Effect Of Alfalfa-Pellet And Grain-Pellet Induced Sub Acute Ruminal Acidosis (SARA) On Feed And Water Intake, Milk Production, And Endotoxin In Feces And Rumen Fluid.

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Sub acute ruminal acidosis (SARA) is a metabolic disorder of dairy cows, which is characterized by daily episodes of low rumen pH. Diagnosis of this disease currently relies on the measurement of the pH of rumen fluid, but this technique can cause health problems in the cow, and can be inaccurate due to saliva contamination and the diurnal variation of rumen pH. Hence, alternate markers for SARA must be investigated. Four rumen canulated and four non rumen cannulated cows were used during two consecutive 6 wk periods in a cross over design. Between wk 3 and 5 of each period, SARA was induced by feeding alfalfa pellets or grain pellets to obtain a rumen pH below 5.6 for more than 3 h/d. Rumen pH was monitored continuously in the rumen cannulated cows. Water consumption was determined by continuous measurement of the flow of water through each water bowl. Dry matter intake and milk production were determined for each day of the experiment. Milk samples were collected from four consecutive milkings during each week of the trial. Rumen fluid and feces samples were collected twice daily during two days of each week throughout trial. Alfalfa-pellet induced SARA increased the duration of rumen pH below 5.6 from 43 to 234 min/d. Grain-pellet induced SARA increased the duration of rumen pH below 5.6 from 63 to 349 min/d. Alfalfa-pellet induced SARA increased total daily water consumption (106.1 vs. 116.7 L/d), but grain-pellet induced SARA did not affect water intake. Grain-pellet induced SARA increased dry matter intake (22.5 vs. 25.9 kg/d), but alfalfa-pellet induced SARA did not affect feed intake. Neither alfalfa-pellet induced SARA, nor grain induced SARA, affected milk fat or milk yield, but both increased milk protein from 3.05 to 3.12 % in the former, and from 3.06 to 3.23 % in the latter. The milk fat:protein ratio declined from 1.10 to 1.07 due to alfalfa-pellet induced SARA, and from 1.10 to 1.03 due to grain-pellet induced SARA. Both methods of SARA induction increased lipopolysaccharide endotoxin (LPS) in the rumen, on average, from 10,690 to 25,604 EU/mL, and increased LPS in the feces, on average, from 28,686 to 58,511 EU/mL. Changes in the milk fat:protein ratio and LPS in the feces may offer potential avenues for the diagnosis of SARA.