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► **To cite this version:**

Jp Lallès, Christine Duvaux-Ponter. Intestinal motility and weaning in the dairy calf. 28. Journées association française de nutrition, Oct 1991, Dijon, France. pp.483-483, 10.1051/rnd:19920514 . hal-00899540

HAL Id: hal-00899540

<https://hal.science/hal-00899540>

Submitted on 11 May 2020

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Intestinal motility and weaning in the dairy calf. JP Lallès, C Duvaux-Ponter (INRA, Jeune Ruminant, 65 rue de Saint-Brieuc, 35052 Rennes Cedex; INA-PG, Chaire de Physiologie Animale, 16, rue Claude Bernard, 75231 Paris Cedex 05, France)

The transition from a milk to a solid diet (weaning), usually rich in fibre, requires drastic anatomical, digestive and metabolic adaptations. Digestion then takes place mainly in the rumen. This leads to a subsequent increase in duodenal flow associated with reduced nycthemeral variations. Since motility studies are limited in this area, we studied the effect of weaning with either hay (H) or concentrate (C) on duodenal motility in the calf weaned between 8 and 10 wk of age. Five calves were equipped with stainless steel electrodes implanted on the serosal surface of the duodenum. Myoelectric activity was recorded for 6 h on d 0 (before weaning), d 7 (during weaning), d 14 (at the end of weaning) and on d 21, 28 and 35 thereafter.

As observed by Ruckebush and Buéno (1973) in hay-fed calves, duodenal motility in calves weaned onto hay or concentrate was transiently affected by the digestive changes

subsequent to weaning. Indeed, total removal of milk was characterised by 2- and 1.5-fold increases (for H and C respectively) in propagated cycle frequency. However, after 3 wk, the frequency returned to preweaning values. These changes could be partly explained by a marked reduction in the first "postprandial" irregular spike activity (ISA) (-60 and -40% with H and C), but also in the following ISAs (-45% for both H and C) until the end of the weaning period. Then, a progressive increase in ISA duration was observed, the amplitude of which depended on the diet. Quiescence duration was maximal at weaning, while regular spike activity, although not greatly affected by weaning, was shortened thereafter.

We conclude that transient changes in duodenal motility related to weaning seem to be more important with H than with C. This may be explained by a less severe suboptimal nutritional state with C. In fact, with these concentrates, digestive transit overall was not greatly affected through weaning (Lallès and Poncet, 1990).

References

Lallès JP, Poncet C (1990) *Livest Prod Sci* 24, 333-345
 Ruckebusch Y, Buéno L (1973) *Br J Nutr* 30, 491-499

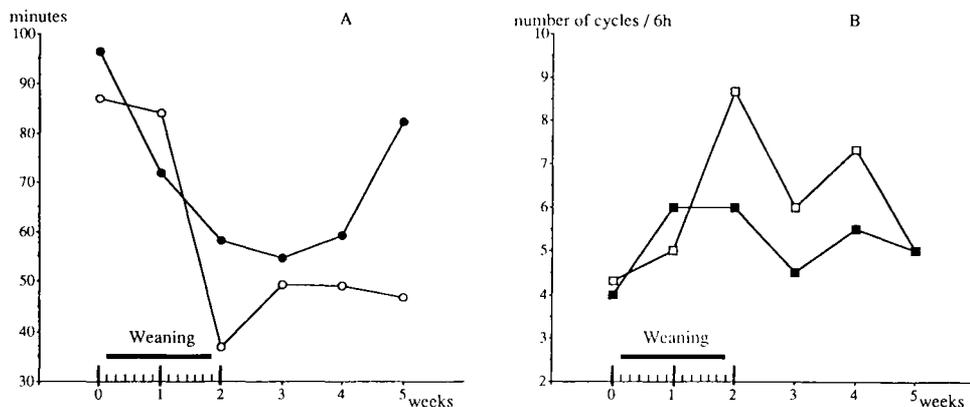


Fig 1. First post-prandial ISA duration (A) and number of duodenal migrating myoelectric cycles (B) during the 6-h recording period, in calves weaned onto hay (O, □) or concentrate (●, ■).