ducks that can produce eggs and meat, but its productivity is still low , one effort to improve productivity animal is improve the quality of the feed .The problems that often occurred during this is still a lot the use of antibiotics as growth will gain, it is going to any negative impact on animal because of the residue that could endanger the consumers . Come up with an alternative that could be done by to replace the use of an antibiotic with probiotics and organic acids.

Probiotics is microbes living that are capable of developing inside the intestines and benefit the host . The use of probiotics can serve to set composition to be microflora by reducing the number of pathogenic microorganisms in the intestines . [1] is that the use of probiotics containing lactic acid bacteria 3.6 ml capable of being employed by good in the digestive tract .The results of the study [2] shows that isolate derived from silage Hymenache

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acutigluma including in a type of lactic acid bacteria Lactobacillus plantarum who can serve as probiotics

The addition of an organic acid that can maintain a balance in the diestive tract by means of maintaining pH of the digestive tract , so that the protein increase. Results of the study [3] shows that lactic acid bacteria derived from silage Hymenache acutigluma capable of living in a condition of pH low and high .The addition of an organic acid on the water drinking or poultry feed it has been proven to improve the absorption of with improve the functioning an enzyme digestive so it influences increase in digestion and absorption of especially fibers and protein [4]. Based on this it is necessary to conduct research on the effect of giving probiotics and organic acids to the weight of small intestine and caeca Pegagan duck.

2. Materials And Methods

2.1 Materials

Material used in research is organic acids and lactic acid bacteria resulting from Hymenache acutigluma silage. Rations consisting of maize , bran rice , concentrates , MBM, soybean, metionin , and lysine who get mixed until homogeneous (Table 1 and 2) .pegagan ducks age six months as many as 72 tail.

Table 1. Composition feed ingredients

Feed Ingredients	Usage (%)
Corn	43.00
Rice Bran	19.80
Concentrate	19.10
Soybean	12.20
MBM	4.90
Methionine	0.40
Lysine	0.60
Total	100

Table 2. The nutritional content of the research ration

Feed Ingredients	Usage
Dry ingredients (%) *	89.52
Organic ingredients (%) **	41.52
Crude Fiber (%) *	11.64
Crude fat (%) *	5,91
Crude protein (%)*	23.97
Nitrogen(%)***	0.67
Calcium (%) ***	2.86
Potassium (%) ***	0.45
Phosphor (%)***	1.08
Energy Metabolism (kcal / kg) **	2771.08

Note: * Nutritional requirements based on analysis results in the nutrition and animal feed laboratory (2019)

**Nutrition needs based on ration calculation results

*** Nutrition needs based on the results of analysis in the chemical, biological and fertility Laboratories

2.2 Research Methods

2.2.1 Probiotic

Making probiotics in this study using the [5] ,. Lactic acid bacterial isolates that have been obtained are then cultured in MRSB (deMann Rogosa Sharpe Agar in the form of liquid / borth) and incubated for 48 hours. The culture was centrifuged at 3000 rpm for 15 minutes to separate the supernatant and substrate. The substrate was added with 5% skim milk and maltrodextrins (w / w). Next, spray dried with a temperature of 160-180^{0}C.

2.2.2 OrganicAcid

According to the modified State method (2009), after 21 days the silage is harvested and then opened and extorted with the addition of distilled water (1: 1). The obtained silage liquid is then put into a bag made of cloth to separate the liquid between the silage, then the silage juice is taken to check the value of the acidity (pH) using a pH meter. If the silage pH is around 3.8-5 then silage juice can be used as organic acid. Organic acids that have been taken are put into plastic bottles to be stored in the refrigerator.

2.2.3 Livestock raising

Maintenance of Pegagan ducks is done for 60 days. Provision of treatment for the use of organic acids is mixed in drinking water, probiotics and tetracycline mixed in feed. During the maintenance of the ration and drinking water is given *adlibitum.*

2.2.4 Sampling

Before cutting, ducks are fasted for 6 hours and only given drinking water. Cutting is done by severing the blood vessels (veins and arteries), food channels and airways then blood is removed by hanging for 50-120 seconds, then immersion in hot water for 5-30 seconds with the aim to facilitate the process of hair removal. After hair removal, the legs, head, neck and internal organs are removed and the small intestine is removed and wiped off. Small intestinal fluid and wipe removed first then cut and measured its weight.

2.3 Data Analysis

The variables observed in this study were small intestine weight, doudenum, jejenum, ileum and wasted weight [6] . Data were analyzed descriptively with 4 replications and 6 treatments consisting of

P0 = ration without treatment (Control)
P1 = ration basal + organic acid
P2 = ration basal + probiotics
P3 = ration basal + tetracycline
P4 = ration basal + organic acid + probiotics
P5 = ration basal + Organic acid + Probiotics + Tetracycline

3. Results and discussion

3.1 Results

The results of giving probiotics and organic acids from copper silage grass silage to the weight of small intestine, duodenum, ileumaf jejenum and ceace Pegagan duck can be seen in Table 3.

Table 3. Average percentage weight of small intestine (duodenum, jejenum ileum) and ceace pegagan ducks.

