

# Nutrient Diets Digestibility of Local Female Rabbit (*Lepus nigricollis*) offered Grass Field Supplemented Multi Nutrient Block (MNB)

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**Abstract** – This research was conducted to determine the effect of supplementation *Multi Nutrient Block* (MNB) on nutrient diets digestibility of local female rabbit offered based feed grass field. This research was conducted for 12 weeks in Dajan Peken village, Tabanan. Animals used are 20 local female rabbits (*Lepus nigricollis*). This research used randomized block design with five blocks (replications) and four treatments which control diets are rabbit offered grass field unsupplemented MNB (R0), control diets supplemented MNB 15 g/head/day (R1), control diets supplemented MNB 30 g/head/day (R2), and a control diets supplemented MNB 45 g/head/day (R3). Water and grass field provided *ad libitum*. Observed variables were dry matter digestibility, organic matter digestibility, crude protein (CP) digestibility, digestible energy (DE), crude lipid digestibility, calcium (Ca) digestibility, and the digestibility of phosphorus (P). The results showed that R1, R2, and R3 produce higher digestibility and significant different ( $P < 0.05$ ) than R0 in all variables (dry matter digestibility, organic matter digestibility, crude protein (CP) digestibility, digestible energy (DE), crude lipid digestibility, calcium (Ca) digestibility, and the digestibility of phosphorus (P)).

**Keywords** – Nutrient Digestibility, Local Rabbits, MNB, Field Grass.

## I. INTRODUCTION

Raising rabbits have been done in various countries to increase meat production. This is partly that raising rabbit does not need a wide area and are relatively small capital is needed. The failure of the farmers in raising rabbit at present is because of farmers knowledge about nutrition rabbit is not enough. In developing countries many constraints faced one of which is a nutrient digestibility of the diet is low so the growth is slow, so there is little in the farm people many rabbits are cannibals [8]. Some researchers reported the results of studies on the digestibility of nutrient diets of rabbits in Indonesia but not many who can increase the digestibility nutrient diets of rabbits. The fermented of *bagasse* cannot be used as a feed supplement for male *new zealand white* rabbits were initially expected to improve the digestibility diets of rabbits but produces lower digestibility of the dry matter and organic matter [4]. The plantain skin fermented with local microorganism could be used as a diets of rabbits and can improve the digestibility of dry matter and organic matter only to the level of 30% as feed material weaning male Rex Rabbits [5]. The utility of pineapple skin on diets to the level of 15% of the total diets does not give effect to the dry matter and organic matter digestibility nutrient rabbits [7]. The utility of corn husks to the level of

7.5% in the total diet no effect on digestibility of dry matter and organic matter crossbred male *new zealand white* rabbits [14]. Lokal male rabbits (*Lepus nigricollis*) offered grass field supplemented *Multi Nutrient Block* (MNB) until 15g/head/day produce highest performance compared by unsupplemented MNB [9]. Due the information about research rabbits and also digestibility nutrient of rabbits this experiment was carry out.

## II. MATERIALS AND METHODS

**Animals.** Animals used in the research are 20 head local female rabbit (*Lepus nigricollis*) with different ages (30-45 days) and weight range 374-498 grams so it is not homogeneous. This is a local female rabbits growth phase (bloodstock) obtained from rabbit farmer in Riang Gede Village, Tabanan, Bali, Indonesia.

**Feed and drinking water.** *Multi Nutrient Block* (MNB) is made from materials such as pollard flour, fermented tofu, molasses, coconut oil, tapioca flour NaCl and Calcium hidrofosfat. The content of MNB made according the nutrient requirements of rabbits. Energy (ME) 2449,3 kcal/ kg and 16,315% crude protein. The grass field and drinking water provided *ad libitum*.

Table 1. The Composition and Nutrient Content of *Nutrient Multi Block* (MNB)

Bahan	%	ME (Kkal)	CP (%)	Ca (%)	Pav (%)	Lemak (%)	CF (%)
Molasses*	5	98					
Pollard*	18	205,2	2,12	0,02	0,06	0,057	14,75
Fermented tofu**	60	1698	14,17	0,32	0,14	6	0,6
Tapioca flour*	5	18,1	0,025	0	0	0,015	0
Calcium Hidrofosfat*	6,5	0	0	1,66	1,17	0	0
NaCl	0,5	0	0	0	0	0	0
Coconut oil*	5	430	0	0	0	0	0
Total	100	2449,3	16,315	2,0	1,37	6,072	15,35

\*) [11]; \*\*) [3]

**Cage.** This research used 20 plots cage, under the cage is equipped with gauze used to accommodate the rabbit feces, so the pseudo feces issued rabbits accommodated. Each cage is equipped with 3 coconut shell, which is used to place of the grass, the MNB and drinking water.

