COMBINATION EFFECTS OF TEAT SPRAYING AND DRY COW THERAPY

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Introduction

Post milking teat disinfection and treatment with long acting antibiotic therapy at dry off (DCT) are widely promoted (www.nmconline.org) for effective prevention of mastitis. Numerous studies have demonstrated the value of each component in isolation but rarely has the full impact of the combined approach been evaluated, including production benefits in low-cost pasture-based herds. In New Zealand, teat disinfection is commonly applied by teat spraying and is reported to reduce new intramammary infections (IMI) by *Streptococcus uberis* by 75%, *Staphylococcus aureus* by 67% and coagulase-negative staphylococci by 58%[1] when compared with no teat spraying for a whole lactation; no production gains were recorded however through application of teat disinfection. NZ studies on the use of DCT report fewer (~90%) infections post-calving with *S. uberis*[2,3] in quarters receiving DCT, and fewer clinical cases[2] and lower somatic cell counts (SCC) during the following lactation[2], but no production benefits were measured. It is hypothesised that a combination of teat-spraying and whole herd DCT will show measurable milk production benefits when applied to similar cows managed in the same farm environment.

Materials and Methods

The study used approximately 250 cows, monitored over 2 lactations, at the Northland Agricultural Research Farm (Dargaville, New Zealand). Treatments were applied in a 2x2 factorial arrangement: post-milking teat sanitation with an iodine teat spray for the whole lactation (TS), no teat spraying for the whole lactation (NoTS), blanket (all cows) treatment with dry cow antibiotic at dry off at the end of the 1st season (BKT), selective treatment (selected cows) with dry cow antibiotics at dry off at the end of the 1st season (SEL). Teat spraying was done manually, using a central pressurised spray system, delivering an iodine-based spray (23 g/L available iodine diluted 1:3 with water). Cows were grazed as one herd. Selective dry cow treatment (DCT) involved treating, with dry cow antibiotics (Orbenin DC), cows that were treated for clinical mastitis (CM) during the preceding lactation and cows that showed one or more high SCC. Threshold individual cow SCC were 150,000/ml for cows and 120,000/ml for heifers. Herd test milk samples were collected approximately fortnightly in the first three months of lactation and monthly thereafter, for milk yield and SCC analysis. Milk samples were collected from individual quarters of each cow for bacteriological analysis at the first milking post-calving (M1), mid-lactation (R1), late lactation (R2) and before dry off (DO). Collection and analysis of samples were conducted according to NMC guidelines.

Results

For the TS treatment, there were fewer cows with CM (12.3% vs 22%; $P<0.05$), a 50% lower prevalence of *Corynebacterium bovis* (after M1; $P<0.001$) and a 70% reduction in *S. uberis* prevalence at the R1 sampling ($P<0.05$) during the 1st season. No difference in prevalence of CNS was measured between cows on the TS and NoTS treatments. The SCC in the 2nd half of lactation was lower ($P<0.05$) for cows that were TS, but there were no production benefits. At the end of the 1st season, 75% of TS cows and 76% of NoTS cows were eligible for DCT in the SEL treatment group. In the 2nd season, there was no effect of TS or dry cow therapy strategy, on the proportion of cows with CM. However, there were fewer *S. uberis* IMI among cows on the TS-BKT treatment at the M1 sampling and fewer CNS IMI among cows on the TS-BKT treatment at the R1 and R2 samplings. There were fewer *S. aureus* infections after the M1 sampling in cows that were teat sprayed. No production benefits or consistent treatment effects on SCC were observed in the 2nd season.

Discussion

There was an effect of teat spraying on CM incidence in the first season, but not in the 2nd season. Flooding early in the second season resulted in a 2 to 3 day period in which cows were not milked, which could have affected repeatability between seasons. Fewer *S. uberis* and *C. bovis* IMI following teat spraying is supported by previous work[1]. A combination of TS and BLK DCT resulted in fewer *S. uberis* IMI at calving, which supports the use of these two strategies. However, there was no benefit in a lower incidence of CM. Incidence of CM was low for all treatment groups (between 10.6 and 6.2 % of cows infected) in the second season, which could have contributed to the lack of an effect. In addition, 75% of cows in the SEL group received DCT (due to the high prevalence of *C. bovis*, up to 57% of cows affected), which would have reduced the impact of the SEL treatment. In conclusion, the benefits of teat-spraying and whole herd dry cow therapy are generally apparent when used individually, but in this single herd, no measurable benefits of the combination of approaches was evident. Several confounding factors affected the results. Larger scale field studies are required to test interactions between DCT and TS approaches fully.

References

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