Efficacy of a Novel Non-Antibiotic Foot Bath Solution for Treating Digital Dermatitis in Lactating Dairy Cows

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The objective of this study was to determine whether application of a novel foot bath solution (Accelerator™) was superior to, or as effective as, a 5% copper sulfate foot bath to control digital dermatitis (DD) in lactating dairy cows. The novel foot bath solution does not contain antibiotics or copper and requires less frequent application than a copper sulfate foot bath. Lactating Holstein-Friesian cows from a herd in central Missouri were examined for evidence of DD and thirty-four cows with visible DD lesions (hairy heels warts) in at least one of the hind limbs and a LAMENESS score of ≥ 2/5 were randomly assigned to one of two treatment groups. During a 28 day study period, 17 cows walked through the Accelerator™ foot bath once weekly, while the other 17 cows walked through a 5% copper sulfate solution foot bath once daily five days a week (Monday through Friday). The hind feet were evaluated on day 0 (immediately before starting the foot bath), and on days 7, 14, 21 and 28. Data collection included LAMENESS score (1-5), pain score (0-2) via application of a water jet to the distal hind limb, lesion score (M0, M1, M2, M3, and M4), and digital image of each hoof that permitted measurement of lesion area using a freely available software program (ImageJ 1.42i). Changes in DD lesion area and LAMENESS score over time were evaluated using repeated measures analysis of variance. The number of limbs cured and the incidence of new DD infections were compared between treatments using Chi-Square test. The number of limbs with DD in the Accelerator™ (65%, 22/34) and CuSO₄ (71%, 24/34) groups were similar at the start of the study (Day 0). However, a lower percentage of limbs in the Accelerator™ group (76%) were affected by DD over the 28 day study period than in the 5% copper sulfate group (88%, P = 0.0036). The Accelerator™ foot bath treatment also resulted in a clinically and statistically (P < 0.05) significant reduction in DD lesion area and lower LAMENESS scores than cows walking through the 5% copper sulfate foot bath. In conclusion, the Accelerator™ footbath shows promise for controlling DD in dairy herds that wish to use a less labor intensive footbath regimen than that commonly used with a 5% copper sulfate foot bath. Moreover, the Accelerator™ footbath offers an alternative foot bath for producers interested in decreasing environmental contamination with copper or antibiotics.