**Experimental design.** This research was conducted using randomized block design with 4 treatments and 5 block (replicates), there are 20 experimental units. This research uses a randomized block design for local female rabbit (*Lepus nigricollis*) used by the body weight is not

homogeneous. The treatments will be piloted is a control diet (grass field) unsupplemented MNB (R0), control diets supplemented MNB 15 g/head/day (R1), control diet supplemented MNB 30 g /head /day (R2) and diets control supplemented MNB 45 g /head/day (R3).

*Variable Observed.* The variables measured were dry matter digestibility, organic matter digestibility, crude protein (CP) digestibility, digestible energy (DE), crude lipid digestibility, digestibility of calcium (Ca), and the digestibility of phosphorus (P).

*Data analysis.* Data were analyzed by analysis of variance, if there are differences among treatments were significantly ( $P < 0.05$ ), the analysis followed by Duncan's multiple range test [12].

### III. RESULTS AND DISCUSSION

Dry matter digestibility of rabbits unsupplemented MNB (R0) was 46.68% (Table 2). Supplementation of MNB 15 g/head/day (R1), 30 g/head/day (R2), and 45 g/head/day (R3) on local female rabbits produce dry matter digestibility were higher ( $P < 0.05$ ) were 12.9%, 18.33% and 21.15% respectively compared with the local female rabbits unsupplemented MNB (R0) while between treatment R1, R2, and R3 are not significantly different ( $P > 0.05$ ).

Table 2. Nutrient Diets Digestibility of Local Female Rabbits Supplemented MNB and Unsupplemented MNB

Variables	Treatments				SEM <sup>3)</sup>
	R0 <sup>1)</sup>	R1	R2	R3	
Dry Matter (%)	46,68 <sup>b2)</sup>	59,58 <sup>a</sup>	65,01 <sup>a</sup>	67,83 <sup>a</sup>	2,78
Organic Matter (%)	43,88 <sup>b</sup>	58,26 <sup>a</sup>	64,52 <sup>a</sup>	67,28 <sup>a</sup>	2,83
Crude Protein (%)	43,94 <sup>c</sup>	50,60 <sup>bc</sup>	56,59 <sup>b</sup>	72,76 <sup>a</sup>	3,35
Digestible Energy (%)	38,44 <sup>c</sup>	60,77 <sup>b</sup>	65,02 <sup>ab</sup>	69,92 <sup>a</sup>	2,76
Crude Lipid (%)	48,15 <sup>c</sup>	73,68 <sup>b</sup>	83,40 <sup>a</sup>	87,02 <sup>a</sup>	1,55
Calcium (%)	43,54 <sup>c</sup>	68,66 <sup>b</sup>	75,39 <sup>a</sup>	77,42 <sup>a</sup>	2,17
Phosphorus (%)	37,79 <sup>c</sup>	68,93 <sup>b</sup>	81,31 <sup>a</sup>	86,18 <sup>a</sup>	1,77

1) R0 : Diet grass field unsupplemented MNB (control diet)

R1 : Diet grass field supplemented MNB 15 g/hr

R2 : Diet grass field supplemented MNB 30 g/hr

R3 : Diet grass field supplemented MNB 45 g/hr

2) Value with same superscripts in same row indicate no significant different

( $P > 0.05$ )

3) SEM: *Standard Error of The Treatment Means*

Increased MNB supplementation can increase the digestibility of dry matter, MNB supplementation can increase total consumption. Rabbits were supplemented MNB reduce the consumption of grass, otherwise rabbits unsupplemented MNB increase the consumption of grass. The increase in dry matter digestibility occur due of differences in quality diet was consumed, rabbit with control diet would consume higer grass with coarse fiber content is higher than supplementation MNB who consumed lower crude fiber. High fiber content in diets can lower dry matter digestibility nutrient in rabbits [1]. In addition, due to the differences in physical constituent diets and nutrients in the diet is consistent with the results which states that the diet dry matter digestibility is

influenced by the composition of the constituent material and physical form feed diets [13].

Data shown that organic matter digestibility of diets unsupplemented MNB (R0) was 43.88% (Table 2). Local female rabbits supplemented R1, R2, and R3 produce organic matter digestibility were higher and significantly different ( $P < 0.05$ ) were 14.38%, 20.64%, and 23.4% respectively compared with local female rabbits unsupplemented MNB (R0) while between treatment R1, R2 and R3 are not different ( $P > 0.05$ ). Increased MNB supplementation in the diet increases also the organic matter digestibility. This is due to the increased dry matter digestibility and MNB constituent materials can be more digestible than the grass.

