



NON-STERIFIED FATTY ACIDS, CALCIUM AND INSULIN IN PREPARTUM AND THEIR RELATIONSHIP WITH MILK YIELD IN EARLY LACTATION IN HOLSTEIN-FRIESIAN COWS



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INTRODUCTION



Milk production losses represent only the tip of the iceberg; because the problems generated around calving include drug costs, labor and sometimes premature waste of cows. In this context, create a rapid test for predicting the volume of milk or the existence of hypocalcemia, ketosis and displaced abomasum with the determination of a metabolite, it would be useful for farmers. Based on the above, the objective of this study was to examine associations of serum concentrations of NEFAs, Ca and insulin 10 days before calving and 10 or 20 days after calving with milk yield at early lactation in Holstein-Friesian cows.

DATA USED

- Animals used in the study were 90 Holstein-Friesian cows (30 per stall).
- Body weight (BW) was 780 ± 36 kg, with BCS of 3.0.

STATISTIC ANALYSIS

- Data was analyzed using SAS (SAS, 2014)
- Odd ratios expresses the advantage or likelihood of experiencing an event for a high-risk group (above) when compared with a low-risk (below the threshold).

STUDY VARIABLES

- Milk yield
- Serum concentrations of NEFA, Calcium and Insulin

Item	Proportion of animals at the threshold of high risk metabolites (%)	Odd ratios	Confidence intervals of Wald at 95%	P
Prepartum, Day 10				
NEFA ≥ 0.5 mmol L ⁻¹	67.40	0.8	0.30 – 1.4	<0.06
Calcium ≤ 2.1 mg dL ⁻¹	72.11	2.2	1.8 – 2.28	0.05
Insulin ≤ 0.26 ng mL ⁻¹	6.02	0.8	0.61 – 0.90	<0.005
Postpartum, Día 10³				
NEFA ≥ 0.5 mmol L ⁻¹	22.00	0.9	0.89 – 2.13	0.05
Calcium ≤ 2.1 mg dL ⁻¹	66.41	1.4	0.90 – 2.60	
Insulin ≤ 0.26 ng mL ⁻¹	29.70	0.7	0.7 – 2.1	0.05
Postpartum, Día 20				
NEFA ≥ 0.5 mmol L ⁻¹	20.00	0.6	0.50 – 1.31	0.07
Calcium ≤ 2.1 mg dL ⁻¹	40.00	2.5	1.8 – 2.90	0.01
Insulin ≤ 0.26 ng mL ⁻¹	15.12	0.9	0.81 – 2.2	0.02

Item	Dairy 1	Dairy 2	Dairy 3	P		
				Trt.	Week (T)	Trt x T
Milk yield, kg d ⁻¹	25.91±3.92 ^b	26.02±3.65 ^b	37.50±6.14 ^a	0.0001	0.0001	0.99
Body Condition Score	2.50 ±0.03	2.63±0.03	2.27±0.04	0.24	0.24	0.96
Non esterified fatty acids, mmol L ⁻¹	0.41±0.03 ^a	0.27±0.03 ^b	0.39±0.04 ^a	0.01	0.0001	0.92
Calcium, mmol L ⁻¹	2.08±0.16 ^a	1.73±0.16 ^b	1.80±0.21 ^b	0.001	0.001	0.86
Insulin, ng mL ⁻¹	2.04±0.59	0.65±0.59	0.72±0.76	0.34	0.26	0.76

CONCLUSIONS

The thresholds cow level indicate that 70.0% of cows sampled with high levels of NEFA and Ca, and lower insulin in the last 10 days of gestation, and days 10 and 20 of lactation were associated with high risk of losing milk in the first 20 days of lactation.

