

Effect of bovine colostrums of 1st, 2nd and 3rd milking on growth performance and the immune system of newly-weaned piglets after an *E. coli* LPS challenge.

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The aim of this work is to evaluate the influence of post-weaning (PW) diet supplementation with freeze dried bovine colostrums (BC) from 1st, 2nd or 3rd milking on growth performance and the immune system of piglets. This was realised in a context of an *E.coli* lipopolysaccharide (LPS) challenge.

The experiment was performed on 100 newly-weaned piglets distributed between five treatments (Control -, Control +, Col 1, Col 2 and Col 3) and followed for 27 days. All piglets received a PW diet, the diet of “Col 1”, “Col 2” and “Col 3” groups were respectively supplemented with 1 % of 1st, 2nd or 3rd milking defatted freeze-dried BC until the 12th day PW. Then, piglets from the five groups received the same PW diet without any supplementation. On day 5 PW, piglets of “Control +”, “Col 1”, “Col 2” and “Col 3” treatments were injected IM with 100 µg LPS / kg BW while “Control -” received a solution of PBS. Average daily gain and feed ingestion measures were completed with blood analyses (IgA, IgM, IgG, INF-γ, TNF-α, IL-10). BC supplementation induced an increase of ADG in the “Col 1” group compared to both “Col 2” and “Col 3” groups before LPS injection. Then, the LPS challenge induced severe skin inflammations, a decrease of growth performance for 20 days, and important changes of all measured blood parameters 3h post-injection. IgA and IgG concentrations were significantly higher on day 13, and IgM on day 9 and 13, compared to before injection in the 4 LPS treated groups. BW, ADG and ADFI of both “Col 1” and “Col 3” were higher than other two challenged groups at the end of the trial.

In conclusion, the severe effects of LPS masked the potential benefits of BC on ADG and ADFI until day 20. However, higher BW, ADG, and ADFI of both “Col 1” and “Col 3” observed at the end of the trial suggest a restoration of gut damages promoted by the BC growth factors and a similar effect of 1st and 3rd milking BC on growth performance.