

**Feeding acidified milk to Holstein calves: assessment of calf behaviour and welfare**

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Feeding acidified milk to dairy calves is a popular method to reduce bacterial contamination in milk and promote *ad libitum* feeding; however, assessing calf welfare in these systems is difficult. This study investigated calf drinking behaviour when offered acidified milk vs non-acidified milk. Ten one-day-old Holstein heifer calves were randomly assigned to one of two treatments: (1) offered acidified milk on Day 1; or (2) offered non-acidified milk on Day 1. The type of milk each calf received alternated every day until weaning at six weeks of age. Calves were offered 4 l of milk daily at 5:30 and 14:00. The amount of milk refusals were recorded 30 minutes after milk was first offered at every feeding for each calf. Calf behaviour was recorded during each feeding using video cameras and body weights were recorded every seven days. Video footage was analysed for the amount of time required to finish drinking and the number of breakaways (calf stopped drinking, remained in the feeding area, and then proceeded to drink) for each calf. Pearson's correlations were used to detect significant relationships. Data were analysed as a randomized complete block design with repeated measures using SAS. The type of milk offered during the first day did not affect overall average daily gain ( $P=0.77$ ). A positive relationship was detected between the amount of milk a calf refused and the number of breakaways a calf exhibited ( $P=0.002$ ). When offered acidified milk, calves refused, on average,  $2.50 \pm 0.12$  l more milk ( $P<0.0001$ ) than on days offered non-acidified milk and demonstrated  $0.45 \pm 0.11$  more breakaways ( $P<0.0001$ ) than when offered non-acidified milk. As calves aged, they refused less milk ( $P<0.0001$ ) and demonstrated fewer breakaways during feedings ( $P<0.0001$ ). The results from this study showed that Holstein calves exhibited more aversive behaviour towards acidified milk than non-acidified, unpasteurized milk; however, the frequency of aversive behaviour decreased as calves aged. Based on the significant relationship between milk refusals and breakaways, calf breakaway behaviour may be a useful tool during on-farm welfare assessments of group-housed dairy calves (especially mob-fed calves).