

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

## EXAMINATION OF DIFFERENT PROVIDED DRENCH SOLUTIONS ON LACTATING DOES AND SUCKLING KITS

László KACSALA, Tamás TÓTH, Zsolt GERENCSÉR, Zsolt MATICS\*

\*corresponding author: [matics.zsolt@ke.hu](mailto:matics.zsolt@ke.hu)

Kaposvár University, Kaposvár, Hungary

**Resumo:** O crescimento dos láparos é afetado pelo potencial genético, efeitos maternos (produção de leite e habilidade materna) e ambientais. Nosso objetivo foi de avaliar a preferência e o efeito do consumo de misturas líquidas para láparos e matrizes. Dois experimentos foram conduzidos na Universidade de Kaposvár. Experimento 1: 12 coelhas matrizes foram distribuídas em três grupos: Controle: acesso ad libitum a água de dois bebedouros; Mistura líquida: acesso ad libitum a água de um bebedor e 5% de mistura líquida com base no peso do bebedouro; Mistura em pó umedecida: acesso ad libitum a água de um bebedouro e 5% de mistura em pó umedecida com base no peso do outro bebedouro. A metodologia do experimento 2 foi a mesma, contudo o fornecimento de mistura em pó umedecida foi limitado a duas vezes por semana (24h). Em ambos os experimentos os coelhos consumiram voluntariamente as misturas, sendo observada preferência pela mistura em pó umedecida ( $P < 0.05$ ) em relação à sobre água e à mistura líquida. Com exceção do consumo de ração no experimento 1 (ad libitum), nenhum dos parâmetros produtivos avaliados (peso corporal da matrizes, ingestão de leite, peso da ninhada, peso médio, ganho de peso e mortalidade dos láparos) foram afetados pelas misturas fornecidas. Sugere-se a repetição do experimento considerando diferentes concentrações e diferentes temperaturas no ambiente.

**Keywords:** rabbit growth performance, liquid consumption, milk consumption, reproduction

Promoção e Realização:



Apoio Institucional:

Organização:

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

## Introduction

While the growth of the fetuses intensifies at the last term of the pregnancy, the feed consumption of the does declines. Thus, the does convert their reserved fat to provide enough energy for growth of fetuses. A second energy-deficit phase could be observed during the peak period of lactation. This can lead to a declining body condition, which could affect the milk production and the lifespan of the does (Sánchez et al., 2012). During these periods does are not able to consume the required amount of feed. Due to the high fiber content of the feed the protein- and energy content is also limited.

On the other hand - due to the fluctuating climate (global warming) - the average daily temperature increases, which causes a “challenge to solve” for rabbit production. The control of the temperature inside the stable is limited. An increased temperature causes reduction in feed consumption, which will also lead to a decline in milk production and/or body condition of lactating does (Marai et al., 2002).

In other species the force-feeding of drench solution is used to provide a high energy source right after parturition or as part of a treatment (Kass et al., 2013). The drenching method is widely used e.g. in the case of dairy cows right after calving.

The aim of the experiments were to examine the willingness and effect of auto-consumption of liquid and powder based drench solutions on does and kits.

## Material and methods

Two experiments were conducted at the rabbit farm of Kaposvár University with Pannon Ka rabbits (n=24 does and their litters/experiment). Does were housed individually in open top wire-mesh pens (0.5 x 1.0 x 1.0 m). Each pen was equipped with a 30 cm wide feeder (commercial pellet *ad libitum*; DE: 11.0 MJ/kg; crude protein: 18.1%; crude fiber: 15.3%, as in feed) and two cup drinkers with bottles. Controlled nursing was applied till 16 d of age. The temperature varied between 21 and 27°C. The daily lighting was 16 hours.

Promoção e Realização:



Apoio Institucional:

Organização:

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

After kindling, litters were equalized to eight kits/litter. Kits under 45 g of bodyweight were removed, dead kits were not replaced through the experiments. Experiments lasted from 11d before parturition to weaning (35d of age).

Experiment 1: 11 days before parturition, pregnant does were divided into three groups (n=8/group): **Control (C)**: *Ad libitum* access of water from both drinkers; **Liquid-based drench (L)**: *ad libitum* access of water from one drinker and 5% drench (water 50%, glycerin 20%, dextrose 20%, Celmanax® liquid 5%, MHA® liquid 5%) solution by volume from the other drinker; **Powder-based drench (P)**: *ad libitum* access of water from one drinker and 5% drench (maltodextrin 30%, dextrose 35%, whey powder 25%, WPC-80® 9.8%, Coleis® 0.2%) solution by weight from the other drinker. Daily liquid consumption was measured every morning at 8am.

Experiment 2: Methodology was similar to experiment 1, however *ad libitum* drench solution was provided twice a week for 24h (Monday; Thursday from 8am).

Feed consumption was weekly measured. Body weight of does was measured after parturition, and at 7, 10, 14, 17, 35 d of lactation. Milk consumption of kits were calculated as the difference of the body weight of does before and right after nursing at age of 3, 7, 10, 14, 17 d. Litter weight was measured at 2, 9, 16, 21, 35 d of age before nursing. Body weight gains were calculated. Died kits were recorded daily.

The liquid consumption, average daily feed consumption, milk production, body weight and body weight gain of does and kits were evaluated by One-Way ANOVA, the mortality of suckling kits was evaluated by Chi<sup>2</sup> test with SPSS 10.0 software.

