Effect of Rumen Undegradable Protein and Glucogenic Precursor Supplementation on Postpartum Cow Performance
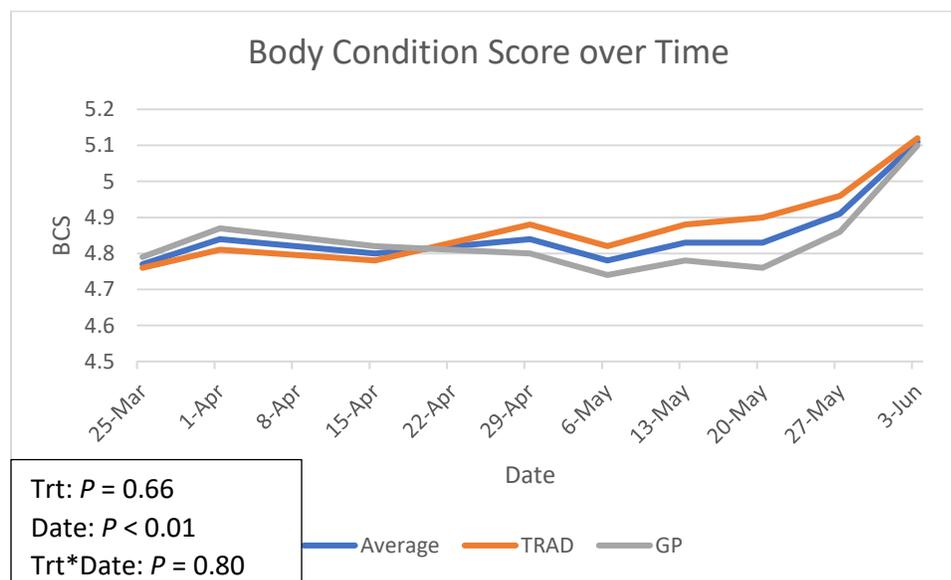
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Hypothesis: Providing a glucogenic precursor supplement postpartum will improve reproductive performance in young cows on a forage-based diet.

Treatments: Cows were stratified by initial BW and randomly assigned to a supplementation treatment upon calving. Supplementation was provided at a rate of 2 lbs/hd/d with supplementation treatments being: a) traditional distillers grains cake (TRAD) and b) distillers grain cake with calcium propionate (GP). Cows were weighed and received a body condition score (BCS) weekly.

Results: No difference in BW was observed throughout the supplementation period or between treatments ($P > 0.05$). Body condition score was not affected by treatment ($P = 0.66$) or treatment by week ($P = 0.80$). Throughout the supplementation period, an effect of week on BCS was observed ($P < 0.01$), with cows starting supplementation at a BCS of 4.8 and ending with an average BCS of 5.1. No difference in 60-d milk yield was observed ($P = 0.68$). At weaning, no difference in cow BW was observed ($P = 0.39$), however there was a tendency ($P = 0.10$) for the TRAD to have a greater BCS than the GP cows. Pregnancy rate was not affected by treatment ($P = 0.75$). Calves were weaned at an average weight of 452 lbs and did not differ between treatments ($P = 0.84$).

Further Analysis: Blood samples were also taken weekly starting 45-d postpartum to measure glucose, insulin, and β-hydroxybutyrate concentration. Liver biopsies were conducted and glucogenic enzyme concentration will be analyzed. An acetate tolerance test was conducted allowing for determination of acetate utilization.
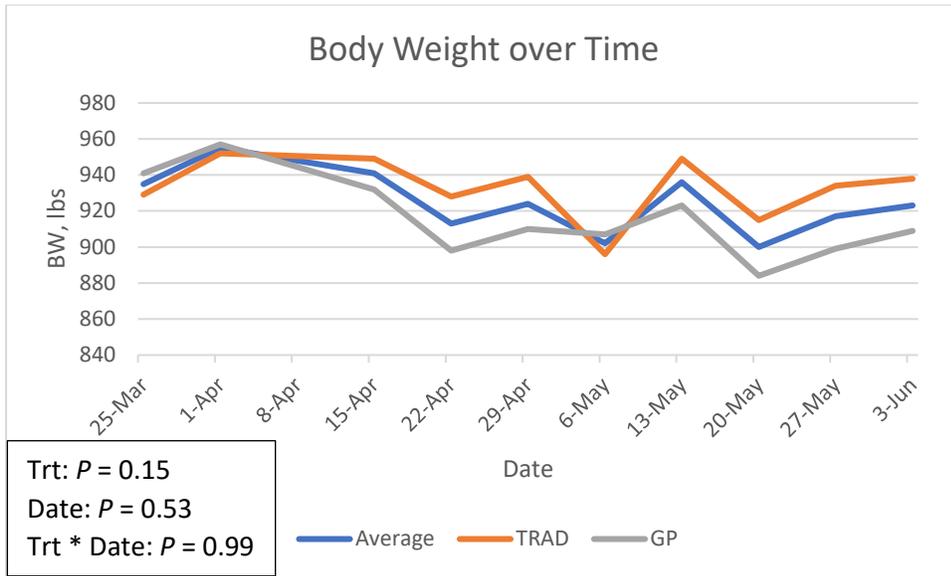

Body Condition Score over Time

Trt: $P = 0.66$
Date: $P < 0.01$
Trt*Date: $P = 0.80$

Body Weight over Time

Trt: *P* = 0.15
Date: *P* = 0.53
Trt * Date: *P* = 0.99

Table 1. Cow and calf performance at weaning.

	TRAD	GP	SEM	*P*-value
Cow Wt, lbs	974	943	25.4	0.39
Cow BCS	5.12	4.93	0.08	0.10
Pregnancy Rate, %	76	72	0.09	0.75
Calf Wt, lbs	451	454	9.94	0.84