Carcass and Non-Carcass Composition of Fryer Fattened with Pellets Containing of Bean Sprouts' Waste

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ABSTRACT

Bean sprouts are vegetable that common as cuisine in some Asia countries. The product is made from the greenish-capped mung beans. The byproduct of bean sprouts process is commonly useless and disposed as waste. This research was conducted to study carcass and non carcass composition of local rabbit fryer fattened with feed containing of beans sprouts waste (BSW) for substitute commercial feed. Twelve kits were fattened for eight weeks with treatments of commercial feed (control), 15, 30 and 45% of BSW. The trials feed were blended with commercial feed and formed as pellets. The observed variables of carcass consist of slaughter weight, carcass percentage, weight and percentage of rabbit commercial cuts and non carcass components. The results showed that addition of BSW until 45% did not significantly affected on both carcass and non carcass composition (P>0.05). Weight and percentage of commercial rabbit cut carcass were also not significant in all commercial cut (foreleg, rack, loin and hind leg). Distribution of carcass components (muscle, fat and bone) were also not significantly among treatments (P>0.05). It could be concluded that bean sprouts' waste could be substitute commercial rabbit feed until 45% without decreasing carcass and non carcass quality.

Key Words: Rabbit, Bean Sprouts Waste, Carcass, Non-Carcass

INTRODUCTION

Bean sprouts are vegetable that is common in some Asia countries. The product is made from the greenish-capped mung beans. The byproduct of bean sprouts process is disposed as waste. Actually, the waste could be used as protein and fiber sources of feed for fattening sheep (Ifafah et al. 2011). Rahayu et al. (2010) reported that total bean sprouts' waste (BSW) in Bogor's traditional market reach until 1.5 ton/day. On the other hand, some limiting factors for smallholder farmer for raising rabbit are high mortality rate and poor management such as feed quality.

The utilization of BSW as protein source for local rabbit production was rarely found, although these byproducts have high protein content up to 13.63% of DM (Ifafah et al. 2011). Trocino et al. (2010) mentioned that the replacement of feed protein source did not affect on growth and carcass percentage of rabbit. Berchiche et al. (2000) used wheat by product up to 50% of the feed mix without detecting any significant reduction in growth performance of rabbit. Meanwhile, Lakabi-ioualitene et al. (2008) also reported that using wheat by product up to 67% did not affect rabbit carcass characteristic. The aim of this study was to use beans sprouts' waste (BSW) to substitute commercial feed on carcass and non carcass composition of local rabbit fryer.

MATERIAL AND METHODS

Animals and diets

The study was conducted in the Laboratory of Small Ruminant Production, Faculty of Animal Science, Bogor Agricultural University (IPB) Indonesia. Twelve kits age 12 weeks were fattened in individual cage until slaughtered for eight weeks. Four diets were formulated as follows: commercial feed (control/P0), 15% (P1), 30% (P2) and 45% (P3) substitution of BSW to commercial feed (Table 1). Each treatment had three replications. The BSW was blended with commercial feed and formed as pellets. *Ad libitum* water was allowed to all animals during treatments. Individual live weight and feed intake were recorded weekly.

Tabel 1. Chemical composition of experimental diets

Feed	Nutrient (%)					
	DM	CProtein	CFiber	CFat	Ash	NFE
BSW	22.91	14.73	42.27	0.11	3.09	39.80
P0	88.12	19.13	20.09	3.37	9.66	47.75
P1	85.82	17.94	25.08	2.71	9.02	45.25
P2	85.83	16.54	26.89	2.81	7.92	45.84
P3	84.76	15.95	30.49	1.13	7.03	45.40

BSW: Bran Sprout Waste; P0: control; P1: P0 + 15% BSW; P2: P0 +30% BSW; P3: P0 + 45% BSW

Carcass and non-carcass quality recording

The rabbits were slaughtered after eight weeks of experiment. Animals were fasted for seven hours before slaughtered. Slaughtering was done according to standard halal methods at the slaughter house plant in Laboratory of Small Ruminant, Department of Animal Production and Technology, Faculty of Animal Science, Bogor Agricultural University. Blood was collected, weighed and recorded as blood weight. After the animal was skinned off, the other parts of the body were weighed in hot condition before was chilled. Carcass was weighed and recorded as hot carcass weight. Dressing percentage was calculated from slaughter weight. After carcass was chilled at 5°C for 24 hours, the carcass was dissected and recorded for carcass tissue (muscle, fat and bone). The weight of the gastro-intestinal tract contents was estimated by subtracting the weight of the empty digestive tract from the weight of full gastro-intestinal tract. Empty body weight was calculated by subtracting the weight of gastro-intestinal contents from slaughter weight. The observed variables of carcass consist of slaughter weight, carcass percentage, weight and percentage of rabbit commercial cuts and non carcass components.

Statistical analyses

The data were analyzed using analyses of covariance (ANCOVA) (Steel & Torrie 1980). Slaughter weight was used as co variable for carcass and non carcass component. The GLM procedure by SAS was used.

RESULTS AND DISCUSSION

Growth performance

The average daily body weight gain of all animals in this trial was no significantly affected by different of feed regime (P>0.05) (Table 2). This means that the bean sprouts waste at ration 15, 30 and 45% resulted in similar daily weight gain rabbit with complete commercial rations. So that, the utilization of beans sprouts waste of 15, 30 and 45% in the diet did not negatively affect body weight gain of rabbits.

