Change in feeding strategy affects intake, rumination behavior, and ruminal pH pattern in dairy cows

**Objective:**
Investigate feeding behavior of dairy cows fed restricted or ad-libitum total mixed rations (TMR) with abrupt changes between.

**Materials and Methods:**
Eight multiparous Holstein cows were assigned to a double crossover design, with treatment 1 (T1) corresponding to ad-libitum feeding and treatment 2 (T2) to restricted feeding with TMR available for 19 h/d. After 4 wk of adaptation, data were collected for 2 d before (d -2 and -1), on d 0, and for 2 d after (d 1 and 2) the switch of feeding strategy. Rumination time, ruminal pH, and dry matter intake (DMI) were recorded continuously.

**Statistical analysis:**
Performed with a factorial arrangement of treatments using the MIXED procedure of JMPpro (v13.1.0, 2016, SAS).

**Results:**
The change from T1 to T2 decreased DMI dramatically on d 0 (-8 kg; P < 0.01). The DMI of the first meal after feed delivery was higher on d 1 after switching from T1 to T2 (5.11 vs 2.19 kg; P < 0.05). On d 2, animals showed the same feeding pattern. In T2 during feed restriction time (1500 to 2000 h), rumination time and pH increased (+19 min in d 0 vs 1; P < 0.05, and +0.24 pH in d 0 vs 1; P < 0.01). When animals were moved from T1 to T2, the daily rumination pattern changed from 1 peak observed early in the morning (0200 to 0400 h) to a bimodal pattern with a second peak of rumination during the hours of restriction (1500 to 2000 h). Similar changes occurred in the ruminal pH, which shifted its maximum from 0500 to 0600 h to 1800 h during the restriction. When animals were moved from T2 to T1, pH, rumination, and DMI quickly changed to the usual pattern.

**Conclusions:**
Our results confirm that an abrupt change in availability of TMR affects feeding and rumination behavior and ruminal pH pattern; however, cows adapt within 1 d after the change.

**Future proposal:**
Fecal Samples time-points to estimate uNDF\textsubscript{240}\textsuperscript{h} excretion in dairy cows
The aim is to identify an easy way to estimate the uNDF240h excretion with an unique time-point sampling (commercial dairy farm application).