

POSTPRANDIAL GLUCOSE AND INSULIN CONCENTRATIONS IN BELGIAN BLUE VEAL CALVES ON A COMMERCIAL MILK POWDER DIET

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White veal calves (formula fed calves) are predominantly male offspring of dairy cattle, which receive a low iron milk powder diet to obtain white meat. Insulin resistance, hyperglycemia and glucosuria have been described in Holstein Friesian (HF) dairy veal calves on different milk powder diets. In Belgium, besides HF dairy calves, also Belgian Blue (BB) beef calves are raised in this production system. The objective was to determine the postprandial evolution of glucose and insulin concentration in 5 months old BB veal calves in order to investigate whether insulin resistance and hyperglycemia are also present in this beef cattle breed. A permanent catheter with a 100 cm elongation tube was placed in the jugular vein of 6 five months old BB veal calves (mean body weight= 260±31 kg), which were housed on a commercial veal farm. The calves received the normal diet for that production stage, being 1250g milk powder (19.6% crude protein and 20.3% crude fat) in 8 liters of water. Blood was drawn via the catheter, without manipulation of the animals, 30 minutes before milk uptake, immediately after milk uptake, then every 30 minutes (T30, T60, T90 and T120) and thereafter every hour (T180, T240, T300, T360, T420 and T480). Mean basal (preprandial) glucose concentration was 5.72±0.34 mmol/L with the glucose peak concentration of 8.65±0.34 mmol/L at T30. Four hours after milk uptake, basal glucose levels were reached again. Mean basal insulin concentration was 0.31±0.14 µU/mL and the peak insulin concentration of 25.53±14.44 µU/mL was reached 1 hour after milk uptake. Insulin concentration returned to the basal level on average 7 hours after milk uptake. The insulin/glucose ratio was 0.05, which is much lower than for HF veal calves (3.26) in previous studies. In contrast to HF veal calves, no signs of insulin resistance could be demonstrated in BB veal calves on a typical milk powder diet, fed twice a day. NUTRITION can influence the postprandial glucose and insulin levels, but the results are also indicative for a breed specific difference in insulin responsiveness as has been demonstrated previously in neonatal BB and HF calves with an intravenous glucose tolerance test.