Table 2 shows that the average daily body weight gain of local rabbits in this study was relatively higher than the study conducted by Rasyid (2009), Gaol (2012) that resulted 13.88±1.60; 12.63±0.63 and 11.53±1.33 g/d, respectively. It means that the addition of BSW relatively produce high performance of rabbits.

Table 2. Daily body weight gain of rabbit

Treatment	BWG (g/d)
Commercial feed (P0)	17.14±1.45
Commercial feed + 15% BSW (P1)	12.14±5.16
Commercial feed + 30% BSW (P2)	17.40±0.70
Commercial feed + 45% BSW (P3)	14.21±4.62
P-value	0.40

Carcass and non carcass characteristics

Slaughter weight in this study was at an average of 1.78 kg. This weight was relatively

small because this study used local rabbits that have small mature body weight. Table 3 shows that there is no significantly different of each trial on slaughter weight of local rabbit (P>0.05). Increasing percentage of BSW in diets did not affect rabbit performance either on carcass or non carcass performance. It can be assumed that the average composition of the experimental diet was not a limiting factor in the growth rate of local rabbits. Carcass percentage in this study relatively similar to study conducted by Farrel & Raharjo (1984) (46-50 vs 43-52%) but relatively higher than Sitepu (2001) (46 vs 41%). Carcass percentage is correlated with feed quality and intake (Cheeke et al. 1987).

Distribution of carcass components (muscle, fat, and bone) was also not significantly among treatments (P>0.05). Figure 1 shows that the average tissue composition of each feed trial statistically was not differ on muscle, fat and bone (P>0.05). Muscle ration in this study ranged between 69-71% of carcass. Nevertheless, rabbits fed by BSW tend to have more muscle and less fat. This experiment showed that commercial rabbit feed could be partially replaced by BSW without impairing growth performance and carcass composition.

Table 3. Carcass and non carcass characteristics of rabbit

Variable	Treatment				P-value
	P0	P1	P2	P3	
Slaughter weight* (kg)	1.68±0.09	1.62±0.09	1.82±0.11	1.80±0.12	0.49
Carcass weight** (g)	781.00±51.00	803.00±52.00	866.00±58.00	900.00±57.00	0.39
Non carcass weight** (g)	751.00±51.00	783.00±50.00	837.00±57.00	873.00±57.00	0.83
Carcass percentage (%)	46.10±2.50	49.10±2.50	47.50±2.80	50.40±2.80	0.73

* Data was corrected based on initial body weight at 1.06 kg
**Data was corrected based on slaughter weight at 1.78 kg. P0: Commercial feed; P1: Commercial feed+15% BSW; P2: Commercial feed+30% BSW; P3: Commercial feed+45% BSW

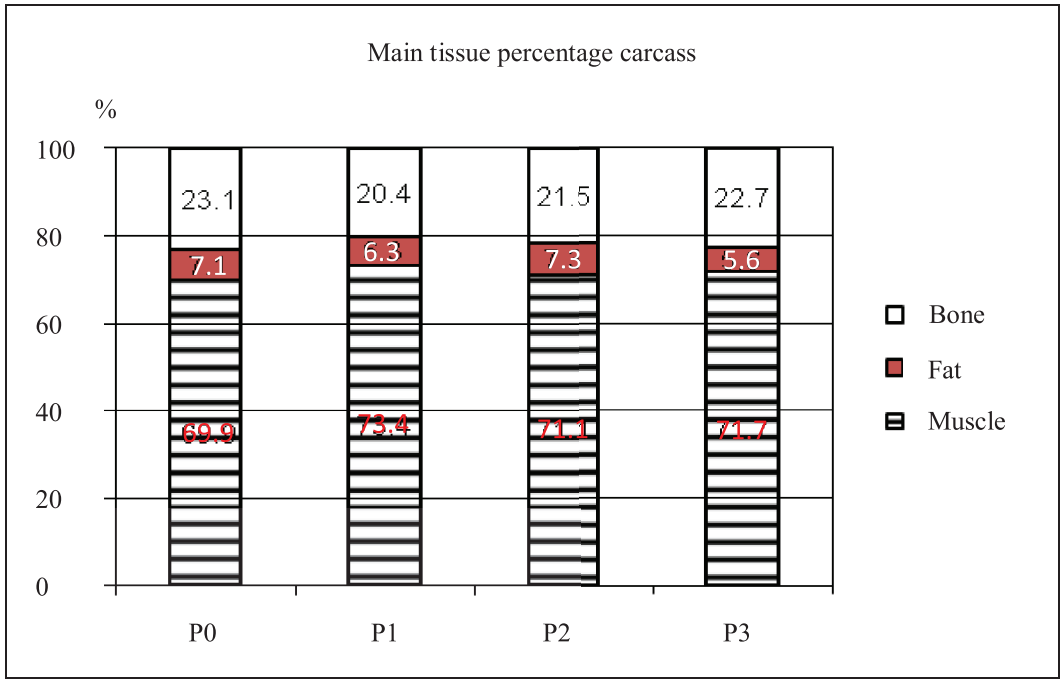

Figure 1. Tissue composition of rabbit carcass for each feed trials

CONCLUSION

Bean sprouts' waste could substitute commercial rabbit feed until 45% without decreasing carcass and non carcass quality. The daily body weight gain of local rabbit by its treatment reached 17.4 g/day with dressing percentage until 50% and muscle ration in carcass ranged between 69.9-73.4%.

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