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R-MR-1: Best Combination of Pre-stimulation and Latency Period Duration Before Cluster Attachment for Efficient Oxytocin Release and Milk Ejection in Cows with Low to High Udder-filling Levels

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Abstract

Experiments were designed to investigate the suitability of a combination of a short manual teat stimulation with a short latency period before teat cup attachment to induce and maintain oxytocin release and milk ejection without interruption. In Experiment 1, seven dairy cows in mid lactation were manually pre-stimulated for 15, 30 or 45 s, followed by either 30 s or 45 s of latency period. It was shown that all treatments induced a similar release of oxytocin without interruption until the end of milking. In particular, the latency period of up to 45 s did not cause a transient decrease of oxytocin concentration. In Experiment 2, milking characteristics were recorded in seven cows each in early, mid, and late lactation, respectively. Because the course of milk ejection depends mainly on the degree of udder filling, individual milkings were classified based on the actual degree of udder filling which differs between lactational stages but also between morning and evening milkings. All animals underwent twelve different udder preparation treatments, i.e. 15, 30, or 45 s of pre-stimulation followed by latency periods of 0, 30, 45, or 60 s. Milking characteristics were recorded. Total milk yield, main milking time and average milk flow rate did not differ between treatments if the degree of udder filling at the start of milking was >40% of the maximum storage capacity. However, if the udder filling was <40%, main milking time was decreased with the duration of a latency period up to 45 s, independent of duration of pre-stimulation. Average milk flow at an udder filling of <40% was highest after a pre-stimulation of 45 s followed by a latency period of another 45 s. In contrast, average milk flow reached its lowest values at a pre-stimulation of 15 s without additional latency period. However, average milk flow after a 15-s pre-stimulation increased with increasing latency period. In conclusion, a very short pre-stimulation when followed by a latency period up to 45 s before teat cup attachment remains a suitable alternative for continuous stimulation to induce milk ejection.

Key words: milking, pre-stimulation, latency period, dairy cow

