

Results

Age (CON = 4.8 ± 0.2 ; PAR = 4.6 ± 0.2), DPP (CON = 73.8 ± 1.6 ; PAR = 75.9 ± 1.5), and body condition score (CON = 6.6 ± 0.9 ; PAR = 6.6 ± 0.1) were not different ($P > 0.05$) between treatments. No difference ($P > 0.05$) in PR at FTAI was observed for the CON (54.9 %) and PAR (55.9 %) treatment groups. Similarly, no difference ($P > 0.05$) in PR was observed between treatments for cows (CON (n= 236) = 55.1 %; PAR (n= 243) = 56.9 %) and heifers (CON (n= 37) = 54 %; PAR (n= 35) = 51.4 %). Breeding season PR (89.8 %) did not differ ($P > 0.05$) between treatments.

Significance

In conclusion, the use of gonadorelin diacetate tetrahydrate plus dinoprost tromethamine (CON) resulted in similar FTAI PR when compared to gonadorelin acetate plus cloprostenol sodium (PAR). The proposed study is significant because it provides relevant research-based evidence on reproductive outcomes (pregnancy rate) following the use of commercially available products approved to synchronize estrous cycles in beef cattle.

The occurrence of flunixin residues in bovine milk samples from the United States

L.W. Kissell¹, MS, PhD; R.E. Baynes¹, PhD, DVM; G.W. Smith¹, PhD, DVM; J.E. Riviere², PhD, DVM

¹Department of Population Health and Pathobiology, North Carolina State University, Raleigh, NC 27695

²Department of Anatomy and Physiology, Kansas State University, Manhattan, KS 66506

Introduction

Flunixin (FLU) is a non-steroidal anti-inflammatory drug (NSAID) approved in the United States for use in beef and dairy cattle for modulation of inflammation in endotoxemia and for the control of pyrexia associated with bovine respiratory disease and acute bovine mastitis. FLU is labeled for intravenous administration at a dose of 2.2 mg/kg every 24 hours or 0.5 mg/lb (1.1 mg/kg) every 12 hours for up to 3 days. The slaughter withdrawal time is 4 days following the last injection and the milk withdrawal time is 36 hours. Since 2005, the United States Department of Agriculture-Food Safety Inspection Service (USDA-FSIS) has reported an increasing number of residue violations in meat from dairy cattle (USDA-FSIS, 2005-2010). This increase in the number of FLU residue violations has led to FLU becoming the second most common residue violation behind penicillin in cull dairy cattle (USDA-FSIS). In milk the marker residue is a metabolite of FLU, called 5-hydroxy flunixin (5OH) and the tolerance for 5OH in milk is 2 ppb. Milk samples in the United States are not routinely tested for 5OH (National Milk Drug Residue Data Base Fiscal Year 2011 Annual Report). However, due to the significant number of FLU tissue residues violations found in cull dairy cows, there is concern that the same practices which have led to tissue residues may also lead to drug residues in milk.

Materials and Methods

A total of 500 samples were collected from 8 different processing plants in different regions of the United States. Plants were located in California, Colorado, New Mexico, Ohio, Tennessee, Indiana, and Utah. However, these were all fairly large processing plants and received milk from multiple states. Some tanker loads represented milk from a single large dairy while other tankers represented milk from multiple dairies that had been comingled together. All milk samples had already been screened for antibiotics but had not undergone any processing (i.e. pasteurization or homogenization).

All 500 milk samples were analyzed for FLU using 2 different approved screening tests, the CHARM[®] Flunixin test and the Alert Flunixin Assay. Each milk sample was run using both assays and positives were confirmed using an ultra-high-pressure liquid chromatography (UPLC) with mass spectrometric (MS) detection method.

Results

Of the 500 milk samples tested for the presence of 5OH residues, 1 sample was found to have a 5OH concentration greater than the tolerance limit using both screening methods. This milk sample was confirmed positive for 5OH using UPLC-MS. The concentration of

5OH in the milk sample was 42 ppb. This concentration is substantially greater than the 2 ppb tolerance limit set forth by the FDA.

