

## Herd-level prevalence of bovine leukemia virus, *Salmonella* Dublin and *Neospora caninum* in Alberta dairy herds using ELISA on bulk tank milk samples

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For effective disease control, up-to-date prevalence estimates are needed. The objective of this study was to estimate herd-level prevalence of bovine leukemia virus (BLV), *Salmonella* Dublin, and *Neospora caninum* in Alberta dairy herds. Bulk tank milk samples from all Alberta farms were collected 4 times, in Dec 2021, and Apr, Jul, and Oct 2022, and tested for antibodies against BLV, *S. Dublin*, and *N. caninum* using ELISAs. Herd-level apparent prevalence was calculated, and the association of prevalence with region, herd size, herd type, and milking system type was determined using mixed effect modified Poisson regression. Prevalence of BLV was 89.4, 88.7, 86.9 and 86.9% in Dec, Apr, Jul, and Oct, respectively, whereas *S. Dublin* prevalence was 11.2, 6.6, 8.6, and 8.5%, and *N. caninum* prevalence was 18.2, 7.4, 7.8, and 15.0%. For BLV, *S. Dublin* and *N. caninum*, a total of 91.7, 15.6, and 28.1% of herds, respectively, were positive at least once. Compared to the north, central Alberta had a 1.13 times higher prevalence of BLV-positive herds, whereas south Alberta had 2.6 times higher prevalence) of herds positive for *S. Dublin* antibodies. Furthermore, central and south Alberta had a 2 times lower prevalence of *N. caninum*-positive herds compared to the north. Hutterite herds were 1.13 times more frequently BLV-positive but more than 2 times less frequently *N. caninum*-positive. Large herds (>7,200 L/day) were 1.1 times more often BLV-positive, whereas small herds ( $\leq$  3,600 L/day) were 3.2 times more often *N. caninum*-positive. Moreover, *N. caninum* prevalence was 1.6 times higher on farms with conventional milking systems than automated milking systems.

**Take home message:** These results provide up-to-date information of the prevalence of these infections that will help in devising evidence-based disease control strategies.

## Effect of SCFA concentration and pH on health and hematology in pre-weaned Holstein dairy calves

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Optimizing rumen development is key for preparing calves for weaning, however, the impact of the physiological development of the rumen on calf health and stress is unclear. This study investigated the effects of ruminal SCFA concentration and pH and their interaction on health parameters in dairy calves. Holstein calves (n = 32), housed individually on rubber mats, were fed milk replacer (26% CP, 18% fat; up to 900 g/d) twice daily, and calf starter (18% CP) and water ad libitum. At 10  $\pm$  3 d of life, calves were ruminally cannulated. One week after surgery, calves were blocked by initial body weight and randomly assigned in a 2 x 2 factorial arrangement of treatments of SCFA concentration (10 vs. 285 mM) and pH (5.2 vs. 6.2), yielding four treatment groups: low SCFA, low pH (LS-LP), high SCFA, low pH (HS-LP), low SCFA, high pH (LS-HP), and high SCFA, high pH (HS-HP). On weeks 3, 5, and 7, calves underwent a 4-h washed reticulorumen procedure with a physiological buffer containing one of the four treatments. Daily intakes of milk replacer and calf starter were recorded. Body weight, clinical health measures, blood hematology, and fecal scores were obtained weekly. Grain intake and ADG both increased as the calf aged regardless of treatment. Fecal score decreased as the calf aged. Low rumen pH increased respiration by 4.7 bpm. No difference was detected in body core temperature by treatment over time. From wk 5 to wk 7, white blood cell counts decreased in the LS-LP group but increased in the HS-LP group. No differences were detected in calf red blood cell counts, platelet counts, cortisol levels and beta-hydroxybutyrate by treatment or age. Hemoglobin and hematocrit percent increased in the HS-LP groups during wks 5 and 7. Haptoglobin decreased by 0.2 mg/ml every two weeks regardless of treatment. Overall, rumen environment does not impact clinical health but does impact some hematological markers short term.

**Take Home message:** These preliminary results demonstrate that calves are resilient to changes in the rumen environment, even with a pH as low as 5.2; a pH that adult cows would not be able to tolerate and would in fact cause severe ruminal acidosis.