



Extra walking of dairy cows to access the pasture in a grazing system: Effect on feeding behaviour

Capelesso A.^{1,3*}, Mendoza, A.², Kozloski G.³, Cajarville C.¹, Dayuto J.¹, Repetto J.¹

¹Universidad de la República, Facultad de Veterinaria, Uruguay.

²Instituto Nacional de Investigación Agropecuaria, Uruguay.

³Universidade Federal de Santa Maria, Brasil.

[*ascapelesso@gmail.com](mailto:ascapelesso@gmail.com)

Introduction

In grazing dairy systems, the distance to the grasslands is frequently viewed as a problem because the cows need walking to access the pasture. Furthermore, while walking, cows are under a fasting period. It is known that a short fasting period can affect the ingestive behaviour and the feed intake by dairy cows (Beauchemin, 2018) and this could have consequences on milk yield. In this way, the objective of this study was to investigate the feeding behaviour impact due to walking in dairy cows walking 5 km between the milking parlour and the pasture plot in a grazing system, separating the effect of walking itself from the fasting period associated to walking.

Material and methods

The experiment was conducted at the Departamento de Producción Animal de Facultad de veterinaria (IPAV, UdelaR, Uruguay; 34°40'S, 56°32'W), on spring of 2017, in accordance with regulations governing the use of experimental animals of the Committee on Animal Experimentation of the Uruguayan University (Comisión Honoraria de Experimentación Animal, UdelaR, protocol: 606/17). Thirty Holstein x Jersey cows were assigned in a randomized complete block design to one of 3 treatments: *i*) grazing (GRA), the cows had access to the pasture immediately after a.m. milking until previous p.m. milking, *ii*) walking (WALK), the cows walked 2.5 km before and after grazing at the pasture totalizing a walk of 5 km/d, and *iii*) fasting (FAS), the cows fasted in a paddock without food and water while WALK group walked, and afterwards accessed to the pasture. After p.m. milking all groups accessed the pasture at same time, remaining until a.m. milking. In both grazing turns, all cows grazed a pasture, with a target allowance of 30 kg of DM/cow per day (measured at 0 cm), and were fed with 3.6 kg of DM/cow per day of soybean hulls at the milking parlour. The cows of each treatment grazed in paddocks separately, entering in a new paddock in each grazing session. Feeding behaviour was recorded for 24 h except during milking during 3 days by trained observers. The individual cow's activity was recorded at 10 min intervals (Sheahan et al., 2013). The behaviours evaluated were grazing, ruminating, lying, standing and others (not showing any of the other activities). The proportion of each behavioural event per hour was calculated as a fraction of total observations. Preplanned orthogonal contrasts were used to separate the means; the cows with permanent access to the pasture were compared with the other two groups (fasting effect: GRA *vs.* WALK+FAS), and cows that walked (with the associated fasting) with the group that were only fasting (walking effect: WALK *vs.* FAS). Furthermore, feeding behaviors were examined using the Tukey's test and were presented in figures. The results were presented as least squares mean \pm standard error of the mean (SEM) and differences were declared at $P \leq 0.05$.

Results and discussion

Interaction between treatment and time was found ($P < 0.001$) for feeding behaviour (Figure 1). The greater grazing activity was observed during the first hours after the morning and afternoon milking for GRA and WALK (Figure 1A), but after entering the paddock, there was a lag time for FAS to reach the similar grazing activity of the GRA cows, and explanation for this is not clear. In the afternoon, all cows had a grazing peak immediately after being milked (Figure 1A). Additionally, the FAS cows showed greater ruminating activity before the afternoon milking than cows of other treatments (Figure 1B). There is not a clear explanation for difference in ruminating activity immediately after the morning and before afternoon milking for FAS group, but could be related with intake rate. As described by Beauchemin (2018), cows grazing with a high bite rate reduce grazing selectivity and increase the ingestion of long herbage particles. As ruminating activity is stimulated by the ingestion of long fiber particles (Beauchemin, 2018), we hypothesized that lower time spent grazing between a.m. and p.m. milking resulted in a lower selectivity and greater ingestion of large particles of pasture in FAS cows.

The cows of treatment WALK remained lower time standing, that FAS cows (0.08 *vs.* 0.15, SEM = 0.013, WALK *vs.* FAS, $P < 0.001$). For lying not differences were observed between groups (0.13, SEM = 0.04, $P > 0.05$).

Conclusion

The short-time fasting period during walking changed the feeding behaviour, decreased the time to grazing and increase the time to ruminating, of dairy cows. Moreover, the exercise of walking 5 km/d reversed the effect of the fasting period during walking on feeding behaviour of dairy cows in a grazing system.