Significance

In this relatively small survey of 500 milk samples we found a positive violation rate of 0.2%. From 2003 to 2011 the percentage of milk tanker samples that had a violative residue associated with any drug in the United State ranged from 0.032 to 0.11% (National Milk Drug

Residue Data Base Annual Reports 2003-2011). This suggests that 5OH residues may be found in the milk almost as often as other potential drug residues. Although this study only sampled a small fraction of milk delivered to processing plants it demonstrates that illegal FLU milk residues may occur in the dairy industry and may necessitate future FLU milk testing at dairy processing plants using a rapid assay. Therefore, emphasis on observing the appropriate drug withdrawal time, route of administration, and labeled dosage is critical to the prevention of residue violations.

Benefits of intrauterine treatment with cephapirin in dairy cows with endometritis

N. Tison, DVM, DÉS ; E. Bouchard, DMV, M.V.P.M. ; R.C. Lefebvre, DVM, PhD, Dipl. ACT

Department of Clinical Science, Faculté de médecine vétérinaire, Université de Montréal, Québec, H3C 3J7 Canada

Introduction

Reproductive performance of dairy cows (Sheldon et al, 2006) and farm economic efficiency (Bartlett et al, 1986, Drillich et al, 1994, Guard et al, 1994) are related to the health status of the uterus at the end of the voluntary waiting period. Uterine diseases affect about half of dairy cows in the postpartum period (Kluciński et al, 1990, Leblanc et al, 2008) and cause infertility by disrupting uterine and ovarian functions (William et al, 2005).

The hypothesis of the current study was that treatment with antibiotic would improve uterine health and reproductive efficiency in dairy cows with uterine infection. The objective was to assess the efficacy of cephapirin intrauterine treatment preceding a timed AI protocol in lactating cows with purulent vaginal discharge (PVD) and cytological endometritis (CYT).

Materials and Methods

A total of 1178 Holstein cows from 17 different commercial dairy herds were recruited between September 2010 and October 2011. Cows were examined around 34 (± 7) DIM to diagnose PVD (n = 992) and CYT (n = 983). All cows were systematically enrolled on an ovulation synchronization protocol (Presynch-Ovsynch) for the first insemination. Genital examination was performed by transrectal palpation, vaginoscopy, and endometrial cytobrush. Purulent vaginal discharge and CYT were defined respectively as the presence of vaginal discharge and as a percent of polymorphonuclear cells (PMN) being detrimental to subsequent reproductive perform-

ance. After examination, cows were randomly assigned to receive or not to receive a cephapirin intrauterine treatment (CEPH) (Metricure, 500 mg cephapirin benzathine; Merck Animal Health, Montreal, Canada). Herd records were compiled in a databank (Dossier de santé animale: DSAHR) and validated. Pregnancy diagnosis was done by transrectal palpation about 35 days after insemination.

Statistical analyses were performed using logistic regression models in SAS. Using a mixed logistic regression with herd as random effect and season and lactation as fixed effect (GLIMMIX), the vaginal discharge and %PMN were analyzed to predict (odds ratio, OR) the first AI success rate ($p < 0.05$). Survival analysis investigated the efficiency of the treatment by using Cox proportional hazard model (PHReg) including season, parity, and herd as variables. Based on the highest sum of sensibility and specificity for the pregnancy status at 120 DIM, the optimal cutoff was 7% of PMN for CYT and the presence of trouble discharge with or without purulent material for PVD.

All procedures conformed to the national guideline for care and use of laboratory animals of the University of Montreal.

Results

The prevalence of PVD and CYT were 23 and 28%, respectively. In the final model, presence of PVD and CYT in control cows (CONT, not treated with cephapirin) was detrimental on FSCR (PVD: 26% ± 5 ; No-PVD: 41% ± 3 ; $P < 0.01$; CYT: 26% ± 4 ; No-CYT: 43% ± 3 ; $P < 0.01$). Survival curves showed a significant detrimental effect