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Effects of Fish Mill Replacement with Expired Milk in Ration to Performance and Carcass of Male Local Rabbit (*Lepus nigricollis*)

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ABSTRACT

Research used 20 male local rabbit. It aim was to now performance of the animals fed help or all replacement of fish mill with expired milk. Ration R3 and R4 produced end body weight and growth rate lower significant difference ($P < 0.05$) than R2, R1 and R0. There were no significant difference ($P > 0.05$) among treatments on consumption and ration conversion. Carcass weight and its percentage of the animals fed ration R3 and R4 were lower ($P < 0.05$) compare to R1, R2 and R0. There were no significant difference ($P > 0.05$) to meat bone ratio among treatments. From the research results could be concluded that fish mill in the animals ration could be replaced up to 50% with expired milk without affect performance and carcass of the animals.

Key words: *local rabbit, fish mill, expired milk, performance, carcass*

INTRODUCTION

Ration is one of environment factor affects to high and low productivity of animal. Ration management which oriented on rabbit nutrient and available of ingredient are the right effort to increase productivity of rabbit efficiently. Nuriyasa *et al*. (2015) stated that understanding about ration quality and expensive price of commercial feed is the reason of unsuccessfully of rabbit farming. This condition often causes frustration on the rabbit farmers.

The farmers must be able to replace all or half ingredients are needed and also be able to use industry waste product such as expired milk which is rich of nutritive value and protein that be able to increase growth rate of local chicken optimally. Expired powder milk waste is not consumed any more by human being. Even though, it nutrition contents is not much different compare to the fresh one (Irianto, 2011). Research results of Alim *et al*. (2012) showed that additional of expired milk 5%, 7% and 10% in total commercial chickens ration produced higher body weight compare to commercial ration without additional of expired milk. The addition of the expired milk 10 % of ration total resulted the best increase of ration consumption. The expired milk could become an alternative to replace fish mill in ration composition due to it price is cheap relatively compare to fish mill. Base on that fact, it needs to do research about replacement of fish mill with expired milk to increase productivity of the local rabbit.

RESEARCH METHOD

Research Design

The research design used 40 male local rabbit with Randomized Block Design, 5 treatments and 8 Blocks as replicates. The treatment was control without replacement of fish mill (R0);

fish mill 25% of ration was replaced with expired milk (R1); fish mill 50% of ration was replaced with expired milk (R2); fish mill 75% of ration was replaced with expired milk (R3) fish mill 100% of ration was replaced with expired milk (R4).

Ration

The ration was composed with some ingredients i.e. yellow corn, fish meal, expired milk, tapioca mill, tofu waste, rice bran, elephant grass, mineral mix and saw mill, and it ingredient And nutrient contents as in Table 1 and Table 2.

Table 1. Ration Ingredient Composition

Ingredient (%)	Treatment				
	R0	R1	R2	R3	R4
Yellow corn	34	34	34	34	34
Fish mill	20	15	10	5	0
Expired milk	0	5	10	15	20
Tapioca mill	11.4	11.4	11.4	11.4	11.4
Tofu waste	20	20	20	20	20
Rice bran	7.7	7.7	7.7	7.7	7.7
Elephant grass	4	4	4	4	4
Salt	0.25	0.25	0.25	0.25	0.25
Mineral mix	0.5	0.5	0.5	0.5	0.5
Bone mill	0.65	0.65	0.65	0.65	0.65
Saw mill	1.5	1.5	1.5	1.5	1.5
Total	100	100	100	100	100

Table 2. Ration Nutrient Contents

Treatment	Nutrient Content					
	ME (k cal/kg)	CP (%)	Ca (%)	P (%)	Fat (%)	CF (%)
R0	2400	15,0	0,74	0,50	6,58	9,27
R1	2464,94	13,74	0,73	0,43	7,0	9,54
R2	2519,83	12,44	0,73	0,36	7,44	9,81
R3	2574,71	11,14	0,72	0,29	7,87	10,07
R4	2629,60	9,85	0,71	0,23	8,30	10,34

RESEARCH VARIABLES

Ration Consumption. Ration consumption was calculated every week through sum of ration offered to the animals minus the rest of ration the day.

