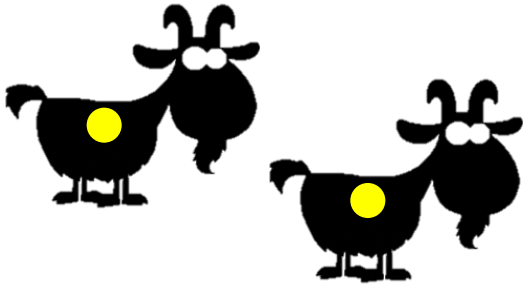
Third DairyCare Conference
Zadar, 5th to 6th october de 2015



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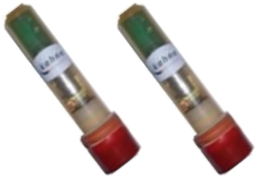

My experience as an Dairy Care STSM Scholar

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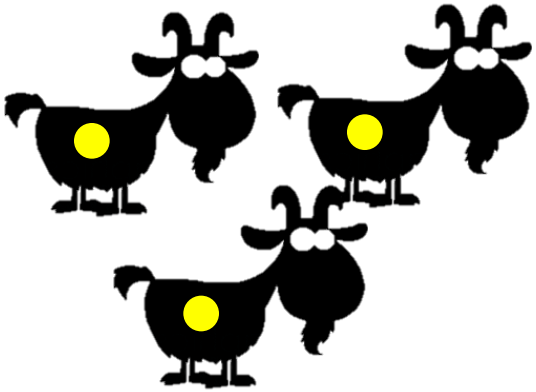
Introduction

Introduction

Objectives

Materials & methods



Results

Rumen cannulas vs. wireless bolus sensors for monitoring rumen pH and temperature changes in dairy goats fed control and acidogenic diets in early lactation

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3rd Dairy Care Cost Action Conference, 5-6 October 2015, Zadar (Croatia), Session WG3

Introduction

Use of wireless rumen boluses, based on radiofrequency, proved to be satisfactory for monitoring the rumen pH and temperature variations in dry goats fed diets with different forage:concentrate ratio or under heat stress conditions (Castro-Costa, 2015; 2nd DairyCare Conference, Córdoba, Spain).

The aims of this study were:

- To compare the use of **rumen cannulas vs. rumen sensors**.
- To study the **ruminal changes produced by feeding control vs. acidogenic diets** (50% concentrate) in high yielding dairy goats.

Materials & Methods

- **Eight dairy goats** (4 Alpine and 4 Saanen; 66.4 ± 3.1 kg BW) in early-lactation (3.60 ± 0.32 L/d; 93 ± 2 DIM) previously cannulated and allocated in individual pens with continuous feed and water intake recording devices (INRA, Paris-Grignon, France).
- **Eight wireless rumen sensors** (KB1001, Kahne, Auckland, New Zealand; no wings) for pH and temperature recording (15 min interval for 35 d). Sensors were calibrated in deionized water (40.0 ± 0.5ºC) and pH buffer standard solutions of 4.01 and 7.00 (pH25, Crison, Barcelona, Spain) and applied via the cannulas.

- **Experimental design** consisted in **2 treatment periods** (lasting 12 and 23 d) during which **2 dietary treatments** were applied consecutively:
  1) **Control (CO)**: 20% concentrate and 80% forage.
  2) **Acidogenic (AC)**: 50% concentrate and 50% forage.

  Diets were offered as a total mixed ration twice a day, after milking, with 2/3 allocated p.m. and 1/3 a.m., according to the time interval between milkings.

  Transition of the diets from CO to AC was done abruptly at d 12 (after p.m. milking).
- **Cannulas** were used to take rumen samples and to measure rumen pH (0, 1, 2, 4 and 6 h after feeding) by pH-meter before (d −4 and −1) and after (d 8 and 14) diet change. The pH values were recalibrated using the data of the rumen fluid samples.
- **Statistical analyses:** Procedures MIXED, GLM and NLIN of SAS v.9.1.3 (SAS Inst., Cary, NC, USA). Differences between means were determined with PDIFF at $P < 0.05$.

Results

Data of 1 sensor was out of range for pH and discarded. On average, pH was greater in AC than CO (+0.20 ± 0.02; $P < 0.01$), showing lower and earlier nadir post-feeding (AC, 5.81 ± 0.03; CO, 6.06 ± 0.02; $P < 0.001$; **Fig. 1**). No diet effect was detected in temperature (39.7 ± 0.1°C; $P > 0.05$), the changes being related to feed and water intake.

Fig. 1. Rumen pH and temperatures as recorded by bolus sensors and after logistic modeling. The shaded area indicates the daily period before milking and without feed (CO = control, AC = acidogenic).

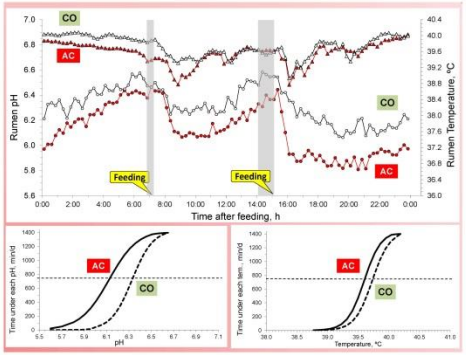
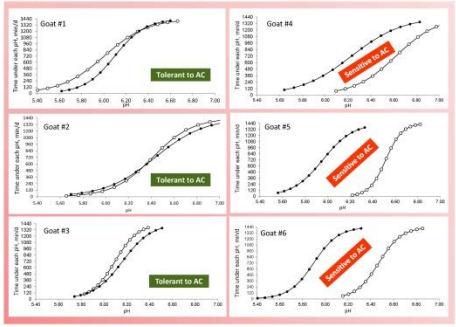


Fig. 2. shows differences between goats in rumen pH under extreme diet conditions, providing a discrimination between sensitive and tolerant goats to the acidosis challenge. These differences were related to individual intake and water differences in behavior, mainly expressed as speed of DM intake.

