

Effect of a bovine colostrum supplementation on growth performance, faecal microflora and immunological parameters of piglets at weaning

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The recent total ban of antibiotic growth promoters in animal food may induce economical losses in pig production. Many alternatives have already been studied, but most of them are not yet technically and/or economically competitive with antibiotics. Therefore, 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 peptides¹ and for its high availability. The aim of this study was to measure the efficiency of a bovine colostrum supplementation to newly weaned piglets on their growth performance, feed intake and the digestive and immunological troubles involved by weaning^{2,3}.

The study examined the effect of bovine colostrum supplementation on growth performance, feed intake, faecal microflora and blood parameters of piglets after weaning. A total of 96 piglets (CRA-W, Gembloux, Belgium) weaned at 26 ± 2 days of age were assigned for 4 weeks to one of the two treatments: 1) the control treatment (commercial diet supplemented with bovine milk whey powder, $n = 48$) and 2) the colostrum treatment (commercial diet supplemented with bovine colostrum whey powder (CER, Marloie, Belgium), $n = 48$). The two supplements were incorporated in the diet at a level of 2% during the two first weeks after weaning and lowered to a level of 1% the two next weeks. Body weight and feed intake were determined weekly for the 4-wk experimental trial. At the same time, faecal *E. coli* and *Enterococcus sp.* were determined on specific culture media. Blood samples were also collected weekly and submitted to a cell counter and flow cytometry was used to determine the lymphocyte populations (B, T, Th and Tc). Total seric IgM, IgG and IgA concentrations were quantified by the ELISA method. The IGF-I concentrations were also determined on blood serum by RIA.

During the first week of the trial, piglets from the colostrum treatment presented improved ADG* (170 g/d vs. 81 g/d, $P < 0.001$), ADFI (345 g/d vs. 256 g/d, $P = 0.03$) and G:F (0.31 vs. 0.48, $P = 0.04$). The higher performances and feed efficiency registered for the colostrum treatment were accompanied with a decrease of 80% ($P = 0.03$) in faecal *E. coli* populations and increases of circulating IgA and IGF-I, respectively by 25% ($P = 0.03$) and 10% ($P = 0.01$) compared to the control treatment.

It is concluded that the bioactive components contained in the freeze-dried bovine colostrum whey reduce the growth check following weaning, by its antimicrobial, growth promoting and immunomodulating components. Bovine colostrum may thus be a good alternative to antibiotics, but further investigations are necessary to study the effect of lower doses of colostrum supplementation and shorter administration periods.

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* ADG = Average daily gain; ADFI = Average daily feed intake; G:F = Gain/Feed intake