

Impact of inadequate colostrum intake in piglets

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Introduction

The increasing number of live born piglets reduces the average birth weight and subsequent increases the risk of mortality. Colostrum intake is crucial for survival in the first days of life. However, studies on the uptake of colostrum by piglets are scarce.

Material/methods

In December 2012 and January 2013 the farrowing process of in total 70 litters (Topigs 20 sows x Tempo boar) was followed over a period of four weeks time. Piglets were weighted (directly after birth and at 24 hours after the birth of the first born piglet; n=1040) to estimate the colostrum intake. After birth of the first piglet a colostrum sample was taken. IgG was determined in this colostrum by radial immunodiffusion. Twice a week blood was collected by jugular venapuncture from 3 piglets per litter: first live born (FB), middle live born (MB) and last live born piglet (LB). Piglets were sampled between the age of 24 hours and 4 days. Serum IgG was determined using the immunocrit assay with an increased centrifugation time of 10 minutes. IgG concentrations were corrected for differences between the weight at 24 hours and the weight at blood collection, assuming that the concentration of antibodies are linear diluted by weight increase between 24 hours of age and the time of blood sampling.

Results

The mean birth weight (BW) was 1.266 kg (n=1087). In the first 24 hours (after the birth of the first piglet) the average weight increase (WI) of the piglets was 56 gram (3,9% of BW; n=1004) with a calculated colostrum intake of 270 gram. BW was positive correlated with the relative weight increase (Rsq 0,064; p<0,001). Piglets that died during the suckling period had a significant lower calculated colostrum intake and a lower percentage of weight increase compared to the piglets that survived (166 gram, -4.9% vs 281 gram, 5.1%; p<0.001). The 25% lightest piglets at birth had a significant higher mortality compared to the other 3 quartiles (<1.08 kg 36.8%^a; 1.01-1.26 kg 10%^b; 1.28-1.45 kg 9.7%^b; >1.46 kg 8.0%^b; p<0.001). Mean colostrum IgG was 60.2 mg/ml (min 32.3 mg/ml; max 77.1 mg/ml). Colostrum IgG was positive correlated with the serum IgG of the piglets (Rsq 0.073; p<0.001). Mean piglets serum IgG was 37.3 mg/ml (min 2.5 mg/ml; max 85.4 mg/ml). Serum IgG significantly lowered with birth order (FB 41.4^a mg/ml; MB 37.0^{ab} mg/ml; LB 33.4^b mg/ml; p<0.001).

Conclusion

Mortality was correlated to a low colostrum intake and a low birth weight. This study (70 litters, 1040 piglets) clearly showed a decrease in piglet serum IgG with increasing birth order. In our opinion this stresses the importance of a quick birth process and early access to the udder.