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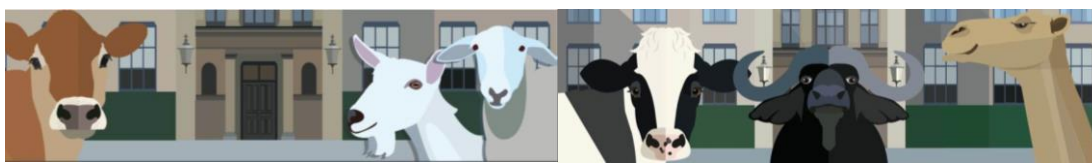
The effects of dietary energy concentration of dry period diet on the eating and rumination time of cows



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Introduction

- Restricting energy intake during dry period may alleviate metabolic problems of dairy cows after calving
 - Avoiding excessive fattening
- However, restriction of energy intake may affect eating and rumination behaviour of cows during early lactation;
 - carry-over effect to early lactation?



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Materials and methods

- **Experiment** with 16 dairy cows in tie-stalls; **2 energy levels** during dry period
 - **HIGH: grass silage** ad libitum, ca 140% of energy requirement
 - **RESTR: TMR (grass silage 55%: straw 40%: Rape seed meal 5%)** ca 107 % of energy requirement
 - Close-up feeding with added concentrate: 1-2 kg/d for 10 d
 - Similar feeding for all cows after calving
- Daily forage intake and eating behaviour was recorded using forage intake control system (Insentec BV).
- Daily rumination time was recorded using rumination monitoring system (Qwes-HR, Lely Industries).
- Weekly averages of measured eating and rumination parameters for each cow were used for repeated measures statistical analysis.



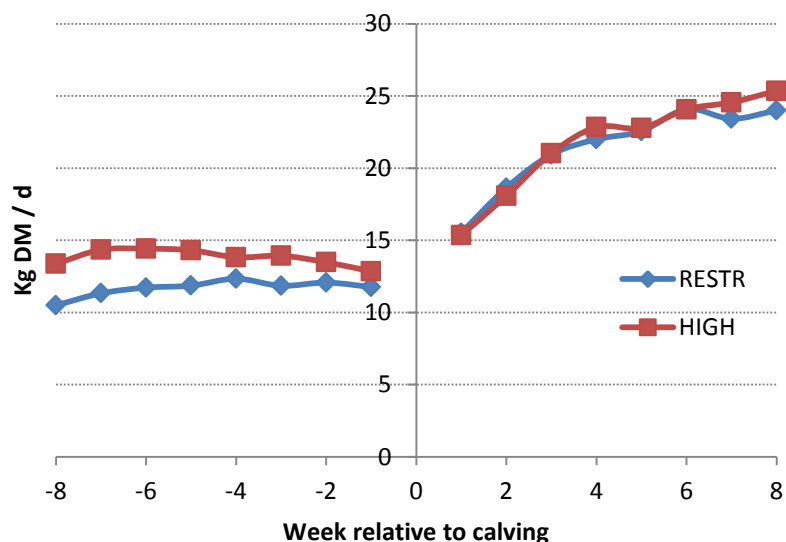
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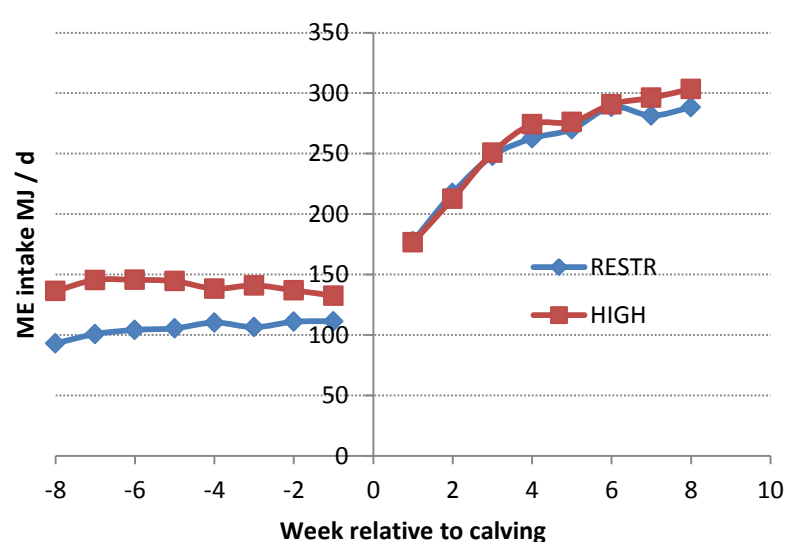
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Dry matter and energy intake

Dry matter intake



Metabolizable energy intake



Before calving Trt: $p < 0.01$, trt x time: $p = 0.64$
After calving Trt: $p = 0.12$, trt x time: $p = 0.72$

