

# MAMMARY GLAND RESPONSE TO THE INFUSION OF MASTITIS REMEDIES IN DAIRY HEIFERS

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## ABSTRACT

Approximately 75% of bred dairy heifers are known to have mastitis, a bacterial infection of the mammary gland. This economically important disease results in a chronic inflammation of developing milk-producing tissues, resulting in reduced milk production and quality when heifers calve. The purpose of this study was to control mastitis by treating heifers during late pregnancy in attempts to cure and prevent infections with pathogenic bacteria. Mammary secretion samples were collected from 29 heifers (30-60 days before to expected calving date) and processed for bacteriology, differential leukocyte counts, and somatic cell counts (SCC) to determine initial infection status. Following sample collection, 4 treatments (untreated control, nonlactating cow therapy, teat seal, and nonlactating cow antibiotic + teat seal) were randomly administered; after treatment, secretions were monitored at 24, 48, and 72 h. Responses to treatments were assessed at calving. Treatment means, expressed as % of quarters cured and % new infections prevented, were separated using SAS 9.3 Proc GLM for Windows. Results demonstrated that treatment with nonlactating cow therapy and nonlactating cow therapy + teat seal were both 100% effective ( $P < 0.05$ ) in curing infected quarters, compared to untreated controls (62.5%). Treatment with teat seal was 87.5% effective in curing infected quarters but not significantly different from controls. SCC (a measure of mammary inflammation) were lower in quarters treated with dry cow therapy ( $125 \times 10^3$ ), teat seal ( $264 \times 10^3$ ), and dry cow therapy + teat seal ( $181 \times 10^3$ ) compared to controls ( $974 \times 10^3$ ). All treatments ranged from 95 to 100% effective in preventing new infections. The 87.5% efficacy exhibited by teat seal was unexpected because this product was developed to prevent new infections, and being an inert substance, has no therapeutic properties. However, mammary secretion samples collected 24, 48, and 72 h after treatment showed elevated concentrations of neutrophils and tumor necrosis factor-alpha in response to teat seal, both of which are known to provide antibacterial activity. Results suggest that cure rates with dry cow therapy and dry cow therapy + teat seal make them suitable mastitis treatment remedies and practical means of reducing this disease in dairy heifers. All 4 treatments (including control) were equally effective in preventing new infections.