

Effect of a bovine colostrum supplementation in piglet diet at weaning on growth performances, food ingestion and faecal *E. coli* concentrations

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Introduction In the perspective of the complete ban of antibiotic growth promoters use in animal food by 2006, many alternatives have been studied. However, most of them are not yet technically and/or economically competitive with antibiotics. In this way, the incorporation of bovine colostrum in piglet diets has been studied. Bovine colostrum was chosen for its high concentration in growth promoting and anti-microbial peptides (Playford *et al.*, 2000) and for its high availability. The aims of this study were to measure the efficiency of a bovine colostrum supplementation on growth performances of newly weaned piglets and to evaluate its effects on the digestive and immunological troubles involved by weaning (Pluske *et al.*, 1997 and Vega-Lopez *et al.*, 1995).

Materials and methods 96 Belgian-Landrace X Pietrain piglets (48 males and 48 females) weaned at 28 days were used in this study. At weaning (D0), they were allocated to 2 treatments according to their sex and liveweight. Piglets of the "Colostrum" treatment received a commercial diet (SCAR, Herve, Belgium) supplemented with freeze-dried bovine colostrum serum provided by the CER (Marloie, Belgium) and the others were fed with the same commercial diet supplemented with bovine milk serum ("Control" treatment). During the two first weeks of treatment, the commercial diet was supplemented with 2 % of the tested sera. This supplementation was lowered to 1 % during the next two weeks. Piglets of each treatment were housed in 4 boxes of 12 piglets. The diets were distributed *ad libitum*. Each week, during four weeks, piglets were weighted, food intake of each box was recorded, faecal *E. coli* populations from 5 piglets of each box were followed by incubation on a specific media (TBX agar, Ledtechno, Hechtel-Eksel, Belgium) and blood analysis were registered with a cell counter (MS 4.5, Melet Schloesing Laboratoires, Cergy-Pontoise, France) and by flow cytometry (FACScan, Becton Dickinson, San Jose, CA, USA). The data were analysed by a two-way analysis of variance (treatment * initial liveweight).

Results During the first week (Table 1), the bovine colostrum supplementation induced an increase of average daily liveweight gain ($P < 0.01$) and reduced faecal *E. coli* concentrations ($P < 0.05$). It seems also to have increased the food intake and decreased the food conversion ratio, but the differences are not significative, according probably to the small number of observations ($n = 4$). During the 3 next weeks, these effects disappeared, but the average liveweight of the piglets receiving the "Colostrum" treatment remained statistically higher (Figure 1). The results of the blood analyses (not presented) showed no difference between the treatments during the four experimental weeks.

Table 1. ADG (g/d), ADFI (g/d), FCR and faecal *E. coli* concentrations (10^7 cfu/g faeces) of the piglets of both treatments during the first experimental week.

	Control treatment	Colostrum treatment	SEM	P	n
ADG*	81	170	9.92	< 0.01	48
ADFI	264	337	23.3	= 0.09	4
FCR	3.44	2.29	0.44	= 0.14	4
<i>E. coli</i>	8.5	1.39	2.3	= 0.03	20

*ADG = average daily liveweight gain, ADFI = average daily food intake, FCR = food conversion ratio, cfu = colony forming unit, SEM = Standard error of mean, P = Probability, n = number of repetitions

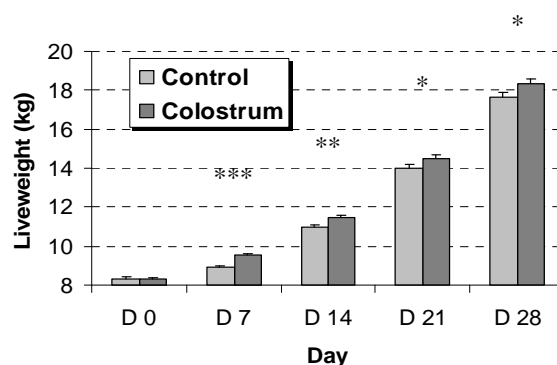


Figure 1. Piglets average liveweight evolution of both treatments during the 4 experimental weeks (* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$).

Conclusions Bovine colostrum supplementation in piglets diet stimulates food intake and reduces the faecal *E. coli* population during the first week after weaning, inducing a liveweight gain increase. A reduction of the food conversion ratio was also observed, suggesting a better nutrient assimilation by the piglets.

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