Water Consumption. Drinking water consumption was calculated trough the water offered to the animals minus the rest of it in the day after.

Body Weight. Initial weight of the animals was obtained at the beginning of the research, while end body weight was at the end of the research. Body weight gain was obtained through the end body weight minus initial body weight (in this case the animal was fasted for 12 hours).

Ration Conversion. Ration Conversion or Feed Conversion Ratio (FCR) was calculated by comparing between sum of ration consumed with body weight gain during the research.

Carcass

Carcass data were obtained through slaughtered system of Owen and Owen (1981) on the age of 84 days. This system is the same to procedure of Alhaidary *et al.* (2010), blood was taken out with cut off the jugular vein located at neck of the animals. Then the animal body was hung at one of hind shin. The hide was removed and then the head at the *atlanto-occipital* joint, the lower *legat* the *tarso* metatarsal and *carpo-metatarsal* joints and the tail at the junction between the sacraland the *coccygeal vertebrae*. After evisceration, the visceral organs except lungs was brought out side from body cavity. Empty body weight was obtained by brought out side of the visceral organ. Carcass percentage was calculated as total weight of hot carcass included body cavity fat and lungs divided by body weight before slaughtered times 100 (Puger and Nuriyasa, 2017). Carcass physical composition was obtained through separated components of bone, meat and carcass fat. Meat and bone-ratio was obtained by divided meat weight with bone weight.

Data Analysis

Data of the research were analyzed with multiple range test, if there was significant Difference among the treatments (P < 0.05), it would be continued to Duncan's test (Steel and Torrie, 1980).

RESULT

Initial live weight of the animal fed control ration (without replacement of fish mill with expired milk) was 506.62 g, while the animals fed replacement fish mill 25% with expired milk (R1), replacement fish mill 50% with expired milk (R2), replacement fish mill 75% with expired milk (R3) and replacement fish mill 100% with expired milk (R4) were 504.78 g, 503.86 g, 501.68 g and 500.94 g respectively, and statistically no significant difference (P > 0.05) as Table 4.1.

End body weight was affected by nutrients content and total of ration consumed of the animals. The more nutrients content absorbed, the higher end body weight produce due to better development of tissue of meat, bone and fat (Nuriyasa *et al*, 2015). The animal fed ration of treatment R0 produce end body weight (2046.40 g), while R1 (1992.06 g) and R2 (1982.84 g) higher (P < 0.05) than the animals fed ration of treatment R3 (1826.84 g) and R4 (1808.92 g). Those due to higher ration consumption of the animal fed R0, R1 and R2 compare to R3 and R4. The higher ration consumption caused energy and protein consumption higher too (Nuriyasa *et al*., 2015). Energy and protein were the main component, so they possible to form better body tissue of local chickens. From the research results of Nuriyasa *et al.* (2016) was reported that rabbit consumed higher energy and protein caused better growth rate and end of body weight.

According to Xiamei (2008) that energy and protein ratio of rabbit ration is very important to pay attention to reach optimal productivity efficiency. Treatment R4 produced body weight gain 15.57g, while treatment R3 was1.28% higher (P > 0.05) than it. Treatment R2, R1 and

R0 produced body weight gain 13.10%, 13.74% and 17.73% ($P < 0.05$). Rations R3 and R4 contains higher energy and lower protein caused energy protein ratio was higher compare to local rabbit standard needs. Research result report of Nuriyasa *et al.* (2014) stated that imbalance of energy and protein ration caused no optimal of growth rate. Rations R3 and R4 contained lower protein than R2, R1 and R0 caused not enough amino acid to synthesis meat protein.

