Effects of prepartum diets supplemented with rolled oilseeds on milk production and reproductive performance in dairy cows

R. Salehi[1], M. G. Colazo[2], M. Oba[1], D. J. Ambrose[1, 2]

[1]Department of Agricultural, Food and Nutritional Science, University of Alberta; [2]Livestock Research Branch, Alberta Agriculture and Rural Development, Edmonton, Canada.

Email: rsalehi1@ualberta.ca; divakar.ambrose@gov.ab.ca

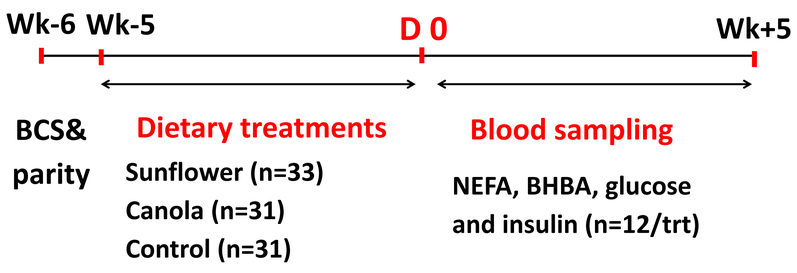
Introduction

- Feeding canola seed during late dry period (prepartum) versus flax or linola seed:
  - Increased interval from calving to first ovulation
  - with no effect on energy balance or fertility
- ***But***, a control diet with no added fat was not included in that study.

Objectives

Therefore, the present study was designed to determine the effects of oilseed (no oilseed vs. oilseed) and type of oilseed (canola vs. sunflower) supplementation during late gestation on postpartum **milk production** and **reproductive performance** in dairy cows.

Methodology

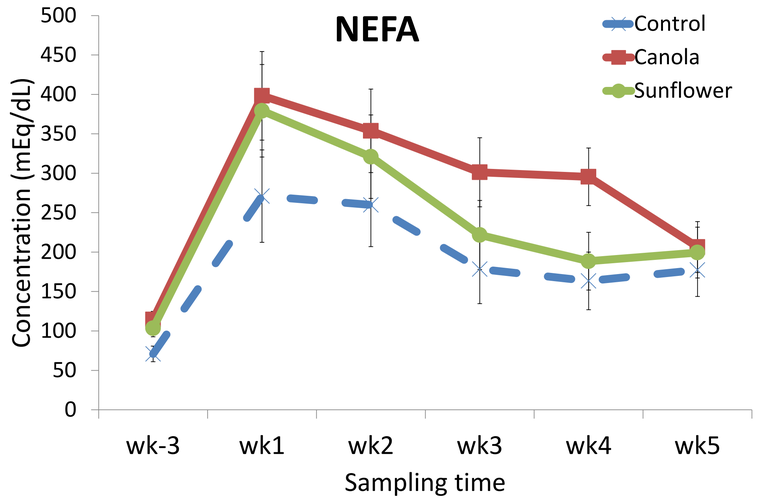


Feed intake: from 4 wk before expected calving to 5 wk after calving

Milk production: recorded until 5 wk after calving

Transrectal ultrasonography : ovaries examined twice weekly from 7±1d after calving until 35 days after calving

Results



- Cows fed oilseed had higher **NEFA** than CON at wk-3, wk1 and wk4.
- Prepartum dietary treatment did not affect **BHBA, glucose** and **insulin** concentration during pre and postpartum.