Fig. 2. Logistic models of rumen pH of goats fed control or acidogenic diets (only data of 6 goats are shown).

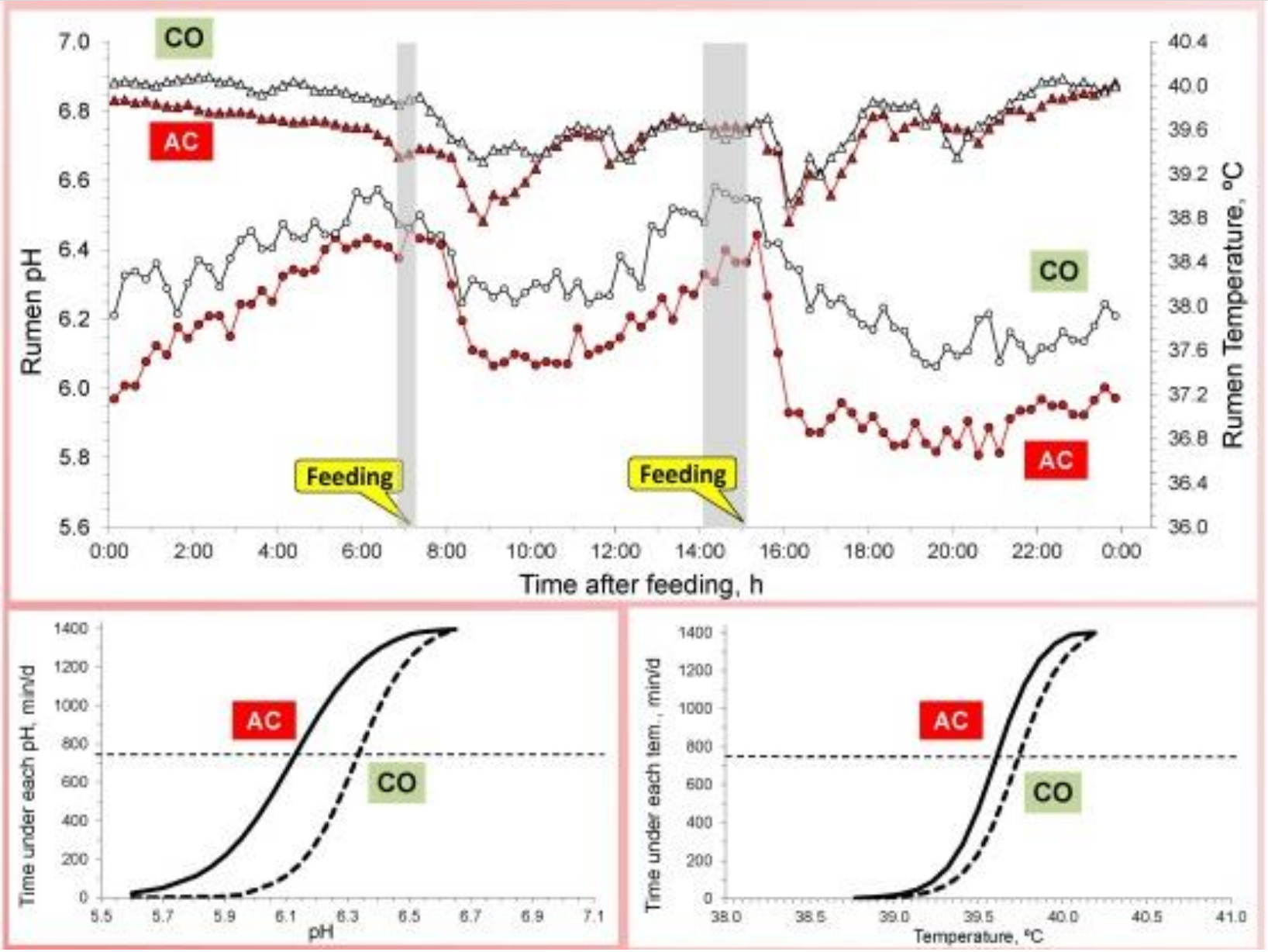


Conclusions

- Wireless bolus sensors and logistic models proved to be useful for monitoring rumen function under extreme diet conditions and to discriminate between sensitive and tolerant goats to rumen acidosis, being an alternative to the use of rumen cannulas.
- Nevertheless, size of the bolus sensors (i.e., too big) and pH drift (i.e., needing recalibration by using actual rumen pH values) are issues limiting the use of current sensors in small ruminants and needing further research.

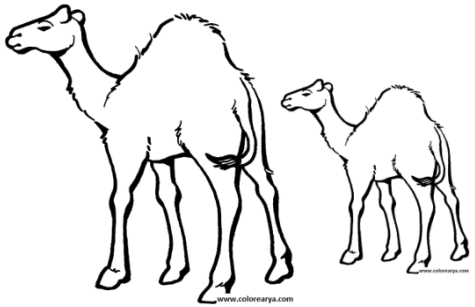
Acknowledgements: Food and Agriculture COST Action FA1308 DairyCare by the ESR short stage grant given to Andreia Castro-Costa.

Results in high yielding dairy goats



Difficulties

Further new applications



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Universitat Autònoma de Barcelona

G2R
Grup Recerca Remugants


SHEEP BREEDS of the BRITISH ISLES
4 étapes pour déterminer la robe d'un cheval


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4 étapes pour déterminer la robe d'un cheval

Thanks for attention!

Muchas Gracias!

Merci Beaucoup!

Muito Obrigada!

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