



Influence on fertility of Lianol® Solapro incorporation in lactation diet

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Introduction

At the end of lactation, sows are in a state of negative energy balance (NEB). The metabolic state is the key factor limiting the fertility and embryonic survival. The NEB reduces fertility and reproduction parameters. The inclusion of Lianol® Solapro in the lactation diet improves these parameters.

Materials and methods

Forty Belgian Landrace sows at CRA-W from three groups were distributed between two feeding treatments upon entering the farrowing unit seven days before expected farrowing: control and supplement. The supplement was Lianol® Solapro, a complementary feeding stuff based on fermented potato protein.

It was distributed manually as top feeding on the first diet (14.1 MJ of ME/kg, EVAPIG®) at a rate of 10 g/day until three days after farrowing and thereafter it was added to the second diet (14.7 MJ of ME/kg, EVAPIG®) at a rate of 0.1%.

The piglets are weaned at 4 weeks of age. Total energy requirement (TER, MJ of ME/d) of sows during lactation was calculated¹. Energy balance (EB) was calculated by subtracting the calculated TER from the intakes. The plasma concentrations of IGF-I were determined in the plasma of sows at weaning. Elisa Kit (Mediagnost®) was used after cryo-precipitation of proteins: acid-ethanol method².

After weaning, sows were managed in the same modalities of breeding until their next farrowing. The sows were scanned pregnant at 4 weeks. At next farrowing, the number of piglets born alive, stillborn and living at day 4 was recorded. Each piglet was weighed at 4 days of age.

Data were analyzed by analysis of variance using the GLM procedure (Minitab® 15.1.30.0). Model included the effects of feeding treatment and group and the interaction between these 2 factors. A F-test allows comparing intra-litter variance (Excel®, 2003); intra-litter variance of control and Lianol® corresponds to the residual variance estimated from an analysis of variance with litter and group as factors.

While the EB was more negative (P<0.10), Lianol® sows had higher plasma IGF-I at weaning. It resulted in higher rates of sows keeping pregnancy until birth.

Similarly, Lianol® gave better quality embryos that develop in stronger piglets. Indeed, the rate of survival born alive (P<0.10) or living at the fourth day (P<0.05) were higher for Lianol® sows.

The piglets present at day 4 had grown equally well in both groups, but while there were more survivors, the intra-litter variance of weight was lower (P<0.05); the litters were more homogenous.

Conclusion

Lianol® Solapro is a fermented potato protein which is added to the feed of sows. This study confirms its beneficial effect on several sow fertility parameters and on the quality and survival of the piglets that are born in the subsequent litter.

References

1. Noblet, J. et al. (1990), Energy utilization in pregnant and lactating sows: modeling of energy requirements. J. Anim. Sci., 68, 562-572.
2. Renaville, R. et al. (1993), Changes in the hypophyso-gonadal axis during the onset of puberty in young bull calves, J. Reprod. Fertil., 99, 443-449.

Table 1: Reproduction performance

	Control	Lianol® Solapro	s.e.	Effect
No. of sows at weaning	22	18		
NEB lactation, MJ EM/d	-22	-28	1.8	T ¹
IGF-I at weaning, ng/ml	45	66	3.9	T ^{***}
No. (%) of sows inseminated	19 (86%)	17 (94%)	/	
Weaning to estrus interval, d	4.7	4.6	0.13	
No. (%) of sows pregnant at scanning	17 (77%)	17	/	
No. of sows that farrow	16 (73%)	17 (94%)	/	
Avg. litter				
Total piglets born	12.5	12.4	0.6	
Piglets born alive	11.2	11.6	0.5	
% of survival/total born	89%	94%	1.5%	T ¹
Piglets at 4 d	10.4	11.1	0.5	
% of survival/total born	83%	91%	2.0%	T ¹
Piglet BW at 4 d, g				
Mean	2,124	2,126	68	
s.e. intra-litter	108	85	6	T ¹

No standardization of litter size, T=Treatment effect, G=Group effect, T×G=Treatment × Group interaction - † = P<0.10, * = P<0.05, ** = P<0.01, *** = P<0.001