serum was collected at 11 time intervals for 120 min. Serum glucose and insulin areas-under-the-curve (AUC) and glucose half-lives were calculated. Glucose AUC (7299 vs 10599 ± 1173 units) tended ($P = 0.08$) to be smaller, and insulin AUC (185 vs 361 ± 17 units) was smaller ($P < 0.01$) for LACT cows than for NLACT cows. Glucose half-life was nearly 50% less ($P = 0.03$) for LACT compared to NLACT cows (53 vs 100 ± 12 min) and tended ($P = 0.08$) to be longer in July compared to May (94 vs 58 ± 12 min). Diet quality as affected by season did influence glucose half-life. LACT cows were more responsive to insulin than NLACT cows since they cleared glucose in less time with less insulin, although it would be expected that NLACT cows would clear glucose in less time than LACT cows. Body condition may be as important as lactation in the regulation of glucose clearance.

Key Words: Glucose, Insulin, Lactation, Physiological state

INCREASING GLUCOSE PRECURSORS IN RANGE SUPPLEMENTS FED TO YOUNG POSTPARTUM RANGE COWS

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Increased nutrient demands during late gestation and lactation may amplify the need for supplementation of cows grazing dormant New Mexico range. Even with a supplementation regimen, young beef cows experience a period of weight loss after calving and during lactation. In order for a cow to gain weight and thus start cycling, an adequate supply of blood glucose must be available to the animal, and she must be able to absorb that glucose into her tissues. The hormone responsible for glucose uptake is insulin, and in periods of weight loss and nutrient stress the cow is less responsive to its effects. Ruminants synthesize nearly all of their glucose from products of digestion, which include propionate (a product of ruminal carbohydrate fermentation) and amino acids (from protein degradation). However, fermentation of dormant forage yields small amounts of these glucose precursors (propionate). During lactation, the increased demand for glucose for milk production adds to the deficit of glucose available to the cow. Her problem is 3-fold: first, she has an inadequate supply of blood glucose, second, the need for glucose has dramatically increased for milk production, and third, blood glucose is inhibited from entering tissues, thus restricting her ability to gain body weight. Previous research at NMSU showed improved cow reproductive performance (earlier return to estrus) when supplements containing increased glucose precursors were fed. However, an optimum level of supplemental glucose precursors has yet to be defined. Therefore, a study was conducted at the Corona Range and Livestock Research Center to evaluate reproduction, milk production, weight change, and tissue insulin sensitivity responses of 2- and 3-yr-old postpartum beef cows (n = 51) to supplements differing in glucose precursors. Supplements were individually fed after the morning grazing period twice weekly at 2.5 lb per head per day for 78 d postpartum. The three supplements each provided 0.75 lb CP with increasing amounts of potential glucose precursors (GP): 0.13 lb GP (**LOGP**), 0.27 lb GP (**MIDGP**), or 0.42 lb GP (**HIGP**). Glucose precursors were supplied by bypass protein (blood and feather meal) in the

LOGP supplement and by bypass protein and propionate salt (NutroCal, Kemin Industries, Inc.) in the MIDGP and HIGP supplements (0.18 and 0.35 lb, respectively). Return to cyclicity and milk production was similar among supplement groups. Although HIGP-fed cows produced numerically more milk than cows in other treatment groups, this did not result in better calf performance, as calf adjusted 205-d weaning weights were similar for all supplement groups. All treatment groups exhibited the same weight change responses over the duration of the experiment and had similar tissue response to insulin. Interestingly, cows in this study produced more milk and returned to estrus earlier than previous postpartum cow experiments conducted at the Corona Range and Livestock Research Center.

Key Words: Protein supplements, Postpartum interval, Glucose precursors

Table 1. Cow production responses to three supplements containing increased glucose precursors.

	Supplement				
Item	LOGP	MIDGP	HIGP	SE	Probability
Days to first estrus	51	64	59	4.5	$P = 0.75$
24-hr milk production, lb	16.3	16.7	17.6	0.8	$P > 0.05$
205-d weaning weight, lb	537	532	519	12	$P = 0.85$
Glucose half-life (clearance), min	74	75	85	13	$P > 0.54$
Pregnancy rate, %	100	94	94	--	$P > 0.05$

EFFECTS OF ADDED DIETARY FAT ON DIGESTIBILITY AND PASSAGE RATE BY STEERS FED FINISHING DIETS CONTAINING 25% *SWEET BRAN*®

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Key Words: Cattle, Corn Gluten, Digestibility

Sweet Bran® corn gluten feed is a wet corn milling feed product produced by Cargill Sweeteners North America. Recently, many feedyards in the Midwest have begun using Sweet Bran as both an energy and protein source, replacing a portion of the steam-flaked corn and supplemental protein in growing and finishing diets. A previous study conducted at the Clayton Livestock Research Center examined effects of Sweet Bran and added fat on performance and carcass quality responses by finishing beef steers. This research demonstrated an increase in dry matter intake resulting in greater average daily gain of steers fed 25% Sweet Bran with 2 to 4% added fat compared to a standard steam flaked corn-based diet with no Sweet Bran and 3% added fat. In order to further examine the intake and gain responses, a metabolism trial will be conducted on the main campus at New Mexico State University. Nine ruminally cannulated steers of mixed beef breeds will be maintained in the Nutrition/Physiology building during the 3-