Immune response of suckled beef calves to dam vaccination against bovine respiratory disease

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Peak incidence of pneumonia occurs in young calves less than 3 months of age. The objectives were: (1) characterise the development of immunocompetence in beef suckler calves from birth to 3 months of age; and (2) trace glycoprotein E (gE)-negative bovine herpesvirus type 1 (BoHV-1) antibodies from vaccinated dams to calf sera and investigate the calves' response to live BoHV-1 at 2 weeks of age. The study consisted of thirty multiparous (MP) beef suckler, spring-calving cows: Limousin × Friesian (LF; n=15)) and Charolais × Limousin (CL; n=15). Cows were immunised against BoHV-1 at day(d) -84 and -56 pre-partum. Calves were immunized at 2 weeks of age against Parainfluenza type 3 virus (PI-3 virus), bovine respiratory Syncytial virus (BRSV) and *Mannheimia* (*Pasteurella*) *haemolytica*. All calves were also immunized against BoHV-1 at 6 weeks of age, using 1 dose of a live commercial vaccine; this was administered intra-nasally at 6 weeks of age. Cows were blood sampled by jugular venipuncture at d -84, d -56, d -28 (pre-calving), d 0 (calving), and at d 14 post-calving. Blood samples were collected from the calves (n=30) *via* jugular venipuncture at birth, prior to colostrum feeding (0 h), at 12 h, 24 h, 72 h and 168 h after the initial feeding of colostrum, and at d 7, 14, 28, 42, 56 and 84 post birth. The mean concentration of gE negative antibodies circulating in the dam's blood pre-partum proved negative to gE ab (S/N≥0.70). The CL and LF cows proved negative to gE-antibodies. Total circulating BoHV-1 antibody levels peaked (85%) at 12 h post birth in calves and declined thereafter, as the maternal antibodies decayed. There was no difference (P>0.05) in BoHV-1 and BRSV antibody levels in calves post vaccination at 2 weeks of age or after the booster BRSV vaccine. Further research is warranted to improve vaccine effectiveness against pneumonia in calves with maternally derived antibodies.