

Feed restriction as a model to induce systemic inflammation in dairy cows before calving

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Introduction

- Most dairy cows experience a substantial decrease in feed intake preceding parturition, which has been associated with systemic inflammation (SI).
- We aimed to assess whether the prepartum decrease in feed intake initiates SI, and if present, the ability of meloxicam to mitigate inflammation.

Materials and methods

- Prepartum Holstein cows were assigned to control (n = 13), untreated feed restriction (FR-U; n = 15), or feed restriction plus meloxicam (FR-T; n = 17) groups.
- Control cows were fed ad libitum, FR-U and FR-T were reduced to 70% of their average intake for from -15 to -12 d before expected calving (**Figure 1**).
- FR-T cows received meloxicam once/day for 4 d (-13 to -10).
- Metabolic markers were assessed in multiple blood samples (**Figure 2**).

Results

- All outcomes changed (P < 0.05) with time independent of treatment.
- In both FR groups, concentration of NEFA increased during the FR (**Figure 3**).
- Haptoglobin and LBP concentrations did not change during the FR (**Figures 4 and 5**).
- No differences among treatments were observed for the remaining metabolites.

Figure 1

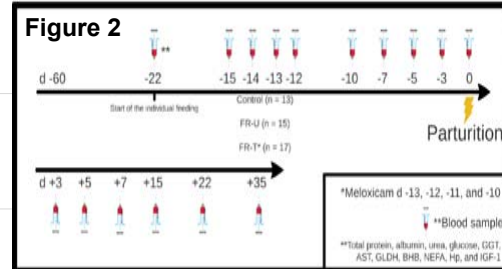
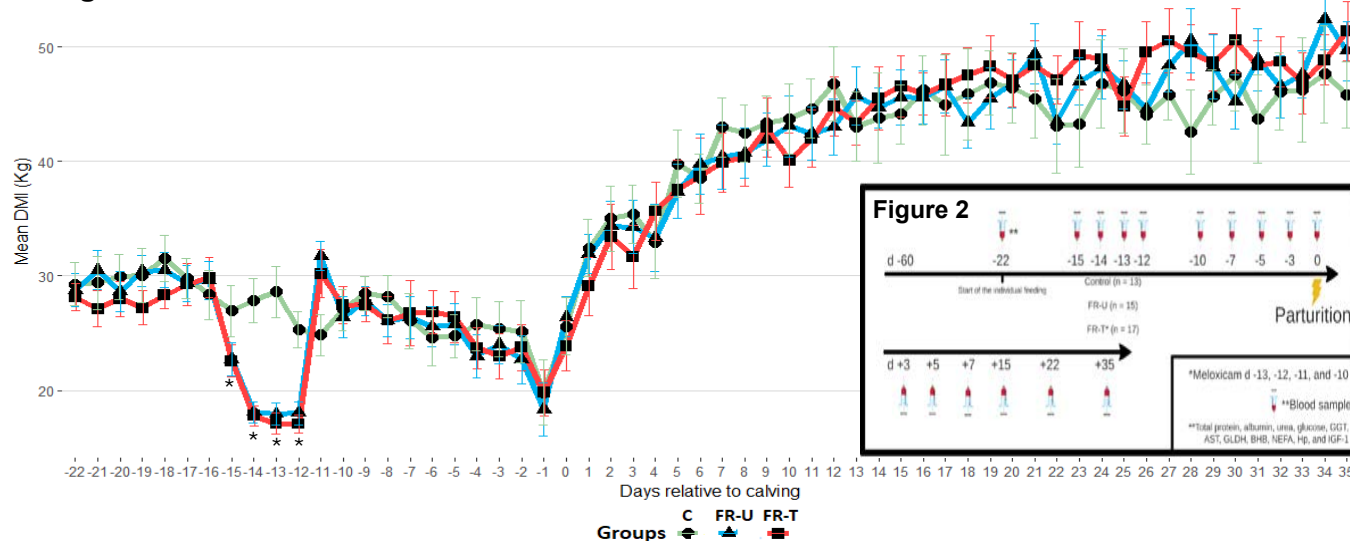


Figure 3

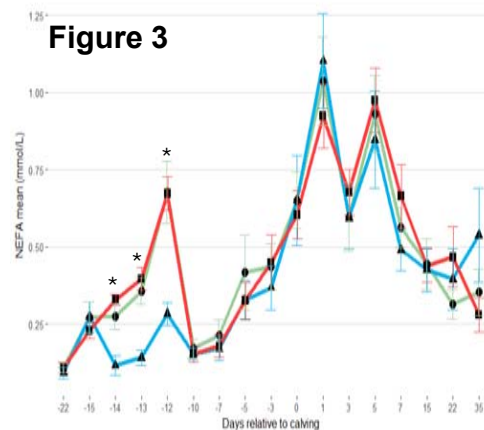


Figure 4

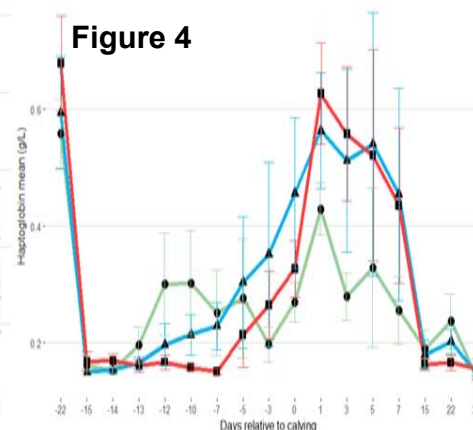
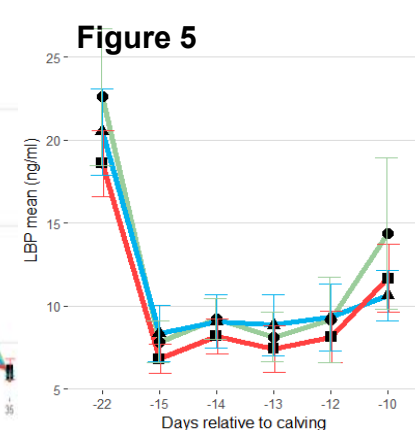


Figure 5



Conclusion

- This model of feed restriction to mimic that seen in the week before calving produced substantial fat mobilization.
- Based on the present metabolic indicators, this FR model did not induce SI.
- More sensitive markers of SI such as TNF α , IL-1 β , and IL-6 should be assessed in order to establish final conclusions.