

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

## INFLUENCE OF DIFFERENT LEVELS OF SOLUBLE FIBER IN CAECAL CHARACTERISTICS OF GROWING RABBITS

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**Abstract:** O objetivo deste trabalho foi avaliar características cecais de coelhos em crescimento com 72 dias de idade, alimentados desde a desmama (30 dias) com diferentes níveis de fibra solúvel (75; 95; 115; 135; 155 g/kg). Ao fim do teste de desempenho, 12 animais de ambos sexos de cada tratamento foram abatidos, totalizando 60 animais. Cada coelho foi abatido por eletronarcose seguida da sangria. O peso do conteúdo cecal, peso de ceco cheio e pH cecal foram mensurados e apresentado em relação ao peso de abate. Uma distribuição totalmente casualizado foi utilizado, efeitos lineares e quadráticos da inclusão de fibra solúvel foram estudados utilizando o contraste polinomial utilizando o software R. Os diferentes níveis de fibra solúvel resultaram em um aumento linear para o peso do conteúdo cecal (4.28 a 6.13 %SW,  $p < 0.001$ ), um aumento linear para o peso total do ceco cheio (5.81 a 7.72 %SW,  $p < 0.001$ ), e uma redução linear do pH cecal (5.81 a 5.70,  $P = 0.043$ ). Com isso, é possível inferir que o aumento da inclusão de fibra solúvel na dieta afeta as características cecais dos animais.

**Keywords:** fiber levels, commercial carcass, cecal pH, carcass yield

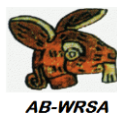
### Introduction

In the nutrition of rabbits the fiber has two main functions, the first refers to its nutritional value, the second is related to the regulation of the transit of the digest and with the maintenance of the integrity of the intestinal mucosa (De BLAS et al.,

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1999). It is observed that the fiber stimulates and facilitates the digestive transit of food, mainly for its indigestible fraction (De BLAS, 1992). The supply of dietary fibers exercise two main functions for non-ruminant species, mainly for the growing rabbit, to provide nutrients for the microbiota of the large intestine and to ensure digestion (motility and transit) and the metabolic functions of the hosts (MATHERS, 1991; CARRÉ, 1992; EDWARDS and PARRETT, 1996).

### Material and methods

The performance test was conducted in the rabbit sector of the EV/UFMG Experimental Farm in the municipality of Igarapé/MG/Brazil. At the end of the development trial period, where the treatments were composed of diets to maintain the needs of growing rabbits according with the recommendations of De Blas and Matheus (2010), being calculated for a variation in the composition of soluble fiber, in the proportions envisaged 75, 95, 115, 135 and 155 g/kg soluble fiber. Therefore, 12 animals of each treatment were slaughtered, each animal being considered an experimental unit, totaling 60 animals. In addition, the animals were weighed at 72 days of age ( $2093.6 \pm 311.5$  g live weight). Each rabbit was slaughtered by electronarcosis followed by exsanguination. The weight of caecal content, full caecal weight and caecal pH was measured and presented as relative to slaughter weight (SW). The experimental design used will be the entirely randomized. The parameters evaluated in the experiment will be subjected to analysis of variance and regression through the Software R (R Core Team 2017), and for the relevant media compared the Tuckey test at a level of 5% probability.

### Results and discussion

The results of the caecal characteristics of growing rabbits feed with different levels of soluble fiber are shown in table 1.

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**Table 1.**

Caecal characteristics of growing rabbits fed diets containing different levels of soluble fiber ( $n = 12$  rabbits/treatment).

	Dietary treatments <sup>†</sup>					SEM*	Contrasts	
	75SF	95SF	115SF	135SF	155SF		Linear	Quadratic
Full gastrointestinal tract [%SW]	343.1	337.4	343.1	350.0	341.5	3.88	0.734	0.895
Full caecum, %SW	6.16	5.81	6.31	7.30	7.72	0.14	<0.001	0.023
Empty caecum, %SW	1.57	1.53	1.42	1.51	1.59	0.03	0.912	0.038
Caecal content, %SW	4.59	4.28	4.89	5.79	6.13	0.13	<0.001	0.054
Full stomach, %SW	3.59	3.45	3.63	3.60	3.21	0.08	0.281	0.275
Empty stomach, %SW	0.91	0.91	0.92	0.98	0.92	0.01	0.360	0.480
Stomach content, %SW	2.68	2.54	2.71	2.62	2.29	0.07	0.187	0.287
Caecal pH	5.87	5.85	5.79	5.75	5.70	0.03	0.043	0.888

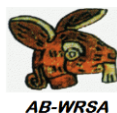
<sup>†</sup>SF: soluble fiber, %SW: Proportioned to slaughter weight; \*SEM: Standard error mean.

The different levels of soluble fiber resulted in a linear increase in the weight of the caecal content (4.28 to 6.13 %SW,  $p < 0.001$ ), consequently there was a linear increase in the total weight of the full cecum (5.81 to 7.72 %SW,  $p < 0.001$ ), however, was observed a linear decrease of the caecal pH (5.81 to 5.70,  $P = 0.043$ ). A positive role of soluble fiber in rabbit digestive health has been claimed (SOLER et al., 2004; GÓMEZ-CONDE et al., 2007) in a context of epizootic rabbit enteropathy (ERE), which has been associated to improved intestinal mucosa integrity and modulation of intestinal microbiota (GÓMEZ-CONDE et al., 2007, 2009). The weight of the caecal content depends mainly on the inclusion of NDF in the diet and the level of lignification of the fiber (GARCIA et al. 2002). In this study it is possible to observe that the level of soluble fiber level influences the caecal content of the animals with a linear increase as the inclusion of soluble fiber and consequently influences the total weight of the full cecum (5.81 to 7.72% SW,  $P < 0.001$ ). Alvarez et al., (2007), evaluating the effect of level and type of fibre on performance and digestive traits of lactating does and growing rabbits, observed that

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fed with lower level of soluble fiber (9.6 g/kg) before weaning shown a lower weight of the caecum (by 6.7%,  $P = 0.01$ ), and of the whole digestive tract (by 6.4%,  $P = 0.002$ ) at 45 days of age when compared to those receiving diet with higher soluble fiber (11.2 g/kg). Trocino et al. (2011), when working with diets with low and high soluble fiber, observed a linear decrease in the PH of the caecal content by increasing the soluble fiber level, which corroborates with the presented in this study (pH 5.87 to 5.70) for groups 75 to 155g/kg, respectively.

### Conclusion

Therefore, it is possible to infer that increasing the soluble fiber in diets of growing rabbits affect the caecal characteristics of the animals, by increasing the full caecal weight and its content.

### Acknowledgments (Optional)

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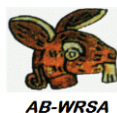
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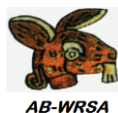




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