## Results and discussion

In both experiments rabbits covered the daily fluid requirement mostly by consuming the drench solutions. The Table 1 shows that during the whole period of experiment 1 (*ad libitum* drench) there were significant differences (p<0.05) between the groups, mostly in favor of the powder-based drench solution. It was observed, that after leaving the nest at age of 16d, kits started to consume the drench

Promoção e Realização:

Apoio Institucional:

Organização:



CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

solutions, preferably the powder-based one. This could be caused by the semi-sweet, milk-like odor and flavor of the solution. In the experiment 2 (limited access to drench) the results were similar to the experiment 1, but not so pronounced. Temperature fluctuated between 21-27°C, no tendencies in examined traits were observed during the experiments.

Table 1 - Average daily liquid consumption (mL/d) of rabbits during *ad libitum* drench provision, experiment 1

Days before-after parturition	Drinkers*						Prob.
	C	L	P	CW	LW	PW	
-11--7	25.4 <sup>b</sup>	8.6 <sup>a</sup>	13.3 <sup>ab</sup>	13.5 <sup>ab</sup>	21.9 <sup>b</sup>	21.3 <sup>ab</sup>	0.003
-6-0	27.2 <sup>ab</sup>	10.7 <sup>a</sup>	25.2 <sup>ab</sup>	12.2 <sup>a</sup>	26.8 <sup>b</sup>	26.5 <sup>ab</sup>	0.003
1-7	29.3 <sup>ab</sup>	17.6 <sup>a</sup>	48.3 <sup>b</sup>	32.4 <sup>ab</sup>	31.9 <sup>ab</sup>	37.7 <sup>ab</sup>	0.002
8-14	30.8 <sup>a</sup>	38.7 <sup>a</sup>	83.7 <sup>b</sup>	57.2 <sup>ab</sup>	28.6 <sup>a</sup>	39.7 <sup>a</sup>	0.001
15-21	43.9 <sup>a</sup>	54.8 <sup>a</sup>	96.5 <sup>b</sup>	52.0 <sup>a</sup>	33.1 <sup>a</sup>	31.0 <sup>a</sup>	<0.001
22-28	48.8 <sup>a</sup>	67.5 <sup>ab</sup>	113.4 <sup>b</sup>	76.6 <sup>ab</sup>	35.3 <sup>a</sup>	35.9 <sup>a</sup>	<0.001
29-35	51.1 <sup>ab</sup>	107.7 <sup>c</sup>	220.8 <sup>d</sup>	100.1 <sup>bc</sup>	53.1 <sup>abc</sup>	42.4 <sup>a</sup>	<0.001

Means with the same letter are not significantly different from each other ( $p \geq 0.05$ )

\* C: Control group, water; CW: Control group, water

L: Liquid based group, drench solution; LW: Liquid based group, water

P: Powder based group, drench solution; PW: Powder based group, water

In overall, the provided drench solutions did not affect the average daily feed consumption. However, in experiment 1, in most observed days the rabbits with provided drench solutions consumed less feed compared to the control group (Table 2). At the second and fourth week of lactation the differences were significant ( $p < 0.05$ ). During the limited access (experiment 2) the tendencies ( $p \geq 0.05$ ) were similar. None of the treatments had significant effect on the body weight of does, the milk consumption, litter weight, average body weight, weight gain or the mortality of kits ( $p \geq 0.05$ ).



CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

Table 2 - Average daily feed consumption (g/d) of rabbits during the *ad libitum* drenching (experiment 1)

Days of age	Groups*			SE	Prob.
	C	L	P		
1-7	206	191	196	8.98	0.083
8-14	290 <sup>a</sup>	242 <sup>b</sup>	268 <sup>b</sup>	7.54	0.027
15-21	340	306	308	7.32	0.118
22-28	500 <sup>a</sup>	429 <sup>b</sup>	426 <sup>b</sup>	13.40	0.039
29-35	616	639	613	13.95	0.725

Means with the same letter are not significantly different from each other ( $p \geq 0.05$ )

\***C:** *Ad libitum* water access from both drinkers; **L:** one drinker water, one drinker 5% drench solution by volume *ad libitum*; **P:** one drinker water, one drinker 5% drench solution by weight *ad libitum*

### Conclusion

Does and kits willingly consumed the drench solutions. Rabbits preferred the powder based drench solution over the liquid based solution. Consumption of drench solutions did not affect the production of lactating does and growth of suckling kits. Further studies are needed to prove the effect of drenching by changing the composition or the concentration of the solutions. Comparison of different room temperatures (e.g. 20°C and 30°C) is suggested.

### Acknowledgments

Supported by the GINOP-2.1.1.-15-2015-00560 project and ÚNKP-17-3 New National Excellence Program of the Ministry of Human Capacities.

### References

- Kass, M.; Ariko, T.; Samarütel, J.; Ling, K.; Jaakson, H.; Kaart, T.; Arney, D.; Kart, O.; Ots, M. 2013. Long-term oral drenching of crude glycerol to primiparous dairy cows in early lactation. *Animal Feed Science and Technology* 184:58-66. DOI: 10.1016/j.anifeedsci.2013.06.004
- Marai, I.F.M.; Habeeb, A.A.M.; Gad, A.E. 2002. Rabbits' productive, reproductive and physiological performance traits as affected by heat stress: a review. *Livestock Production Science* 78:71-90. DOI: 10.1016/S0301-6226(02)00091-X
- Sánchez, J.P.; de la Fuente, L.F.; Rosell, J.M. 2012. Health and body condition of lactating females on rabbit farms. *Journal of Animal Science*. 90:2353-2361. DOI: 10.2527/jas.2011-4065

Promoção e Realização:

Apoio Institucional:

Organização:

