
Methods to measure teat condition in relation to machine milking with two different liners

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The aim of the present study was to test different methods to measure teat condition in relation to machine milking. 12 cows were included in an experiment where two liners were tested. The teat condition was measured by infrared thermography, teat-end thickness, visual inspection of the teats, milk somatic cell count and cow behaviour during milking. Teat-end thickness and teat-end temperature were the methods that indicated milking-related changes in teat condition when different liners were tested.

Summary

Key words: Machine milking, teat condition, teat thickness, teat temperature

The function of the milking equipment is one of the most important factors to keep high-producing cows free from udder-health problems. The performance of the liner is critical because it is the only part of the milking unit that is in direct contact with the udder during milking. Therefore safe and reliable tests of teat condition are needed when evaluating new liners. The aim of the present study was to test different methods for measurement of teat condition when the cows were milked with two different liners.

Introduction

The experiment was carried out at Harma Research Farm, DeLaval, Tumba Sweden. It was a change-over design with two periods and two treatments [a normal-bore liner (article no. 960016) (A), and a wide-bore liner article (no. 999295 (B), both from DeLaval]. The study lasted for 12 days and included 12 cows milked three times a day. The methods tested were teat temperature measured with an infrared camera (four milkings/cow and period), cutimeter measurements of teat-end thickness

Material and method

(two milkings/cow and period), visual inspection of teat condition (three registrations during the experiment), milk somatic cell count (two milkings/cow and period) and cow behaviour during milking (each milking; shuffling, kicking, rumination, urination and defecation).

Results

The front teats showed a significantly ($p<0.05$) increased teat-end thickness (0.51 mm) with liner B after milking compared to before milking. Teat-end temperature increased after milking compared to before milking both at the teat end and middle of the teat (from 30 to 35°C). One of the cows showed deviating results compared to the others in temperature measurements and when this cow was excluded from the calculations there was a significant difference ($p<0.01$) in the increase of teat-end temperature with 3.61 and 4.37 °C for liner A and B, respectively. There was no difference between treatments for the other measurements

Discussion and conclusion

The finding that a wide-bore liner gave increased teat-end thickness is in agreement with earlier studies (Hamann et al., 1994). Increased teat-end thickness after milking indicates a disturbed circulation in the teat end. In this study, measuring teat-end thickness was the method that indicated a significant difference between treatments. Teat-end temperature was also measured. According to Paulrud and Rasmussen (2003) it is likely to find milking-related changes in temperature at the teat end. However, since not all cows in the experiment reacted to teat-end temperature, the method teat-end thickness measured with a cutimeter turned out to be the most useful tool for evaluating teat condition in the present study.

References

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