Before calving Trt: $p < 0.001$, trt x time: $p = 0.52$
After calving Trt: $p = 0.42$, trt x time: $p = 0.57$



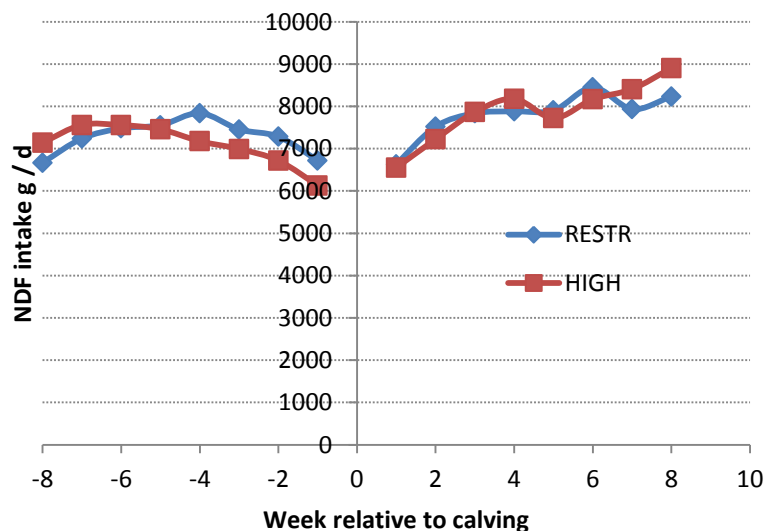
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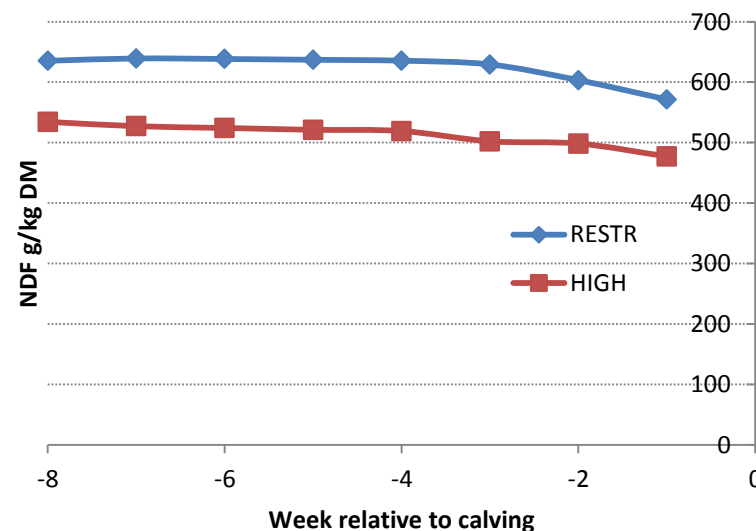
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Neutral detergent fibre (NDF) intake and dietary NDF content

NDF intake



Dietary NDF content, dry period



Before calving Trt: $p = 0.70$, trt x time: $p = 0.29$

After calving Trt: $p = 0.71$, trt x time: $p = 0.56$



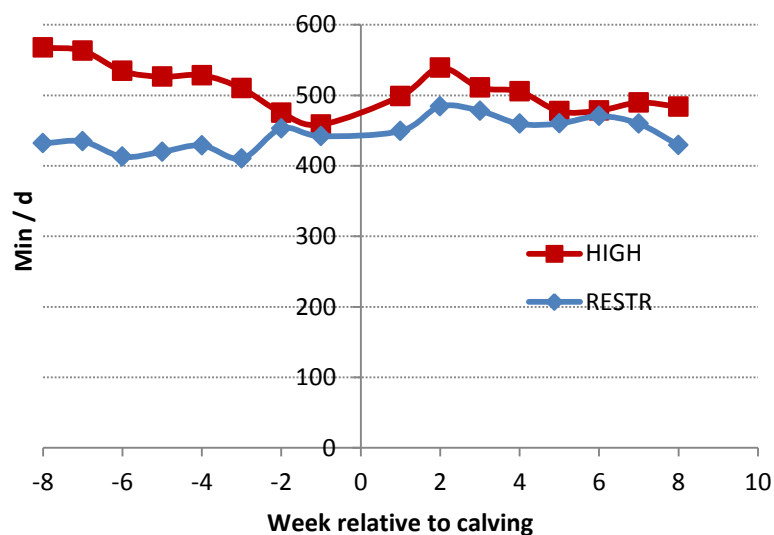
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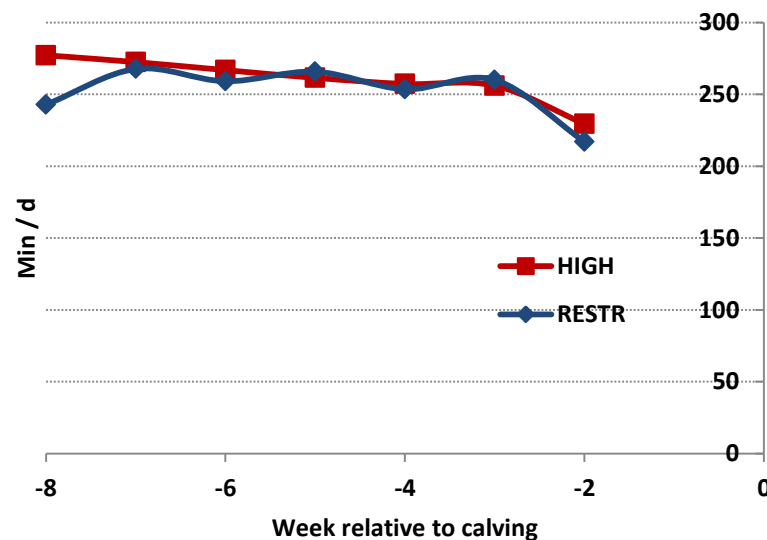
Rumination and eating time

