

# The Natural Food Grade Inhibitor, Lacticin 3147, Reduced the Incidence of Mastitis After Experimental Challenge with *Streptococcus dysgalactiae* in Nonlactating Dairy Cows

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Lacticin 3147 is a broad-spectrum bacteriocin produced by the food-grade organism *Lactococcus lactis*. Lacticin 3147 is active at a neutral pH and has been shown to be bactericidal to streptococci and staphylococci in vitro. The effectiveness of an intramammary teat seal formulation, and a teat seal containing lacticin 3147 was evaluated at drying off in 68 uninfected quarters of 18 cows. Following infusion of either teat seal or lacticin 3147 combined with teat seal, a deliberate infection challenge of *Streptococcus dysgalactiae* ( $\cong 1.5 \times 10^4$  cfu per teat) was administered by direct inoculation into the teat sinus. During an 8-d experimental period following inoculation, 61% of control quarters and 6% of the treatment quarters either developed clinical mastitis or were shedding the challenge organism. Randomly amplified polymorphic DNA polymerase chain reaction genetic typing was used to confirm that both the new infections and the bacteria surviving in the teats at the end of the experiment were the challenge strain. The combination of teat seal and lacticin 3147 was well tolerated within the udder and elicited only a temporary increase in somatic cell count to  $5.7 \times 10^5$ /ml (88 h after infusion) in a previously uninfected lactating udder quarter. Therefore, we concluded that this nonantibiotic approach to mastitis prevention may contribute to a reduction in the routine application of antibiotics at drying off in the future.

Key Words: natural inhibitor • bacteriocin • mastitis

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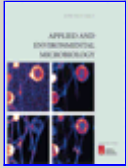


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