Similar Growth Rate and Rumen Development in Weaned Dairy Calves Fed an Alternative Compared with a Traditional Calf Starter Concentrate

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Hypothesis

- That it would be possible to formulate an **ALTERNATIVE** calf-starter with low starch content that:
  - prevented acidification of the rumen
  - maintained its efficacy in stimulating fore-stomach development
- To obtain such a starter, we substituted grain with molasses, grass meal, and dried sugar beet pulp.
Materials and Methods (I)

- Eight Holstein calves implanted with ruminal cannulas on d 7 ± 1
- Two feeding regimens:
  - **CONTROL, High Starch**: Ad libitum access to barley-based calf-starter (337 g starch/kg) and artificially dried grass hay from d 4.
  - **ALTERNATIVE, Low Starch**: No access to concentrate until wk 4 where the calves got ad libitum access to a low-starch concentrate (68 g starch/kg). Ad libitum access to artificially dried hay from d 4.
Materials and Methods (II)

- Skim-milk based milk-replacer was fed in two daily meals (123 g milk-replacer DM/kg milk):
  - 4.74 kg/d, wk 1 to 2
  - 6.60 kg/d, wk 2 to 7
  - 3.30 kg/d, wk 7 to 8
- Weaning after week 8
Intake of Concentrate (g/d) in the 10 week experimental period

![Graph showing intake of concentrate over time for two groups: CON (4) and ALT (3).](image)
Weight of **CON** and **ALT** calves in the 10-wk experimental period

![Graph showing weight changes](image-url)

- **CON (4)**
- **ALT (3)**

**ALT conc.**

**Weaning**
Minimum rumen pH in wk 1 to 10

Recorded minimum ruminal pH
Experiment F-588

Dataset complete - 20050620
Length of papillae in atrium and in ventral rumen sac

- Atrium A
- Atrium B
- Ventral sac

CON (4) vs ALT (3)
Conclusion

- It is possible to formulate a rumen-friendly low-starch concentrates without compromising growth or ruminal development in milk-fed calves.
- The optimum composition of the ‘ALTERNATIVE’ calf-starter, and the effects of time of introduction and milk-level pre-weaning are currently being investigated.
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