Effects of gluconeogenic supplements on energy metabolism and fertility in suckler cows
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¹CITA de Aragón – IA2, Montañana 930, 50059 Zaragoza, Spain, ²NOVATION 2002 SL, C/ Marconi 9, Coslada, 28820 Madrid, Spain; asanz@aragon.es

It was hypothesized that the intake of gluconeogenic supplements around fecundation has a flushing effect on energy metabolism and fertility in suckler cows. The effect of three gluconeogenic supplements on insulin, metabolites, productive and reproductive parameters was studied in 39 lactating Parda de Montaña cows (6.8±2.6 years; 568±65 kg live-weight (LW); 2.8±0.2 body condition score (BCS)) during a 24-day trial. Cows were fed daily 9 kg alfalfa hay and 1 kg triticale meal. At 50±15 days postpartum, cow-calf pairs were distributed into 4 treatments: (1) PRO, 228 g supplement/cow/day (containing 65% propylene glycol); (2) GLY-PRO, 366 g/cow/day (33% glycerine + 9.5% propylene glycol); (3) GLY, 375 g/cow/day (40% glycerine); (4) CONTROL. Supplements were offered from day 1 to 8 (period 1) and from day 16 to 24 (period 2) of the study. Before and after each period, two blood samples (in 48 h) were collected to determine the concentration of insulin, glucose, β-hydroxybutyrate, urea and non-esterified fatty acids (NEFA), and LW and BCS were registered. Concurrently with period 2, cows were involved in a Cosynch protocol and were inseminated on day 24 (pregnancy was diagnosed by ultrasound 35 days later). During the trial, GLY-PRO cows lost less LW than PRO and GLY groups (-8 vs -19 and -16±2.8 kg; P<0.05), and similar to CONTROL (-13 kg). Calves from GLY group had lower LW gain than GLY-PRO and CONTROL calves (0.536 vs 0.866 and 0.804±0.083 kg/day; P<0.05), and similar to PRO calves (0.704 kg/day). Insulin and metabolite concentrations were affected by the interaction between treatment and time (P<0.05), except for glucose (P>0.05). GLY-PRO cows showed the highest values of insulin and NEFA after the first period of gluconeogenic supplementation (P<0.05). Fertility rate was 50% in PRO, GLY-PRO and CONTROL groups, and 60% in GLY (P>0.05). In conclusion, the intake of gluconeogenic supplements during two short periods prior to insemination had slight effects on cow-calf weight gains and energy metabolism, but did not improve fertility in suckler cows. Further studies with longer supplementation times should be evaluated.
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Surface methane and nitrous oxide emissions from a commercial beef feedlot in South Africa
K. Lynch, C.J.L. Du Toit, W.A. Van Niekerk and R. Coertse

Session 37. Strategies reducing antimicrobial need

Date: Wednesday 28 August 2019; 8.30 – 12.30
Chair: Messori

Theatre Session 37

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T.B. Rodenburg

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H. Ayrle, H. Nathues, A. Bieber, M. Mevissen, M. Walkenhorst and A. Maeschli
Effects of gluconeogenic supplements on energy metabolism and fertility in suckler cows

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It was hypothesized that the intake of gluconeogenic supplements around fecundation has a flushing effect on energy metabolism and fertility in suckler cows

**OBJECTIVE**
To study the effect of three gluconeogenic supplements in lactating cows on insulin, metabolites, and productive and reproductive parameters

**Materials and Methods**
- 38 lactating Parda de Montaña cows
- At calving: 600 kg LW, 2.8 BCS (1-5 scale)
- 9 kg alfalfa + 1 kg triticale meal/cow/d
- Two periods of supplementation (8 and 9 d)

**PLASMA**: insulin, glucose, non esterified fatty acids (NEFA), β-hydroxybutyrate, urea
CALF LW: d10, 24 and 59. **FTAIm**: Fixed-time artificial insemination. Pregnancy diagnosis (d59): 35 d post FTAIm

**Results**

**Cows**

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**Results**

**Neural gluconeogenic supplements, g/cow/ d**

- PRO: 228 g
- GLY-PRO: 366 g
- GLY: 375 g
- CONTROL: 407 g

**D1**

- PRO: 65% propilyglycol
- GLY-PRO: 33% glycerin
- GLY: 40% glycerin
- CONTROL: 9.5% propilyglycol

**Sampling**

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**Conclusions**

The intake of gluconeogenic supplements during two short periods prior to insemination had slight effects on cow-calf weight gains and energy metabolism, but did not improve fertility rate in suckler cows. Further studies with longer supplementation times should be conducted.