

Cows Prone to Sub-Acute Rumen Acidosis Exhibit Different Feeding Behaviour

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Previous studies reported that a group of cows fed the same diet have a large variation in rumen pH; cows susceptible to high-grain diets have a lower pH for a longer period of time than tolerant ones, resulting in sub-acute rumen acidosis (SARA). The objective of this study was to determine if feeding behaviour is different between cows either prone or resistant to SARA. Sixteen ruminally cannulated lactating cows (days in milk = 265 ± 36 ; body weight = 632 ± 80 kg) were fed a diet consisting of 35% forage and 65% concentrate mix once daily to increase the risk of SARA. After a 17-d diet adaptation period, ruminal pH was measured every 30 s over the 24-h period. Cows were classified as prone or resistant to SARA based on an acidosis index, which determines the severity of SARA normalized for feed intake (area of $\text{pH} < 5.8$ divided by DMI). Feeding behaviour of animals was observed for the same 24-h period; each animal was checked every 5 min and the behaviour seen at that time was assumed to continue for 5 min. The 24-h observation period was split into three 8-h time periods following feeding, and eating behaviour was summarized for each period. Minimum pH ranged from 5.13 to 6.10 and acidosis index from 0 to 19.4 among the 16 cows fed the same diet. The 7 prone cows had the higher acidosis index (8.03 ± 6.25) and the 9 resistant cows had the lower acidosis index (0.11 ± 0.21). Although there was no significant difference in DMI, the prone animals spent more time eating in the first 8-h period after feeding (186 vs. 153 min) and less in the third 8-h period (19 vs. 43 min) than resistant cows. Average meal duration was longer for the prone cows than resistant cows (92 vs. 59 min).

Implications: Cows susceptible to high-grain diets, leading to more severe SARA, eat for longer periods of time particularly soon after feeding. Our results suggest that feeding behaviour of dairy cows may be a contributing factor to SARA, and that increasing feeding frequency to encourage distribution of eating throughout the day can be an effective management approach to mitigate SARA.