Supplementation of MNB 45 g/head/day (R3) produces protein digestibility value of diet highest of 72.76% and significantly different ( $P < 0.05$ ) compared with treatment R0, R1 and R2 were 28.82%, 22.16% and 16.17% respectively (Table 2). Supplementation 15 g/head/day is not different from unsupplemented MNB (R0), but the provision MNB 30 g/head/day higher 12, 65% compared to unsupplemented MNB (R0). There were no differences in the digestibility of crude protein (CP) in the administer diet of 15 g/head/day to 30 g/ head/ day ( $P > 0.05$ ). Digestibility of crude protein also increases with increasing supplementation MNB on local female rabbit due increased of dry matter, organic matter digestibility increased as well as the proteins in the stool is much different to the protein intake. Rabbit who consume more MNB will consume more protein as well which has higher protein content than grass field. This is consistent with the reported by [10] which states that the digestibility of crude protein depends on protein in the diets. Generally diet containing low protein digestibility have low anyway, and vice versa. The same thing was reported by [13] that the level of protein digestibility is highly dependent on the protein content of feed ingredients and the many proteins that enter the digestive tract.

Digestible energy (DE) of diets unsupplemented MNB (R0) was 38.44% (Table 2). R1, R2, and R3 generate higher digestible energy ( $P < 0.05$ ) were 22.33%, 26.58% and 31.48% respectively compared with unsupplemented MNB (R0). The treatment R3 were 9.15% higher ( $P < 0.05$ ) than R1 and did not different ( $P < 0.05$ ) with R2. The treatment R2 did not different ( $P < 0.05$ ) with R1. Supplementation MNB is also a hedge against energy-digested positive this was due to high energy consumption with energy-stool issued less so high energy digestibility. It is also because the content of crude fiber in the diet supplementation lower MNB consequently increasing diet digestibility and digestible energy also increases. This is in line with the opinion of [15] which states that one of the factors that affect energy consumption is the type and quality of diets.

Crude lipid diets digestibility of local female rabbits unsupplemented MNB (R0) was 48.15% (Table 2). Treatmens R1, R2, and R3 produce crude lipid diets digestibility was higher ( $P < 0.05$ ) were 25.53%, 35.25% and 38.87% respectively compared to the digestibility of the diets local female rabbits unsupplemented MNB (R0).

Crude lipid diet digestibility R3 was significantly higher 13.34% ( $P < 0.05$ ) compared to treatment with the R1 but did not differ ( $P > 0.05$ ) with R2. Increased fat digestibility bearish due to increase organic matter digestibility for crude lipid is a part of the organic material. Rugged high fat consumption and faecal energy released causes less rough fat digestibility increased. Diet containing high crude fiber will reduce digestibility coefficients of nutrients including crude lipid [2].

Data shown that Calcium (Ca) digestibility of diets unsupplemented MNB (R0) was 43.54% (Table 2). Digestibility value of diet supplementation treatment of rabbits with R1, R2, and R3 produce Ca diet digestibility were higher ( $P < 0.05$ ) were 25.12%, 31.85% and 33.88% respectively compared with the diets unsupplemented MNB (R0). The treatments of R3 produce highest digestibility and higher ( $P < 0.05$ ) than R1 but not different ( $P > 0.05$ ) with R2. Phosphorus (P) is digested in the diets of rabbits unsupplemented MNB (R0) was 37.79% (Table 2). Local female rabbits supplemented R1, R2, and R3 produce P diet digestibility were higher ( $P < 0.05$ ) were 31.14%, 43.52% and 48.39% respectively compared with the local female rabbits unsupplemented MNB (R0). Digestibility of phosphorus rabbits R3 was 17.25% higher ( $P < 0.05$ ) than R1 but not different ( $P > 0.05$ ) compared to R2. Improved digestibility also occur in variable calcium (Ca) and phosphorus (P). In addition, data showed consumption of calcium and phosphorus as well as calcium and phosphorus in feces less. Another thing that also due increased digestibility of Ca and P is the proportion of calcium and phosphorus in the MNB is complete, thus efficiently digested by rabbits. [6] suggested that the balance of calcium and phosphorus is essential for calcium (Ca) and phosphorus (P) is a macro minerals essential to the maintenance of bone tissue, muscle contraction and energy metabolism.

#### IV. CONCLUSIONS AND SUGGESTION

##### Conclusions

1. Supplementation MNB on local female rabbits (*Lepus nigricollis*) fed grass field basis can increase the digestibility of dry matter, organic matter, crude protein, gross energy, crude lipid, kalsuim (Ca) and phosphorus (P).
2. Digestibility of nutrients feed rabbits offered field grass supplemented MNB 45 g/head/day (R3) produces an average digestibility of nutrients diets highest of treatment unsupplemented MNB (R0), supplemented MNB 15 g/head/day (R1) and supplemented MNB 30 g/head/day (R2).

##### Suggestion

Based on the research suggested the farmer of rabbits who use the grass field as feed, to give the MNB supplementation with 45 g/day/head to produce higher higher digestibility so that it grows faster.

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