Treatment	Small Intestine	Duodenum	Jejenum	Ileum	caeca
P0	1.94 ± 0.12	0.35 ± 0.04	0.83 ± 0.03	0.75 ± 0.02	0.32 ± 0.02
P1	2.00 ± 0.16	0.35 ± 0.02	0.84 ± 0.11	0.76 ± 0.05	0.32 ± 0.03
P2	2.19 ± 0.14	0.40 ± 0.05	0.92 ± 0.08	0.86 ± 0.09	0.38 ± 0.07
P3	2.04 ± 0.20	0.39 ± 0.05	0.91 ± 0.13	0.78 ± 0.18	0.36 ± 0.04
P4	2.43 ± 0.20	0.45 ± 0.03	1.08 ± 0.10	0.89 ± 0.09	0.43 ± 0.03
P5	2.03 ± 0.11	0.37 ± 0.02	0.86 ± 0.10	0.76 ± 0.10	0.32 ± 0.03

Note: P0 = (control), P1(ration basal + organic acid), P2 (ration basal+ Probiotic), P3 (ration basal+ Tetrasilin), P4 (ration basal + organic acid + probiotic)), P5 (ration basal + organic acids + + Probiotics+ Tertrasilkin).

3.1.1 Small Intestine Weight

The results of the average percentage of Pegagan ducks small intestine weighing ranged from 1.94-2.43%. The lowest average percentage of small intestine weight in this study is in control (P0) while the highest average value is in the provision of probiotics and organic acids (P4). This indicates that the administration of probiotics and organic acids from silage of copper clumps works optimally in the small intestine so that it can influence the weight of the Centella asiatica ducks, allegedly giving probiotics can produce short chain fatty acids which are the product of the production of Lactic Acid Bacteria (LAB) . [7] stated that short chain fatty acids are the result of the production of *Bifidobacteria* and *Lactobacilli bacteria.* Organic acid also has antibacterial properties that emphasize the growth of pathogenic bacteria that are in the small intestine so that the process of absorption of nutrients will go well. This is in line with the opinion of [8] which states that organic acids can emphasize the growth of pathogenic bacteria because organic acids can reduce pH in the small intestine and have antibacterial properties.

3.1.2 Weight of the Duodenum

The results of the study showed the average percentage of duodenal weight ranged from 0.35% - 0.45. The lowest mean percentage of duodenal weight in this study is control treatment (P0) while the highest average value is in the treatment of probiotics and organic acids (P4). Probiotics and organic acids can work well, thereby increasing the absorption of nutrients in the duodenum. Increased absorption of nutrients due to the provision of probiotics and organic acids stimulates the growth of intestinal epithelial cells so that the process of absorption of nutrients will increase. This is in accordance with [9] who stated that short chain fatty acids produced by probiotics will affect the growth of intestinal epithelial cells which will increase the process of absorption of nutrients in the duodenum. Provision of probiotics and organic acids that can increase the activity of lactic acid bacteria will stimulate the growth

of villi in the intestine and ultimately will increase the absorption of nutrients in the duodenum [10]. Growth of the villi in the intestine will increase the weight of the duodenum. This can be seen from the results of research showing that the administration of probiotics and organic acids which can increase the growth of villi in the duodenum will increase the percentage of duodenal weight.

3.1.3 Jejenum Weight

The results of the average percentage of jejenum weights ranged from 0.83-1.08%, these results are still in the normal range it can be compared with the results of [11] research, which is 0.87-0.84%. The lowest average value of jejenum in this study was control treatment (P0) while the highest average value was in the provision of probiotics and organic acids (P4). An increase in jejenum is due to the administration of probiotics and organic acids from silage of copper clumps that work well on jejenum thereby expanding the absorption area in the jejenum. The increased area of absorption in the jejenum will be followed by an increase in the growth of villi in the jejenum. This is in accordance with [12] which states that the increase in intestinal villi height in jejenum is in line with the good absorption of nutrients in jejenum. Probitok and organic acids are able to control the state of microflora in the jejenum so as to increase the thickness of the mucosal tunica in the jejenum wall. Provision of probiotics and organic acids in this study has been shown to increase nutrient absorption which will ultimately affect the weight of the small intestine in the jejenum.

3.1.4 Ileum Weight

The results of the average weight of jejenum research ranged from 0.75% - 0.89%, this result is still in line with the results of [11] the effect of giving probiotics from copper clump grass silage on small intestine weights and wiped with an average percentage of ileum weights 0.82% - 0.89%. The lowest mean ileum value in this study was in the control treatment (P0) while the highest mean value was the giving of probiotics and organic acids (P4). An increase in the average percentage of ilum weight shows that probiotics and organic acids from silage of copper clump grass still work optimally although ilum does not play a role in the process of nutrient absorption because the absorption process of nutrients in the small intestine occurs mostly in the duodenum and jejenum [13].

3.1.5 Caeca Weight

The results of the study showed that the average percentage of weights ranged from 0.32 to 0.43%, this result is in line with the results of the study of [14] profile of the digestive tracts of female tegal ducks that were given additional feed in combination with papaya leaf extract and lactic acid bacteria with an average percentage of 0.37% .- 0.40%. The lowest mean percentage of winting was in the control treatment (P0) while the highest mean value was in the provision of probiotics and organic acids (P4). The average percentage of weight loss has increased because of the provision of probiotics and organic acids from copper clump grass silage that affected the increase. Probiotics and organic acids play a role in multiplying bacteria in the caesarean so that it will increase the digestive activity that occurs in ceca [15] . Probiotics and organic acids provide evidence of an effect on wasting weight. This shows that

there is a good absorption of nutrients in the seka due to the widening of the absorption area of nutrients in wipe so that it affects wasting weight. [16] reports that probiotics can expand the absorption area in the intestine so that it makes absorption of nutrients more effective. They are a place of microbial digestion with the aim of digesting undigested nutrients in the small intestine [13]. The work of probiotics and organic acids can increase the work of secreting enzymes in cellulose and hemicellulose in digesting food. Increased wasting in digesting nutrients will be followed by good growth of intestinal villi so that it will affect wasting weight.

4. Conclusion

The conclusion of this research is the provision of probiotics and organic acids can improve the digestive tract organs of the small intestine, jejenum, duodenum, ileum and caeca pegagan duck.

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