Effect of Dietary Starch Content on the Occurrence of Subacute Ruminal Acidosis (SARA) and Inflammation in Fresh Dairy Cows

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INTRODUCTION

- Dietary strategies used during the transition period to optimize milk production and health in early lactation dairy cows continue to evolve
- A common strategy is to provide more fermentable carbohydrates in the form of starch in the fresh diet relative to the close-up diet
- Large changes in dietary composition and intake during the transition period may increase the susceptibility of cows to SARA, inflammation, and metabolic disorders especially when controlled energy, low-starch dry diets are used

OBJECTIVE

- To assess the impact of dietary starch fed to fresh dairy cows on rumen fermentation, rumination, energy metabolites, and inflammatory markers

MATERIALS AND METHODS

Experimental Design

- Randomized design with 16 multiparous Holstein cows
- Fed treatments (Table 1) once daily from calving to 21 DIM in a Calan Broadbent Feeding System

RESULTS

Statistical Analysis

- ANOVA with the MIXED procedure of SAS with model effects of diet, time, diet x time, and covariate

DATA COLLECTION

- Intake was recorded daily from -14 to 21 DIM
- Milk yield was recorded daily and milk composition measured weekly from 1 to 21 DIM
- Rumen pH was measured at 1-min intervals and rumination was measured at 2-h intervals from -14 to 21 DIM
- Rumen fluid and blood were collected on -14, 1, 2, 3, 4, 5, 6, 7, 9, 13, 17, and 21 DIM at 0 and 6 h post feeding

CONCLUSIONS

- Fresh cows fed a higher starch diet following a controlled-energy, lower-starch close-up diet had a lower daily mean rumen pH, more SARA, and higher serum acute phase proteins
- Feeding strategy during the transition period is critical for minimizing the risk of SARA and controlling inflammation