

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

PERFORMANCE OF GROWING RABBITS FED DIFFERENT LEVELS OF PASSION FRUIT SEED

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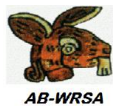
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Resumo: O objetivo desse trabalho foi avaliar o efeito da inclusão da semente do maracujá em dietas para coelhos em crescimento sobre o desempenho. Foram utilizados 100 coelhos mestiços (Nova Zelândia Branco x Califórnia), 50 machos e 50 fêmeas, com 40 dias de idade, distribuídos em um delineamento com blocos ao acaso, em arranjo fatorial 5x2, sendo 5 níveis de inclusão de semente de maracujá (0, 4, 8, 12, 16%) e 2 sexos (machos e fêmeas). Observou-se efeito quadrático sobre o ganho de peso e o peso final dos coelhos, apresentando o melhor resultado no nível estimado de 8,87 e 7,85%, respectivamente. Em função disso, recomenda-se a inclusão deste ingrediente até o nível de 8% em rações para coelhos em crescimento.

Keywords: agroindustrial waste, alternative feedstuff, *Oryctolagus cuniculus*, *Passiflora edulis*

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Introduction

In the feeding of rabbits, the feedstuffs commonly used in diet formulation are corn, soybean meal and alfalfa hay. However, depending of the price variations of these ingredients throughout the year, the high cost may represent an obstacle to the profitability of rabbit production. Thus, the use of alternative feedstuff is an increasingly common practice in animal nutrition, aiming to reduce the use of high-value commercial ingredients and thus decrease the feeding costs (Oliveira, 2013).

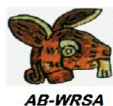
Among alternative feedstuffs, the residues of fruit processing have stimulated the interesting in studies for their inclusion in rabbit diets, since this use is also advantageous for the agribusiness, because the residues does not have an aggregate value and need to be properly targeted, due the environmental impact. In this sense, it is observed from the processing of passion fruit, between 65 and 70% corresponds to residues, including peels and seeds (Ferrari et al., 2004). The passion fruit seeds account for about 6 to 12% of the total weight of fruit, with high amount of insoluble dietary fibers (43.71%) and unsaturated fatty acids (87.59%), with potential use as alternative feedstuff in rabbit diets (Fachinello et al., 2016).

Despite the potential use of this ingredient, information about the use of passion fruit seed in rabbit diets is still scarce. Based on the above, the aim of this study was to evaluate the effect of increasing levels of this feedstuff in growing rabbit diets on performance.

Material and methods

The experimental procedures followed the protocols approved by the Ethics Committee on Animal Research (CEPA 19/2017) of Federal University of Ceara. The passion fruit seed was acquired moist from a fruit pulp industry and was exposed to sun in plastic canvases to dry for four days. Throughout the process, the residue was mixed 4 times a day and then stored in plastic bags for use in the digestibility and performance assays, when it was grounded through a 3 mm screen. In the performance assay, 100

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New Zealand White × California rabbits (50 males and 50 females), at 40 days of age, were housed in galvanized wire cages with semiautomatic feeder and nipple drinker. The weight of the animals was considered for the blocks. The initial weight of the light block was 545 ± 39 g for females and 584 ± 34 g for males, and the heavy block was 708 ± 57 g and 724 ± 58 g for females and males, respectively. The animals were allotted in a randomized block design in a 5×2 factorial arrangement, considering 5 levels of passion fruit seed (0, 4, 8, 12 and 16%) and sex (male and female), considering the cage with two rabbits of the same sex as the experimental unit.

The experimental diets were based according to the nutritional requirements of rabbits during the growing period, as recommended by De Blas and Wiseman (2010), and provided in pelletized form. The digestible energy (DE) and nutritional composition of passion fruit seed measured during the digestibility assay were used to formulate the diets, and the amino acid composition was obtained by high performance liquid chromatography analysis (HPLC), with values of 0.331% for lysine, 0.127% for methionine, 0.164% for methionine+cystine, 0.291% for threonine and 0.297% for tryptophan. For evaluate performance, the animals were weight in the beginning and end of experimental period, as well as the diet provided and the leftovers. From the data, feed intake (FI), body weight gain (BWG) and feed conversion (FC) were evaluated.

Results and discussion

The increasing levels of passion fruit seed in diet did not influence ($P > 0.05$) the performance of rabbits during the experimental period (Table 1). In the regression analysis it was observed quadratic effect on BWG ($Y = 27.364 + 1.529X - 0.086X^2$; $R^2 = 0.8513$) and final weight (FW) ($Y = 1808.30 + 53.225X - 3.387X^2$; $R^2 = 0.9672$), with best levels estimated at 8.87% and 7.85%, respectively. The reduction on BWG and FW from 8% of passion fruit seed inclusion in diet may have occurred due the higher EE content.

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The male rabbits had greater FI and BWG than females ($P < 0.05$). This result can be explained by the average of initial bodyweight of males have been higher than females.

Table 1 - Performance of growing rabbits fed different levels of passion fruit seed

Inclusion level (%)	Parameters			
	Final weight (kg)	Feed intake (g/day)	Body weight gain (g/day)	Feed conversion
0	1.97	85.62	32.99	2.54
4	1.96	78.65	31.80	2.47
8	2.04	83.33	35.00	2.39
12	1.94	80.22	32.41	2.52
16	1.80	73.73	30.10	2.39
Sex				
Male	1.98	84.00a	33.92a	2.45
Female	1.90	76.62b	31.00b	2.47
Mean	1.94	80.26	32.46	2.46
SD ¹	7.71	13.37	9.77	10.86
ANOVA ²		P-value		
Level	0.0171	0.1460	0.0236	0.5996
Sex	0.0752	0.0198	0.0023	0.7912
Level x Sex	0.9573	0.5097	0.7113	0.3646
Regression for level				
Linear	0.0096	0.2489	0.1429	0.7624
Quadratic	0.0024	0.1341	0.0170	0.9270

¹SD: standard deviation; ²ANOVA: analysis of variance. Means followed by different letters in the column differ ($P < 0.05$) by F test; *Differs from control (0%) by Dunnett test ($P < 0.05$).

Conclusion

Based on the results, it can be inferred that the passion fruit seed can be used in diets for growing rabbits up to the level of 8%.

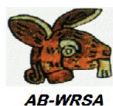
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