Table1. Effect of prepartum dietary treatment on dry matter intake

	Prepartum dietary treatment			P-values	
	Control	Canola	Sunflower	CON vs. FAT	CAN vs. SUN
Prepartum					
WK-4					
Primiparous	12.31±0.21	11.66±0.20	12.05±0.20	0.08	0.19
Polyparous	16.44±0.15	15.15±0.15	15.18±0.14	<.0001	0.88
WK-3					
Primiparous	12.35±0.22	11.52±0.21	12.89±0.21	0.58	<.0001
Polyparous	16.75±0.16	15.03±0.16	15.01±0.15	<.0001	0.92
WK-2					
Primiparous	12.03±0.21	11.76±0.20	12.08±0.20	0.66	0.27
Polyparous	15.72±0.15	14.21±0.15	14.03±0.14	<.0001	0.40
WK-1					
Primiparous	11.18±0.24	11.09±0.23	11.56±0.23	0.64	0.16
Polyparous	14.45±0.17	13.07±0.18	12.80±0.17	<.0001	0.28
Postpartum					
WK1					
Primiparous	17.64±0.38	17.15±0.37	17.83±0.37	0.75	0.19
Polyparous	21.87±0.27	19.37±0.28	20.57±0.26	<.0001	0.002
WK2					
Primiparous	18.89±0.36	19.17±0.35	20.88±0.35	0.01	0.0007
Polyparous	24.15±0.26	22.83±0.26	23.64±0.25	0.004	0.02
WK3					
Primiparous	21.26±0.34	21.44±0.33	24.21±0.33	0.0002	<.0001
Polyparous	26.96±0.25	25.42±0.25	26.37±0.24	0.0005	0.006
WK4					
Primiparous	22.43±0.37	23.01±0.36	24.10±0.36	0.01	0.03
Polyparous	28.34±0.27	27.88±0.27	28.48±0.26	0.62	0.11
WK5					
Primiparous	23.43±0.36	23.74±0.35	24.91±0.35	0.04	0.01
Polyparous	30.32±0.26	28.92±0.26	29.73±0.25	0.001	0.02

Table2. Effect of prepartum dietary treatment on milk production

	Prepartum dietary treatment			P-values	
	Control	Canola	Sunflower	CON vs. FAT	CAN vs. SUN
WK1					
Primiparous	19.51±1.37	21.24±1.32	21.83±1.37	0.22	0.75
Polyparous	34.45±1.02	31.69±1.04	30.68±1.00	0.01	0.48
WK1					
Primiparous	25.19±1.32	27.06±1.28	26.28±1.32	0.36	0.67
Polyparous	41.04±0.98	38.43±1.00	38.24±0.96	0.02	0.89
WK1					
Primiparous	26.18±1.46	28.61±1.41	29.50±1.46	0.11	0.66
Polyparous	43.00±1.09	40.47±1.11	41.85±1.09	0.17	0.37
WK4					
Primiparous	29.82±1.30	27.87±1.40	31.03±1.35	0.13	0.52
Polyparous	41.98±1.02	45.42±1.00	43.32±1.00	0.02	0.35
WK5					
Primiparous	30.22±1.63	27.55±1.74	31.52±1.68	0.11	0.58
Polyparous	39.54±1.28	43.53±1.25	42.79±1.25	0.12	0.07

Table3. Effect of prepartum dietary treatment on reproductive performance

	Prepartum dietary treatment			P-values	
	Control	Canola	Sunflower	CON vs. FAT	CAN vs. SUN
Number	31	31	33	-	-
Interval to 10 mm, d	9.33±0.46	8.92±0.49	9.95±0.43	0.22	0.33
Interval to 16 mm, d	13.83±0.82	14.99±0.78	15.38±0.73	0.17	0.71
Interval to first ovulation, d	20.73±1.59	22.90±1.50	20.61±1.41	0.58	0.26
Pregnancy at first AI, n (%)	7/31(22.58)	8/31(25.80)	11/33(33.33)	0.47	0.5
Cumulative pregnancy, n (%)	18/31(58.06)	23/31(74.19)	23/33(69.69)	0.17	0.68
Proportion of pregnant cows by 150 DIM	13/31(41.93)	16/31(51.61)	14/33(42.42)	0.62	0.4
Proportion of pregnant cows by 250 DIM	18/31(58.06)	23/31(74.19)	24/33(72.72)	0.07	0.8

Take home message

- Supplementation of oilseeds during late gestation reduced feed intake and milk production during the first two weeks after calving
- Reproductive performance was not affected although inclusion of oilseeds in the dry period tended to improve cumulative pregnancies by 250 days postpartum

Acknowledgements