

Elevated storage temperatures and concentration of large animal pharmaceuticals

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Introduction

Most veterinary pharmaceuticals are labelled to be stored at or below 77°F or 86°F. Previous work showed that temperatures in ambulatory veterinary practice vehicles exceeded those temperatures for 67-100% of days in the summer of 2013. The project objective was to determine the effect on the active ingredient concentrations of drug products exposed to temperatures above their recommended upper storage limit.

Materials and Methods

Five bottles of dinoprost, flunixin meglumine, GnRH, tulathromycin and xylazine were maintained at 65-75°F (room temperature). Five additional bottles of each product were maintained in a programmable chamber set to mimic temperatures recorded in one veterinary practice vehicle in summer 2013. All bottles were sampled on days 0, 40, 80, and 120. Samples were analyzed in duplicate by LC/MS/MS. Changes in active ingredient concentration were assessed

by linear regression, and t-tests were performed to compare slopes of time:concentration curves for room temperature and environmental chamber-stored drugs.

Results

Slopes of drug concentrations over 120 days for all 5 drugs were less than 0.04, and there was no statistically significant difference between the slopes of concentrations over time for room temperature vs environmental chamber-stored bottles for any of the drugs.

Significance

No significant impact of elevated storage temperatures on product active ingredient was found in this study. However, the only outcome tested was active ingredient concentration on a limited number of products for 120 days, so practitioners are advised to protect all pharmaceuticals from elevated storage temperatures.

Risk factors associated with septic arthritis of the distal interphalangeal joint in beef cattle

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Introduction

Lameness is a condition associated with important economic losses in beef cattle operations (Hird DW. et al J Am Vet Med Assoc 1991; 198:554). Infection of the distal interphalangeal joint (DIJ) usually results in severe lameness and is an animal welfare concern (Desrochers A. et al J Am Vet Med Assoc 1995; 206: 1923); however, diagnosis of digital infection in beef cattle in the field is difficult and challenging

for veterinarians. Identification of risk factors associated with septic arthritis of the DIJ in beef cattle could lead to early treatment and improve prognosis for future productive life. The objective of this study was to determine if factors such as duration of lameness, number of antibiotic treatments, severity of lameness, and the presence of asymmetric swelling at the coronary band of the affected foot are associated with septic arthritis of the DIJ in beef cattle.

Materials and Methods

Twenty-nine animals (13 cases and 16 controls) presenting to the Veterinary Health Center at Kansas State University with a complaint of a single-foot lameness were included in the study. Cases were defined as beef cattle of any gender presenting with a complaint of single-foot lameness where septic arthritis of the DIJ was diagnosed by radiographic examination of the affected digit and/or cytology of the synovial fluid of the DIJ. Controls were defined as adult beef cattle presenting with a complaint of single foot lameness with absence of a diagnosis of septic arthritis of the DIJ. All animals underwent a complete lameness exam including lameness scoring. During lameness examination, the presence of swelling at the coronary band of the affected foot was evaluated and recorded. A lameness score of 0-5 was used where 0 indicated absence of lameness and 5 indicated severe, non-weight bearing lameness. A specific questionnaire was developed to obtain information on exposure of cattle to risk factors. Association between factors and the presence of septic arthritis of the DIJ was evaluated by exact logistic regression analysis.

Results

Duration of lameness, antibiotic treatment, and number of doses of antibiotics were not significantly associated with the diagnosis of septic arthritis of the distal interphalangeal joint in beef cattle from this study ($P > 0.05$). In contrast, a significant association lame beef cattle with a lameness score of 4 or 5 and the presence of asymmetric swelling at the coronary band of the affected foot was observed. The presence of asymmetric swelling at the coronary band and the presence of a lameness score of 4 or 5 significantly increased the odds (25.8 and 19.8, respectively) of septic arthritis of the DIJ in single-foot lame beef cattle in this study ($P < 0.01$).

Significance

Based on the results of the present study, clinical signs such as asymmetric swelling of the coronary band and severity of lameness could be used in field conditions to determine the probability of infection of the DIJ in beef cattle. Rapid identification of septic arthritis of the DIJ could lead producers and veterinarians to seek specialized veterinary services and improve animal welfare.

Investigation of a reported increase in clinical disease attributed to anaplasmosis and babesiosis in Costa Rican dairy herds

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Introduction

Anaplasmosis and babesiosis have been recognized as significant disease entities in Latin America for many decades. As in the United States, seroprevalence varies widely within the country of Costa Rica, dependent on altitude, temperature, vegetation, and other factors. Infection with multiple hemoparasites (*Anaplasma marginale*, *Babesia bovis*, and/or *Babesia bigemina*), along with other comorbidities and management factors, may influence manifestation of clinical disease. This study was undertaken as a field investigation in response to reported concerns of increased sudden death and severe clinical disease in adult animals, as well as unexpected serious disease in younger animals. The aim was to evaluate the infection status and epidemiology of these herds to determine what organisms might be playing a role in disease

and identify potential changes in management that could help mitigate the impact.

Materials and Methods

Six dairies in Costa Rica were selected based on altitude, a history of clinical disease concerns, and willingness to participate in the study. Approximately 50 animals were sampled at each farm, and clinical data and information on management practices were gathered. Serum and whole blood samples were collected and transported on ice back to the US for analysis. Serology was performed using the commercial VMRD *Anaplasma* cELISA and the VMRD *B. bovis* MI-ELISA (license pending) to determine the seroprevalence and epidemiology on each farm. Nested PCR for protozoan 18s ribosomal sequence as well as *Babesia bigemina*-specific