

## Herd-level prevalence of bovine leukosis and neosporosis in Alberta dairy herds using bulk tank milk samples

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Endemic infectious diseases remain a major challenge for Canadian dairy farms. The Cattle Health Surveillance System (CHeSS) project offers a more comprehensive approach for the surveillance and control of multiple endemic infectious diseases of importance in Western Canada. For effective disease control programs, up-to-date estimates of the disease occurrence are of utmost importance. The objective of this study was to estimate the herd-level prevalence of bovine leukosis and neosporosis in Alberta, Canada, dairy farms. Bulk tank milk samples from all Alberta dairy farms (n = 489) were collected in December 2021, April 2022, July 2022, and October 2022, and tested for antibodies against bovine leukemia virus (BLV) and *Neospora caninum* using indirect ELISAs with Bovicheck BLV and IDEXX Neospora X2, respectively. ELISA results were dichotomized (positive and negative) based on the cut-off values as per manufacturers' recommendation. Herd-level prevalence was calculated as proportion of positive samples of total tested samples. Herd-level prevalence of BLV was estimated at 89.4% (95% CI = 86.3 – 91.9%), 88.7% (95% CI = 85.6 – 91.2%), 87.1% (95% CI = 83.8 – 89.8%), and 86.9% (95% CI = 83.5 – 89.6%) in December, April, July and October, respectively, while herd-level prevalence of *Neospora caninum* was estimated at 18.2% (95% CI = 15.0 – 21.9%), 7.2% (95% CI = 5.2 – 9.9%), 7.6% (95% CI = 5.5 – 10.3%), and 15.0% (95% CI = 12.1 – 18.5%), in December, April, July and October, respectively.

**Take home message:** These results provide up to date information of the disease frequency that will set the basis for further investigation of within-herd prevalence of these diseases and help in devising appropriate disease control strategies in Alberta.

## The effect of high and low progesterone exposure treatments in a crossover trial on estrous expression and ovulation timing in Holstein heifers

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The aim of this study was to evaluate the associations between progesterone (P4) concentrations during diestrus with intensity of estrous expression and time from estrus to ovulation in nulliparous Holstein cows. In a randomized cross-over design experiment, post-pubertal heifers (n=31) were pre-synchronized and fitted with a leg-mounted automated activity monitor (AAM). On d-17 relative to estrus, the animals received GnRH, P4 implant for 7 d and GnRH again on d-8. From d-7 to -1, heifers in the high P4 group (HP4) received a new CIDR while the heifers in the low P4 group (LP4) received a second use CIDR. Additionally, heifers in LP4 received multiple PGF2 $\alpha$  injection during the diestrus. Heifers in both treatment groups received PGF2 $\alpha$  on d-1, and estradiol cypionate on d0. Upon estrus activity alert, and every 4 h after until ovulation, the ovaries of the heifers were scanned by ultrasonography for the occurrence of ovulation. Blood samples were taken at estrus and 7 d later for P4 analysis. The HP4 treatment had significantly lower P4 concentrations on d0 than the LP4 treatment (P=0.001) and a tendency for higher P4 on d7 after the HP4 treatment (P=0.07). There was no effect of treatment on ovulation timing (HR=1.17, 95% CI=0.69–1.98, P=0.56). Estrous expression was not affected by treatment when measured by Duration (HP4: 17.7 $\pm$ 0.8 vs LP4: 17.4 $\pm$ 0.8; P=0.72) or Relative Increase of activity (HP4: 364.4 $\pm$ 24.6 vs LP4: 344.6 $\pm$ 24.6; P=0.55).

**Take home message:** Heifers with low P4 during diestrus had higher P4 on the day of estrus and a tendency for lower P4 7 d after than heifers with high P4 during the diestrus, but no associations were found for OT or estrous expression.