Efficacy of a Botanical Preparation for the Intramammary Treatment of Clinical Mastitis on an Organic Dairy Farm

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Introduction

Clinical mastitis is an economically important disease and constitutes a major reason for antibiotic use in conventional dairy farms. In contrast, organic dairy farms are restricted in the use of antibiotics, resulting in a reduced availability of therapies for treatment of clinical mastitis. Consequently, alternative medications to antibiotics for effective treatment of clinical mastitis would be beneficial to organic dairies. The objective of this study was to evaluate the efficacy of a botanical preparation (PHYTO-MAST®) in the treatment of clinical mastitis in dairy cows.

Materials and Methods

The study was conducted in a 1200 Holstein cow organic dairy farm located in Colorado (USA). The study included 194 cases of clinical mastitis from February to September, 2009 in 163 cows. First to sixth lactation cows with clinical mastitis were randomly assigned to treatment (PHYTO-MAST®; n=88) or control (n=75) groups, resulting in 101 quarters allocated for treatment and 93 quarters allocated for control. At enrollment (day 0) clinical mastitis cases were classified according to a three points severity score. Treatment was applied for three days and cows were evaluated for clinical cure on day 4. Cows that continued to have mastitis on day 4 were evaluated daily until the resolution of the clinical condition and eventual return to the milking herd. Quarters that were therapeutically dried and cows that were culled before a clinical cure were censored at that point when considered in the time to event analyses. Outcomes of interest consisted of mastitis resolution at day 4, time to resolution, somatic cell score (SCS) after recovery, and bacteriological cure at 14 and 28 days after treatment. Categorical outcomes were analyzed by Chi square test (PROC FREQ, SAS) and logistic regression (PROC GLIMMIX, SAS). Time analyses were performed using the PROC LIFETEST and PROC PHREG procedures (SAS). Reduction in SCS was tested by analysis of variance (PROC GLM, SAS).

Results

No significant differences between groups were found in the distribution of cows by lactation, days-in-milk (categories) at the time of clinical mastitis, and mastitis severity score, indicating an adequate randomization of cases during enrollment. Similarly, no significant difference between groups was found in the distribution of *Staphylococcus aureus* and *Eschericia coli* cases at day 0. No significant effect on clinical mastitis resolution at day 4 was found for treatment when compared to control group. However, the time analyses indicated a tendency for a faster recovery in the treatment group (P=0.06) when the time to resolution was evaluated. The ANOVA indicated a significant effect for the difference between SCS before and after clinical mastitis treatment (P=0.04); T test for means comparison indicated significant differences for control vs treatment groups (P<0.05). However there was no effect on the levels of SCS after recovery or in the probability of a SCC less than 200,000 somatic cells/mL after treatment. A tendency for a higher rate of bacteriological cure in the treatment group (P=0.052) at day 14 was indicated by the Chi square test. No significant association between treatment and bacteriological cure (P=0.63) was found for day 28.

Significance

It is concluded that treatment with the botanical preparation (PHYTO-MAST®) had a positive effect on the time to recovery from clinical mastitis and increased the rate of bacteriological cure (day 14) together with improving the reduction of SCC post treatment. This preparation may be used for the treatment of clinical mastitis in organic dairy farms. Further research is needed to identify optimum therapeutic protocols with PHYTO-MAST® to obtain maximum efficacy for the treatment of clinical mastitis.