

# Hunger behaviour in dairy calves

Andreia De Paula Vieira<sup>1</sup>, Vanessa Guesdon<sup>2</sup>, Anne Marie de Passillé<sup>2</sup>, Marina A. G. von Keyserlingk<sup>1</sup>, Daniel M. Weary<sup>1</sup>

<sup>1</sup>Animal Welfare Program, Faculty of Land and Food Systems, 2357 Main Mall, University of British Columbia, V6T 1Z4, Canada  
<sup>2</sup>Pacific Agri-Food Research Centre, Ethology Laboratory, 6947 #7 Highway, P.O. Box 1000, Agassiz, British Columbia, V0M 1A0, Canada

## Introduction

Under conventional management dairy calves are fed only about half of their *ad libitum* milk intake, leaving them hungry much of the time. This motivation to access milk may have a number of negative effects, including competition for milk and non-nutritive sucking at the feeder. The objective of this study was to describe the effects of hunger on calf behaviour.

## Material & methods

Twenty-four female Holstein calves were assigned to one of two treatments at birth: 1) *ad libitum* access to milk (AL), and 2) restricted access to milk (R:10% of body weight per day). At 8 days of age the calves were moved to a group pen (see Figure 1) and fed milk using a computer controlled feeder. We measured the frequency and duration of feeder visits (both 'rewarded' when calves received milk, and 'unrewarded' when no milk was provided). For rewarded visits we also measured the amount of milk provided. Other behavioural observations included frequency of vocalizations, cross-sucking, sucking bouts, competitive displacements from the feeder and time lying.

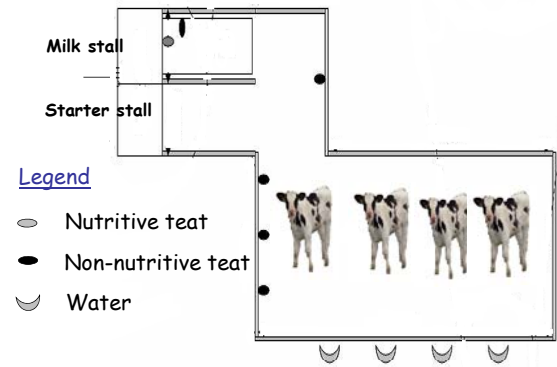


Figure 1

## Results

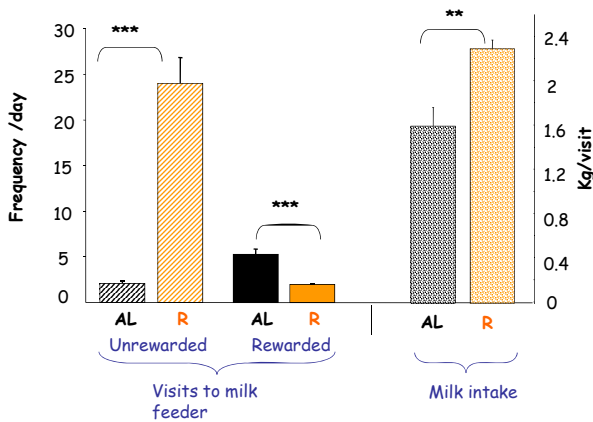


Figure 2

Compared to calves fed *ad libitum* (AL), those fed restricted (R) quantities of milk made many more unrewarded visits to the feeder. Restricted calves also made fewer rewarded visits, but consumed more milk during each of these visits.

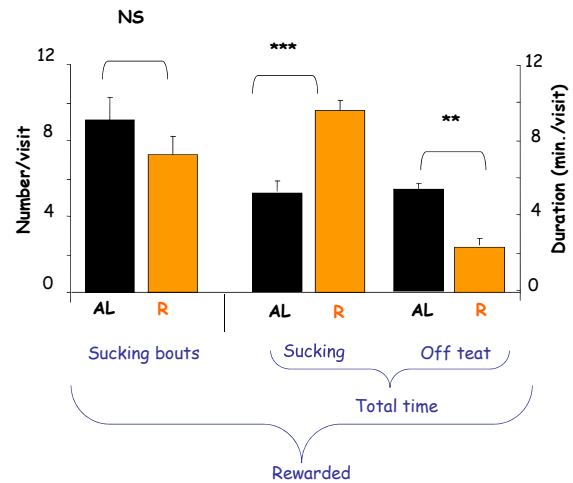


Figure 3

During rewarded visits, restricted calves (R) spent more time on the teat than did *ad libitum* calves (AL). Restricted calves also spent less time lying down (1h less,  $p=0.05$ ) and initiated more "strong" contacts at the feeder with other calves (7.5 versus 1.1,  $p<0.01$ ) and were in this way more likely to displace calves from the feeder.

## Conclusions

Hungry calves visited the feeder more often, even though they received no milk during the majority of these visits. This and other behavioural differences suggest that restricted feeding causes problems in the management of automated calf feeders, increasing feeder occupancy and competition for access to the teat. New feeding practices are being adopted in the dairy industry, but calves are rarely fed *ad libitum*. The behaviours described in this study may also be useful in assessing calf hunger when using these new feeding practices.