

Effects of Subacute Ruminal Acidosis (SARA) Induced By Feeding a Pelleted Diet on Feeding Behaviour of Lactating Dairy Cows

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Subacute ruminal acidosis (SARA) in dairy cows can occur when their diet contains excessive amounts of concentrate and/or insufficient physical effective fibre. Changes in feeding behaviour have been suggested as a tool for the diagnosis of this disease. To test this, a study was conducted to determine how feeding behaviour of lactating dairy cows is affected by SARA induced by feeding a diet with a high content of pellets and a low content of physically effective fibre. The study included 8 Holstein cows, four of which were rumen cannulated during a 6 wk period. Cows were housed in a tie stall and were fed once daily. During wk 1, cows received a total mixed ration containing 50% DM concentrate and 50% DM alfalfa hay. Between wk 2 and 6, the alfalfa hay was gradually replaced with alfalfa pellets at the rate of 8% per week. Feeding behaviour was monitored continuously by weighing the feed in the feed troughs using the Growsafe Model 4000/E system (Growsafe Systems Ltd, Airdrie, AB). Rumen pH was monitored continuously in rumen cannulated cows. Between wk 1 and wk 6, average daily rumen pH decreased from 6.35 to 5.78, and the duration below pH 5.6 increased from 112 to 447 min/d. These changes in rumen pH show that SARA was successfully induced in week 6. The meal criteria, estimated by modeling the three-normal frequency distribution of log-transformed interval lengths, averaged 19.6 ± 4.1 min across cows and weeks. Between wk 1 and wk 6, dry matter intake increased from 16.9 to 23.7 kg/d, the number of meals increased from 8.8 to 10.2 meals/d, and the eating rate increased from 75.8 to 92.7 g/min. Meal sizes and meal durations did not differ between wk 1 and wk 6. The size and eating rates of the first meal after feed delivery were higher than the daily averages of meal size (16.6 vs. 3.6 kg) and eating rate (133.1 vs. 86.8 g/min). Between wk 1 and wk 6, the size (15.5 vs. 12.8 kg) and duration (149.8 vs. 81.5 min/meal) of this first meal decreased, and the eating rate (102.9 to 164.3 g/min) of this meal increased. A parallel study showed that grain induced SARA also reduces the size and duration of the first meal after feed delivery. Our results confirm that SARA induced by feeding a diet with a low physical effective fibre content changes feeding behaviour of dairy cows. As alfalfa pellet induced SARA and grain induced SARA both reduced the size and duration of the first meal after feed delivery, monitoring this meal may offer potential for the diagnosis of SARA.