

Posters

Evaluation of disease occurrence and production parameters of dairy cows treated with pegbovigrastim

M.X.S. Oliveira, BS¹; D.D. McGee, DVM²; J.A. Brett, DVM³; A.E. Stone, PhD¹

¹Department of Animal and Dairy Sciences, Mississippi State University, Starkville, MS

²Elanco Animal Health, Greenfield, IN

³College of Veterinary Medicine, Mississippi State University, Starkville, MS

Introduction

Pegbovigrastim is a modified form of the naturally-occurring bovine granulocyte colony-stimulating factor. At the time of the study, pegbovigrastim was commercially available under veterinary prescription as Imrestor (Elanco Animal Health, Greenfield, Indiana). According to the product label, when the product is applied 7 days before calving and again at the day of calving, clinical mastitis incidence decreases by 28% in the first 30 days of lactation in dairy cows and heifers. The objective of this study was to further demonstrate the effectiveness of Imrestor at reducing clinical mastitis incidence, and to demonstrate the effectiveness at reducing metritis incidence in the first 30 days of lactation on a commercial dairy operation.

Materials and Methods

Study cows (n = 270) were blocked by parity group (multiparous or primiparous) and randomly assigned to control (CON, n = 144) or treatment (IMR, n = 126). Ten ± 2 d before expected calving and again at calving, IMR cows received 2.7 mL of Imrestor and CON cows received 2.7 mL of 0.9% saline. Milk yield, fat, protein, lactose, solids nonfat percent, and SCC, and body condition, hygiene, and lameness were evaluated weekly. Animals were evaluated for metritis twice weekly through rectal temperature, palpation, and uterine discharge evaluation until 30 DIM. Farm personnel recorded other postpartum diseases. The MIXED procedure of SAS was used to evaluate milk composition and milk yield which were analyzed as repeated measures in time with block, treatment, calving month, and lactation week included in mixed models. The GLIMMIX procedure was used to evaluate mastitis and metritis occurrence. Variables entered a model if $P \leq 0.1$ when screened individually. Variables with $P \leq 0.15$ were kept in the final model.

Results

Imrestor cows had a 25% greater incidence of metritis ($P < 0.01$) and were 2.46 more likely to develop the disease ($P < 0.01$, with a 95% confidence interval ranging from 1.41 to 4.31). The model to determine milk yield in CTL and IMR

cows accounted for effects of block ($P < 0.01$), lactation week ($P < 0.01$), and calving month ($P = 0.04$). The effect of block was significant, and milk production was less in primiparous cows compared to multiparous cows (81.1 ± 2.0 and 98.3 ± 1.5 lb; 36.87 ± 0.91 and 44.67 ± 0.69 kg, respectively). Treatment was not associated with a change in MY ($P = 0.62$). Effect of calving month was also significant. Cows that calved in the summertime had lower milk production compared to cows that calved in winter (lowest production was in August with 83.27 ± 3.63 lb [37.85 ± 1.65 kg]; October 84.6 ± 2.44 lb [38.45 ± 1.11 kg]; November 85.75 ± 2.66 lb [38.98 ± 1.21 kg]; December 89.21 ± 3.52 lb [40.55 ± 1.60 kg]; January 95.85 ± 3.72 lb [43.57 ± 1.69 kg], and February 100.49 ± 6.51 lb [45.68 ± 2.96 kg]). The model to determine SCC in CTL and IMR cows accounted for effects of block ($P = 0.87$) and lactation week ($P < 0.01$). No significant differences in the log of SCC on CON and IMR cows were observed ($P = 0.21$). Animals treated with IMR also displayed similar milk composition to the saline-treated CTL, as the fat, protein, lactose, and SNF percentages in the milk did not significantly differ ($P = 0.35$, 0.24, 0.48, and 0.34, respectively).

Administration of pegbovigrastim is FDA-approved to decrease CM incidence in the first 30 DIM, but no significant differences was observed between the IMR and CTL groups in the present study ($P = 0.54$). However, CM occurrence was infrequent in both treatments. Of the 265 cows in the study, only 17 clinical mastitis cases were detected (10 IMR cows and 7 CON cows), corresponding to only 6.41% of all study cows.

Significance

Cows given pegbovigrastim injections around the time of calving had increased odds of developing metritis without any negative effects on milk production or components. Study animals did not have a decreased incidence of CM, but fewer cows were detected with the condition than expected, preventing a deeper analysis.