

FEED RESTRICTION OF RABBITS: EFFECTS ON THE DEVELOPMENT OF THE GASTROINTESTINAL TRACT AND CARCASS YIELD

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Resumo: Estratégias para a redução dos custos de alimentação são cruciais para o futuro da cunicultura no Brasil. Este trabalho objetivou avaliar o efeito da restrição alimentar sobre o desenvolvimento do trato gastrointestinal de coelhos e o rendimento de carcaça. Aos 35 d, dezesseis coelhos de ambos os sexos da raça Nova Zelândia Branca foram alojados em número de 2 por gaiola, e mantidos até os 84 d. Metade dos coelhos (8) recebeu alimentação à vontade durante todo o período experimental e a outra metade (8) foi submetida à restrição alimentar nos períodos de 35 à 42 d (45 g/coelho/dia) e 56 à 63 d (85g/coelho/dia). Não houve diferença significativa ($P>0,05$) no peso e rendimento da carcaça, bem como nos rendimentos dos órgãos (ceco, intestino delgado, fígado e rins) e no comprimento do intestino delgado de coelhos submetidos à restrição alimentar, em relação aos coelhos alimentados à vontade. Desta forma, a restrição alimentar pode ser economicamente viável à produção de coelhos, por minimizar os custos com alimentação e resultar em maior retorno financeiro para produtores e abatedouros.

Key words: cost reduction, feed efficiency, internal organs, rabbit production

Introduction

Rabbit production is a livestock activity that applies technical, practical and economic knowledge. In Brazil, the first challenge is to overcome cultural barriers to

Promoção e Realização:



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rabbit meat consumption. The second challenge is to reduce the rabbit production costs, especially the feed, which represents about 60 to 70% of the total cost. This way, alternatives to nutritional management are fundamental and need to be more investigated (Machado and Ferreira, 2014). Feed restriction is an animal production strategy with the purpose of delimiting the amount of feed intake to reduce the feeding costs and also the incidence of gastrointestinal pathologies (Alabiso et al., 2017), especially after a stressful time, such as weaning (Gallois et al., 2008).

Biologically, it is expected that feed restriction would promote physiological and anatomical adaptation for an increased efficiency of nutrient absorption by the gastrointestinal tract. In other words, feeding management can result in metabolic changes, immunosuppression and altered function of the digestive system. The objective of the present study was to evaluate the effect of feed restriction on the development of the gastrointestinal tract and organs, and carcass yield.

Material and methods

The study was carried out at the Federal Institute of Minas Gerais (IFMG), Bambuí Campus. The approval of the Institutional Animal Care and Use Committee (CEUA/IFMG) was registered under protocol number 03/2017. The experimental period started at weaning (35d) and finished at slaughter (84d). At weaning, a total of 16 male and female New Zealand White rabbits were randomly housed, two per cage, with eight replicates per treatment (feed restriction and *ad libitum*). The cages (0.6 x 0.6 x 0.4m) were equipped with nipple water drinkers and semi-automatic feeders. The rabbits were allowed *ad libitum* access to water. A commercial pelleted diet was provided (17.73% of CP, 17.17% of ADF and 2450 kcal of DE/kg). Half of the rabbits (8) were fed *ad libitum* over the experimental period. The other half (8) was subjected to feed restriction from 35 to 42 d (45g/animal/day) and from 56 to 63 d (85g/animal/day) and after that refeeding was on an *ad libitum* basis. Average ambient temperature was 13.3°C (minimum) and 31.4°C (maximum)

and average relative humidity was 61.5%. The lighting program consisted of natural photoperiod over the entire experimental period.

Rabbits were slaughtered by physical stunning and bleeding. The carcasses (no blood and organs), and organs (full caecum, small intestine, liver and kidneys) were weighed and their yields (in %) were determined relative to slaughter weight (at 84 d). Small intestine length was also determined. Data were submitted to analysis of variance using the software package SISVAR and means were compared by the SNK test at the 5% probability level. The experimental unit for all traits was the individual rabbit.

Results and discussion

No significant differences ($P>0.05$) were observed for carcass weight and carcass yield (Table 01) according to the feeding treatments. It means that feed restriction did not affect the crucial traits for rabbit meat market. These findings corroborate the results reported by Oliveira et al. (2012), and also Alabiso et al. (2017), who reported lower carcass yield for rabbits subjected to feed restriction.

No effects ($P>0.05$) of feed restriction were detected on either gastrointestinal tract (caecum and small intestine yields, and small intestine length) or liver and kidneys yields (Table 01). Similar results were observed by Yakubu et al. (2007), Tumová et al. (2007) and Oliveira et al. (2012). Biologically, it is expected that feed restriction would promote physiological and anatomical adaptation for an increased efficiency of nutrient absorption. Although our results have not reported significant differences, we speculate that the feed restriction promoted some minor changes in the physiology and the metabolism of the rabbits. However, further studies are necessary for substantiation.

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

Table 1 – Gastrointestinal tract and carcass traits of rabbits subjected to feed restriction¹

Traits	Feeding treatment		cv(%)	P
	<i>Ad libitum</i>	Feed restriction		
Slaughter weight (g)	2755,0 ^a	2630,0 ^a	8,60	0,2975
Carcass weight (g)	1450,0 ^a	1389,0 ^a	10,10	0,4090
Caecum weight (g)	157,8 ^a	158,6 ^a	17,95	0,9517
Small intestine weight (g)	76,75 ^a	76,00 ^a	9,62	0,8411
Small intestine length (cm)	308,1 ^a	306,8 ^a	9,09	0,9230
Liver weight (g)	83,38 ^a	83,50 ^a	18,51	0,9873
Kidneys weight (g)	15,63 ^a	16,38 ^a	10,53	0,3884
Body composition, % of slaughter weight				
Carcass	52,58 ^a	52,76 ^a	3,27	0,8208
Caecum	5,76 ^a	6,04 ^a	17,72	0,5973
Small intestine	2,78 ^a	2,89 ^a	8,67	0,3863
Liver	3,01 ^a	3,40 ^a	17,99	0,1932
Kidneys	0,57 ^a	0,61 ^a	10,97	0,2199

¹Feed restriction from 35 to 42 d (45g/rabbit/day) and 56 to 63 d (85g/rabbit/day).

^aValues followed by the same letter in a row are not significantly different ($P > 0.05$) by SNK test.

Conclusion

Feed restriction could be economically viable in rabbit production for minimizing feeding costs and leading to greater economic advantage to producers and slaughterhouses.

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