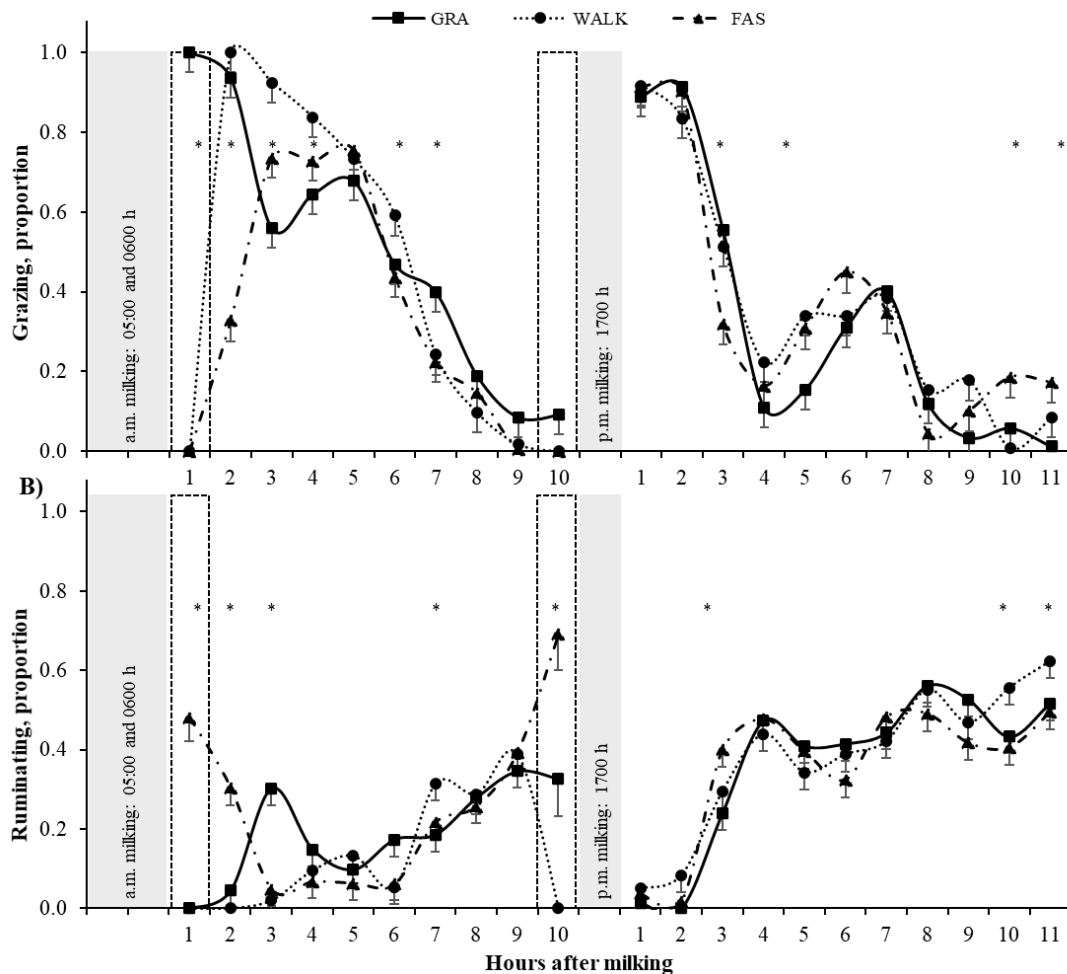


Figure1. Grazing (A) and Ruminating (B) (proportion of total observation) of dairy cows, in a grazing system that: grazed (GRA); walked (WALK) or fasted (FAS), after a.m. milking before getting access to the pasture and before p.m. milking. The milking's periods of day are represented as grey area, and the treatments moment are represented as dotted area. Asterisks (*) indicate at least one significant difference ($P \leq 0.05$) among the treatments at each time-point, when T and $T \times H \leq 0.05$

Keywords: pasture dairy system; milk yield; short fasting



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Literature cited

Beauchemin, K. A. (2018). J. Dairy Sci. 101:4762-4784.

Davidson, J.A.; & Beede, D.K. (2003). J. Dairy Sci. 86:2839-2851.

Gregorini, P.; Gunter, S.A.; & Beck, P.A. (2008). J. Anim. Sci. 86:1006-1020.

Sheahan, A.J.; Gibbs, S.J.; & Roche, J.R. (2013). J. Dairy Sci. 96:477-483.