

INVESTIGATION OF BIOLOGICAL MARKERS TO EVALUATE THE ADAPTATION OF THE NEWBORN BELGIAN BLUE CALF TO THE EXTRAUTERINE LIFE. A PILOT STUDY.

Ronzoni A.¹, De Marchin E.², Lebrun M.², Rao A.-S.¹, Rollin F.¹, Hanzen C.¹ and Théron L.¹

¹Faculty of Veterinary Medicine, University of Liège, Department of Production Animals, Liège, Belgium

²Association Régionale de Santé et d'Identification Animales (ARSIA), Gestion et Prévention de Santé, Ciney, Belgium

Abstract

Adaptation to extrauterine life and immunity transfer at calving are more at stake when dealing with highly productive breeds such as the Belgian Blue Cattle Breed (BBCB). The purpose of the present pilot study was to evaluate different blood markers, from the birth to the first week of life in BBCB calves, in order to investigate fundamental aspects of the adaptation to the extrauterine life as passive immunity transfer and early energy metabolism. Eighty calves coming from 10 different farms located in Wallonia (Belgium) were enrolled. A clinical examination was performed to verify viability and maturity at birth. Blood samples were collected at birth, day 1 and day 3 to 7. Passive immunity transfer analysis included serum and colostrum immunoglobulin G (IgG) concentration, and plasmatic selenium concentration (Se). Glycemia, serum insulin and cortisol concentration have been considered for the energy metabolism analysis. The data collected were statistically analysed using logistic regression and unpaired t-test. All calves were born alive, viable and mature by caesarean section. Mortality rate was 0% at one week and 5% at three months. Only 33% of calves had an IgG concentration >16g/L after one week of age, while only 34% of colostrum had an IgG concentration >70g/L. Glycemia and serum insulin concentration at birth were significantly lower than other breeds, and plasmatic selenium concentration where coherent with low supplemented dams. We compared calves across IgG concentration classes (>16 g/L vs <16g/L). The cross-sectional analysis of the risk of FPT when given low IgG concentration colostrum has shown a non-significant odd ratio (OR 1,058 and 0,39116 g/L)(p<0,001). No significant difference has been shown between cortisol and glycemia (p=0,3) nor insulin and glycemia (p=0,2) at birth. These data suggest a significant difference in BBCB calves on several metabolic markers, but they also revealed that immunity transfer and micronutrition of pregnant hyper-productive dams remain a challenge in modern farms.