Daily rumination time

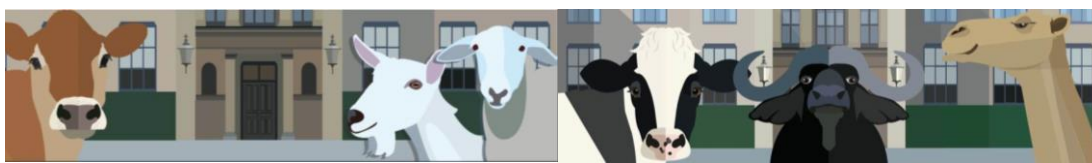


Before calving Trt: $p < 0.01$, trt x time: $p = 0.39$
After calving Trt: $p = 0.12$, trt x time: $p = 0.72$

Daily eating time, dry period

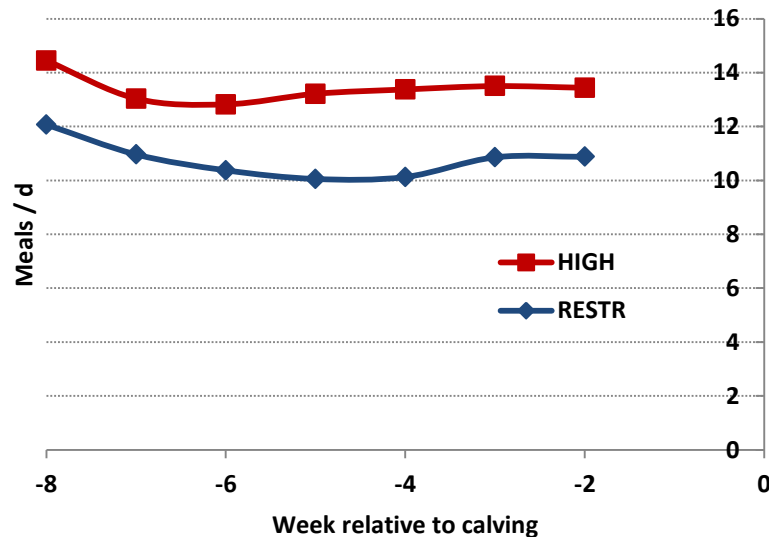


Trt: $p = 0.44$, trt x time: $p = 0.36$



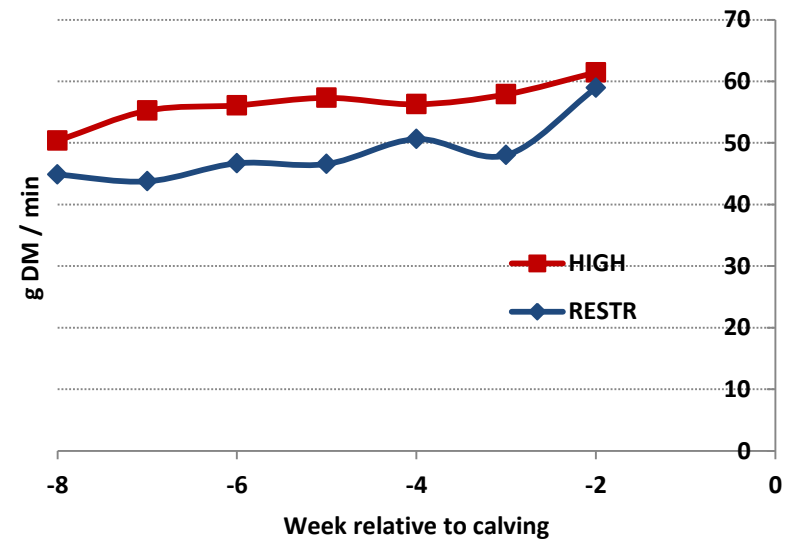
Eating behaviour

Number of meals, dry period



Trt: $p = 0.03$, trt x time: $p = 0.79$

Eating rate, dry period

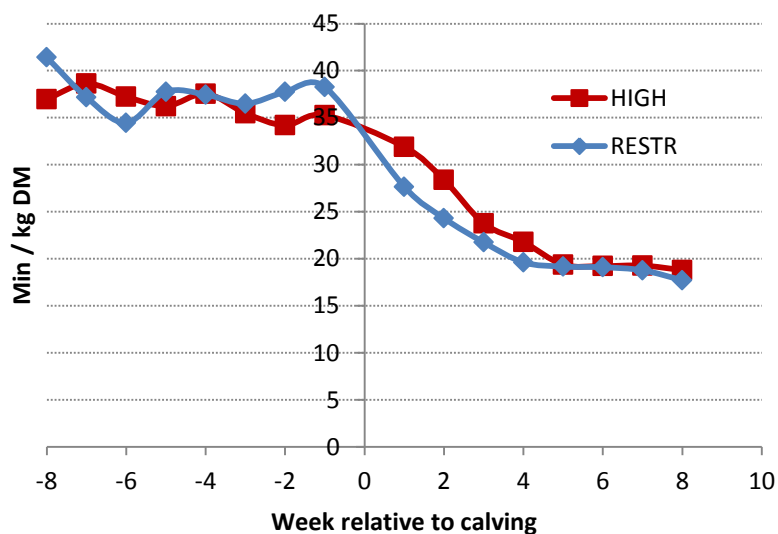


Trt: $p < 0.01$, trt x time: $p = 0.76$



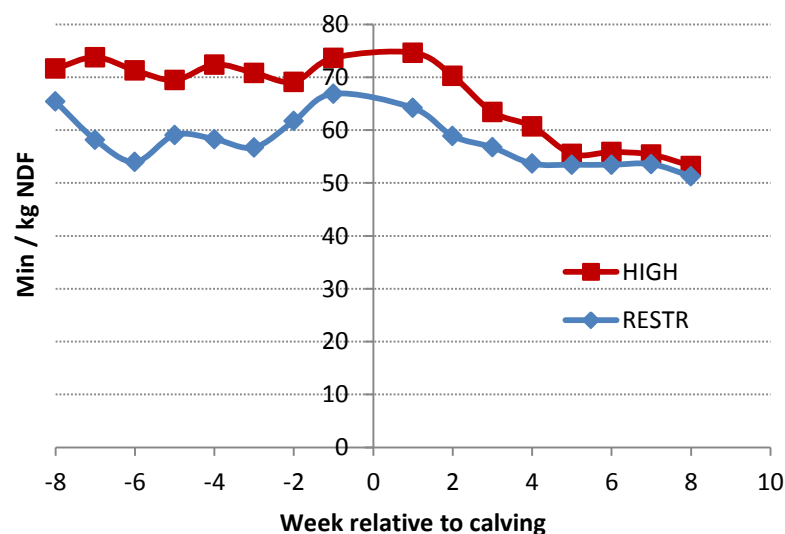
Rumination time per kg DM or per kg NDF

Rumination time per kg DM



Before calving Trt: $p = 0.52$, trt x time: $p = 0.81$
 After calving Trt: $p = 0.20$, trt x time: $p = 0.57$

Rumination time per kg NDF



Before calving Trt: $p < 0.01$, trt x time: $p = 0.82$
 After calving Trt: $p = 0.16$, trt x time: $p = 0.73$



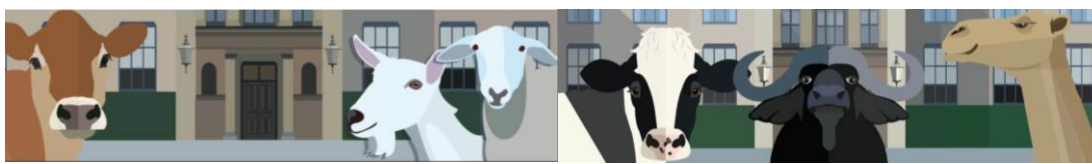
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Conclusions

- Daily rumination time was primarily related to DM intake and not to dietary NDF content
 - In high-forage diets during dry period
- Inclusion of straw in the diet decreases rate of eating but it may not prevent the decrease of rumination time caused by restriction of energy intake
- Effect of particle size still have to be considered



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Thank you for your attention!



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