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## THE EFFECT OF INCLUDING A CALCIUM SOAP IN THE DIET AND AMBIENT TEMPERATURE ON LACTATING RABBITS

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**key words:** fat, temperature, rabbit

### SUMMARY

Three diets (1, 2, 3) with similar values for fibre and protein, and 28, 68, 106 g EE/kg DM, adding 0, 3, 6% of calcium soap respectively, were used, the values for DE content being 11.1, 11.5, 11.7 KJ/g DM, respectively.

128 litters housed in a climatic chamber at 30°C or in a traditional building, where mean minimum temperatures varied between 9 and 24°C, and fed ad libitum on the experimental diets from 21 to 35 days of age, were controlled.

Solid feed intake in suckling rabbits and liveweight at weaning were adversely affected ( $p < 0.001$ ) by high temperature.

### INTRODUCTION

Trying to relieve the negative influence of high environmental temperatures on feed intake, by adding fat to diets of rabbits has been suggested as a suitable method for improving feed efficiency as a consequence of the higher level of energy (Lebas, 1975). The effect of high fat diets on the intake of lactating rabbits has also not been studied.

In the present work, we report the performance of lactating litters, fed on three diets of different ether extract but similar digestible energy contents.

### MATERIAL AND METHODS

**Diets.** Three diets with 28, 68 and 106 g/kg DM, adding a calcic soap of palm oil, were used. Protein, fibre and energy values were similar (180 g/kg, 155 g/kg and 11.5 kJ/g respectively)

**Temperatures.** The experience was carried out in a climatic chamber at a constant temperature of 30°C and in a traditional building (T) where three intervals of the mean minimal temperatures were considered: 9-13, 14-18 y 19-24°C.

**Litters.** From the age of 21 days litters were distributed to separate cages, lactating once a day. Solid food intake and weight of 71 litters at 30°C and 57 litters in T were recorded.

**Analysis.** Data were analysed with diet (1,2,3) and temperature (30°C,T) as factors of variation, using the Scheffe test, and introducing size and weight of litters at 21 days as covariates.

## RESULTS

Diets did not affect any of the variables, and no interaction between diet and temperature was significant. The analysis of the intervals of temperatures was not relevant, because the results were very similar for the three intervals considered in T. Temperature significantly affected to ingestion of food during lactation and weight at 35 days ( $p < 0.001$ ), being both lower at 30°C than in the building (Table 1)

Table 1. Feed intake, liveweight and mortality of litters from 21 to 35 days of age, in traditional building and climatic chamber at 30°C.

	environment		SE	Sig	Cov	
	T	30°C			(1)	(2)
No pups at 21 d (1)	6.69	4.76	0.32	***	-	-
Liveweight at 21 d, g/pup (2)	376	357	12.6	NS	-	-
Feed intake						
g DM/d	131	106	4.5	***	***	***
g DM/Kg <sup>0.75</sup> /d	51.8	44.2	1.5	***	***	NS
g DM/pup/d	24.3	19.2	0.78	***	NS	**
Liveweight at 35 d						
g	4620	4180	93	**	***	***
g/pup	893	809	13.2	***	***	***
Mortality, %	4.8	2.3	1.37	NS	*	**

\*\*\*,  $p < 0.001$ ; \*\*,  $p < 0.01$ ; \*,  $p < 0.05$ ; NS, non significant.

## DISCUSSION

Lactating rabbits ingested similar amounts of the three experimental diets. Some other works have also found that intake of diets before weaning is similar even if there is a substantial difference in their composition or ingredients (Torres *et al.*, 1978; Fraga *et al.*, 1979; Blas *et al.*, 1990).

Solid food intake and weight at weaning were lower at 30°C, when data were corrected for the size and weight of litters at 21 days, when the solid ingestion starts. Results from Simplicio *et al.* (1991) also showed a significant reduction in live weight gains of litters reared at the same temperature as this

experiment, these were related to an equally lower intake of does and litters, in Simplicio's work no separate measurements were taken. Litters were not affected in the traditional building when minimal temperatures varied between 9 y 24°C.

The negative effect of a high ambient temperature on the performance of litters may be linked to the lower milk output of does; in this respect, it can be seen that the mean live weight of an individual rabbit at 21 days of age, corrected with the size of litter, was similar in the building and at 30°C (376 compared to 357 g, NS). The intrinsic effect of a different solid ingestion in both environments on growth rate should not be evident, 25 g MS or 285 kJ DE/day for a litter which at the same time ingests 150-200 g of milk. This reduction in lactating animals seems low, when compared to the effect of the same temperature on older rabbits (Stephan 1980, Simplicio *et al.*, 1988). It seems that lactating rabbits are less sensitive to a high temperature because mean minimum temperatures of 19-24°C did not affect the litters, but intake and growth are impaired when rabbits are fattened at 18-22°C (Fernandez Carmona *et al.*, 1993) or 15-25°C (Casamassima *et al.*, 1988).

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#### REFERENCES

- BLAS, E., MOYA, A., CERVERA, C., FERNANDEZ CARMONA, J. 1990. Utilización de un pienso con leche en gazapos lactantes. *AYMA* 30 (4), 155-157.
- CASAMASSIMA, D., MANERA, C., MUGNOZZA, G.S. 1988. Influenza del microclima sulla produttività del coniglio. *Rivista di Conigliicoltura* 11, 31-35.
- FERNANDEZ CARMONA, J., CERVERA, C., BLAS, E. 1993 Efecto de la inclusión de jabón cálcico en el pienso de conejos. *Inv. Agraria, Prod. San. Animal* (en prensa).
- FRAGA, M.J., TORRES, A., de BLAS, J.C. 1979. Crecimiento en gazapos lactantes de raza Neozelandesa. *Anales del INIA. Producción Animal* 10, 21-24
- LEBAS, F. 1975. Influence de la teneur en energie de l'aliment sur les performances de croissance chez le lapin. *Annales de Zootechnie* 24, 281-288.
- SIMPLICIO, J.B., CERVERA, C., BLAS, E. 1988. Effect of two different diets and temperatures on the growth of meat rabbit. 4th World Rabbit Congress (Budapest), III, pp 74-77.
- SIMPLICIO, J.B., FERNANDEZ CARMONA, J., CERVERA, C., BLAS, E. 1991. Efecto del pienso sobre la producción de la coneja a una temperatura ambiente alta. *Investigación Agraria, Producción y Sanidad Animal* 6 (1), 67-73.
- STEPHAN, E. 1980. The influence of environmental temperatures on meat rabbits of different breeds. 2nd World Rabbit Congress Congress (Barcelona), I, pp 399-409.
- TORRES, A., FRAGA, M.J., PEREZ, E., de BLAS, J.C. 1978 Crecimiento en gazapos lactantes. *Anales del INIA, Producción Animal* 9, 29-40.