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R-MR-2: Effect of Different Premilking Manual Teat-cleaning Methods on Bacterial Spores in Milk

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Abstract

Different teat-cleaning methods were evaluated to determine their effect on the presence of spores from anaerobic bacterial spore-formers in the milk. Artificial contamination was used to achieve uniform contamination of teats to reduce the number of cows and samples needed in the experiments and still obtain adequate power to detect differences among tested methods. Teats were contaminated experimentally with a large amount of *Clostridium tyrobutyricum* spores in a manure-water slurry. Various types of dry and moistened towels and different combinations of methods using soap or 2 types of towels, together with cleaning times of 10 or 20 s, were compared in 2 Latin square-designed experiments with 7 cows, 7 treatments, and 4 replications in each experiment. In comparison with control (no cleaning and no forestripping), cleaning teats with dry paper towels for 10 s reduced concentration of spores in milk by 45 to 50%. A 50 to 74% reduction was achieved using different types of moist towels for 10 s. Methods using 2 towels, soap, or a longer cleaning time reduced bacterial contamination by 85 to 91%. The most effective methods in reducing milk spore content (96% reduction) were use of a moist washable towel with or without soap followed by drying with a dry paper towel, for a total time of 20 s per cow. One of the best cleaning methods was studied in an additional experiment to determine the effect of different teat contamination mixtures. The Latin square-designed experiment with 8 cows, 8 treatments, and 2 replications showed that cleaning was independent of the tested contamination matrix (manure, soil, or sawdust), type of spores (*Cl. tyrobutyricum* and *Bacillus cereus*), or degree of contamination (manure or extra manure).

Key words: premilking teat cleaning, *Clostridium tyrobutyricum* spore, *Bacillus cereus* spore, milk quality