Table 4.1 Effects of Fish Mill Replacement with Expired Milk to Performance of Local Rabbit

Variable	Treatment					
	R0	R1	R2	R3	R4	SEM
Performance						
Initial body weight (g).	506,62[a]	504,78[a]	503,86[a]	501,68[a]	500,94[a]	12,03
End body weight (g)	2046,40[a]	1992,06[a]	1982,84[a]	1826,84[b]	1808,92[b]	14,56
Body weight gain (g/day)	18,33[a]	17,71[a]	17,61[a]	15,77[b]	15,57[b]	1,12
Ration consumption (g/day)	62,51[a]	62,08[a]	62,62[a]	60,01[a]	59,42[a]	2,08
Ration conversion	3,41[a]	3,51[a]	3,55[a]	3,81[a]	3,82[a]	0,14
Carcass						
Slaughter weight (g)	2046,40[a]	1992,06[a]	1982,84[a]	1826,84[b]	1808,92[b]	54,56
Carcass weight (g)	1003,55[a]	955,19[a]	895,65a	761,24[b]	744,37[b]	30,28
Carcass percentage (%)	49,04[a]	47,95[a]	45,17[a]	41,67[b]	41,15[b]	1.13
Carcass length (cm)	34,0[a]	33,73[b]	32,88[b]	31,71[b]	31,35[b]	1,02
Bone weight (g)	288,62[a]	286,99[a]	284,45[a]	244,83[a]	241,54[a]	48,46
Meat weight (g)	704,89[a]	658,65[a]	601,69[a]	506,95[b]	493,76[b]	50,07
Fat weight (g)	10,04[a]	9,55[a]	9,51[a]	9,46[a]	9,07[a]	1,93
Meat bone ratio	2,44[a]	2,29[a]	2,12[a]	2.07[a]	2,04[a]	0,12

1) R0: Ration without replacement of fish mill with expired milk

R1: Ration replacement 25% fish mill with expired milk
R2: Ration replacement50% fish mill with expired milk
R3: Ration replacement 75% fish mill with expired milk
R4: Ration replacement 100% fish mill with expired milk

2) The same super script at the same rows showed no significant difference ($P > 0.05$) and the different super script at the same rows showed significant difference ($P < 0.05$).

Generally, rabbit consume ration firstly to fulfill its energy needs. If it is enough energy, the animal stop to eat (de Blass and Wiseman, 1997). Treatments R4 and R3 contained higher metabolism energy than treatments R2, R1 and R0, so ration consumption of the animals fed rations R4 and R3 cumulatively were lower ($P > 0.05$) compare to R2 and R1. Ration conversion is an indication of efficiency of using rabbit ration (McNitt *et al.,* 1996). R4 were 2.93%, 4.11%, 11.73% and 12.02% higher than R0, but statistically no significant difference

(P > 0.05). These were caused by higher of body weight gain quantitatively on the animals fed treatment R0 compare to R1, R2, R3 and R4 due to higher ration consumption of R0, and no caused by the different use of ration according to research result of Nuriyasa *et al.* (2016).

Slaughter weight, carcass weight, and carcass percentage of the animals fed ration R3 and R4 were lower than R2, R1 and R0. Replacement of fish mill up to 75 % (R3) and 100% (R4) caused lower protein content of ration, but it protein was higher. Nuriyasa *et al.* (2014) stated that higher content of ration than standard need causes rabbit consume less ration due to energy need is faster to fulfill it. Less ration consumption with low protein content causes amino acid as component of growth become low, so slaughter weight, carcass weight and carcass percentage which were produced lower. The animals fed control ration (R0) had carcass length 34.0 cm, while the animals fed ration R1, R2, R3 and R4 were 0.79%, 3.29%, 6.70% and 7.79% shorter (P <0.05) than R0. Ration R0 contained energy and protein match to standard need (MCNitt *et al*., 1996), so resulted higher growth rate and longer carcass than other treatments. Replacement of fish mill up to level 50% (R2) was no affect significant (P > 0.05) to carcass physical composition, but it replacement up to75% and 100% with expired milk produced lower carcass physical composition than R3 and R4. This was due to lower protein content of ration R3 and R4 than R2, R1 and R0, so protein consumption was low and formed process of meat tissue was also low. Those were match to opinion of Nuriyasa *et al*. (2018).

CONCLUSION

From all data mentioned above, it could be concluded that replacement of fish mill up to level 50% with expired milk was no affect performance and carcass male local rabbit.

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