

## Results and Conclusions

A total of 77 milk samples were evaluated. Based on diagnostic lab culture results, 33 (43%), 19 (25%), 13 (17%) and 12 (15%) were GN, GP, MX and NG, respectively. The percentage of resistant wells (total wells =30/sample) for all samples in a group was 79%, GN; 33%, GP; 61%, MX and 36% NG. Assuming an infection identified as GN would not be treated, calling an infection GN when it is truly GP or MX should be avoided as studies have shown untoward effects of not treating environmental streptococci infections.<sup>1-4</sup> Thus a desirable percent-resistant wells cutoff would be one with 100% specificity. A cutoff of 94% or greater resistant wells was required to avoid misclassifying a MX infection as GN and would identify 11% of GN infections in this study. A deficiency of the test used in this manner is its inability to identify MX infections. With MX infections, it is likely that either the GN or GP organism predominates and is represented on the MASTiK® test based on relative bacterial numbers in the sample. When MX infections are excluded, a cutoff of 74% or greater resistant wells had a sensitivity of 68% and specificity of 100% for identifying a GN infection. The MASTiK® test may be more sensitive for identifying infection, as a 1ml sample is used, compared to 10-100 µl used in routine bacteriologic culture of milk. Thus 12

NG samples from the lab had growth on the MASTiK®. Many NG samples are presumed to be GN infections, however, the resistance patterns of NG samples were more similar to GP than GN in this study.

The MASTiK® test can provide useful information to make treatment decisions for individual mastitis cases,<sup>3</sup> however, the presence of MX infections may preclude its use for reliably identifying GN infections that would not receive intramammary antibiotics.

## Acknowledgements

MASTiK® test was kindly provided by ImmuCell Corporation, 56 Evergreen Drive, Portland, ME 04103.

## References

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# Effect of Estradiol Cypionate in Postparturient Dairy Cattle at Increased Risk for Metritis

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## Introduction

Metritis is a post-parturient uterine disease that affects fertility, milk production and health of dairy cattle. To reduce the effects of metritis, some dairymen have adopted fresh cow programs that often include the administration of 4 mg estradiol cypionate (ECP) to postparturient cows with retained fetal membranes. Estradiol is reported to have positive effects on uterine immune function. This study was conducted in order to determine if the administration of 4 mg of ECP to cows at high risk for metritis is efficacious in decreasing metritis in the first 10 days postpartum.

## Materials and Methods

A clinical trial utilizing cows experiencing hypocalcemia, retained fetal membranes, dystocia, stillbirth, or twins was conducted in one California dairy. Animals were assigned into treatment (4 mg ECP) or control (2 ml vegetable oil) groups at calving. Metritis was classified as mild (fever never reached 103.5°F) or severe (fever ≥103.5°F). Cows with severe metritis were treated with 30 ml Excenel® once daily for a minimum of three days. Logistic regression was used to assess the effect of ECP treatment on the occurrence of metritis, controlling for confounders.

## Results

No differences were found between treatment groups for metritis risk or severity. Multiparous cows receiving antibiotics in the immediate post-parturient period were approximately five times

less likely to be diagnosed with metritis compared to non-antibiotic treated cows. Treatment of high-risk cows with 4 mg of ECP alone was not beneficial in decreasing metritis risk. The full report of this study will be published in the *Journal of the American Veterinary Medical Association* in 2003.

# Effects of Sprinkler, Shade and Fan Cooling of Preparturient Holstein cows on Post-parturient Milk Performance during Summer Heat Stress

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## Introduction

Heat stress has important consequences for animal welfare and production performance, and has been implicated as the most important reason for decreased milk production during summer time. Due to lower milk production, most research has targeted prevention of heat stress in lactating cows. Few investigations, however, have focused on cooling preparturient dairy cows during the non-lactating period, and no research has reported the effects of cooling during the last three weeks of gestation. The purpose of this study was to examine the effects of shades, fans, and sprinklers on the last three weeks of gestation of Holstein cows during summer heat stress. Outcome variables included post-parturient milk production, rectal temperature, body condition score (BCS) and incidence of post-parturient disorders.

## Materials and Methods

A total of 430 prepartum multiparous cows 250-257 days pregnant were randomly allocated to two identically structured pens.

Treatments consisted of sprinklers over the feed bunk (CONTROL, n=209); and sprinklers, fans, and shades over the feed bunk (COOLED, n=221). To be eligible for analysis, cows were required to spend a minimum of 14 days in their assigned pen before parturition. Computerized data recorders in each pen recorded environmental temperature every half hour. Rectal temperatures were measured twice weekly for three weeks before calving. Body condition scores were taken at

study enrollment, parturition, 60 days in milk (DIM) and 150 DIM. Following calving, the presence of parturient paresis, retained placenta, and metritis were recorded for the first 10 DIM. Milk production was measured using twice-monthly Dairy Herd Improvement Association (DHIA) tests for the first 150 DIM. Descriptive statistics were used for environmental temperatures. Data on rectal temperature, BCS, and milk production were analyzed by the MIXED procedure of the SAS (2001) program. Chi-square analysis was used for post-parturient disease outcomes.

## Results

Average daily environmental temperature in the control group was 79.6° F ± 19.1 (26.4° C) vs. 77.2° F ± 16.5 (24.9° C) in the cooled group during the length of the trial. There was no significant difference in rectal temperatures (P= 0.62), BCS (P= 0.57), incidence of parturient paresis (P= 0.99), or retained placenta (P=0.69). A treatment by test date interaction was detected for milk production (P= 0.03) and cows in the cooled group produced more milk than controls in the first 15 days in lactation (79.6 lb [36.2 kg] vs. 75.0 lb [34.1 kg]/d; P<0.05).

## Conclusions

Cooling pre-parturient cows with shade, fans and sprinklers may increase milk production immediately after parturition. Further analyses are needed to assess the economic feasibility of adding cooling systems to preparturient cows.