

Growth and Attainment of Puberty in Heifers from Cows Supplemented with Linseed Meal during Early Lactation

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This study examined the effects of supplementing cows with phytoestrogen rich linseed meal (LSM) during lactation on heifer calf growth and reproduction. Immediately after parturition, mature cow-calf pairs were allotted randomly to one of 12 pens, with six pens supplemented with LSM and six pens fed a control pellet consisting primarily of sunflower meal (CON). Both supplements were pelleted, isocaloric, and isonitrogenous and were offered prior to feeding alfalfa hay each day for the first 60 d of lactation. Heifer calves (n = 91) born from supplemented cows were followed from birth to 315 days of age. Birth weight, sixty day weight, and actual weaning weights were recorded. Adjusted weaning weight was calculated for 205 days of age. Heifers were weighed, and venous blood samples were collected for progesterone analysis starting on day 229.2 ± 1.5 of age and every 14 d until day 313.2 ± 1.5 of age, visual body condition score (BCS) was recorded on day 229, 287, and 313. Birth weights were not different between groups ($P > 0.20$; 87.08 ± 2.4 lbs.) and there was no effect of treatment on day 60 weight ($P > 0.20$; 219.8 ± 4.9 lbs., respectively). There was a tendency ($P = 0.11$) for heifers from LSM cows to have a greater adjusted weaning weight compared to heifers from CON supplemented cows (560.6 vs. 535.7 ± 11.5 lbs.). Heifer BCS was not affected ($P = 0.22$) but heifers from LSM cows were heavier ($P = 0.04$) than heifers from CON cows (644.6 vs. 630.0 ± 5.3 lb). Previous studies indicated that some heifers start to cycle at 7 months of age, however in this study only 27 heifers attained puberty by the completion of the trial (14 CON and 11 LSM; $P = 0.40$). Results suggest LSM supplementation during early lactation does not appear to impact onset of puberty in heifer calves, however, it appears that LSM supplementation may enhance weight gain without influencing BCS of heifer calves. Additional studies are underway to explore the effects of phytoestrogens on growth and development of beef cattle.

Table 1. Formulation of lactation diets fed to beef cows.^{ab}

Item	CON	LSM
	----- % As Fed -----	
Alfalfa Hay	13.8	13.8
Corn Silage	79.9	79.0
Linseed Meal Suppl ^c	--	6.4
Sunflower Meal Suppl ^d	6.4	--

^aSupplements were formulated to be isocaloric and isonitrogenous.

^b Supplement offered at 2.2 kg/hd/d.

^c Linseed meal supplement was formulated with 79.8% linseed meal and 20.2% corn grain.

^d Sunflower meal supplement was formulated with 34.3% sunflower meal and 65.7% dry distillers grains.

Table 2. Effect of lactation supplement fed to beef cows on performance of heifer calves.

Item	Treatment		SE	P value
	CON ^a	LSM ^b		
Weight, kg				
Birth wt.	86.2	89.7	3.04	0.4
d 60 wt.	215.8	225.5	9.28	0.2
Wean wt.	517.6	535.1	19.84	0.31
ADJ WW	534.6	559.5	15.87	0.11
Final wt.	630.7	644.6	14.11	0.04
BCS (1-9)				
d229	5.7	5.8	0.05	0.22
d287	5.4	5.4	0.05	0.22
d313	5.9	5.9	0.05	0.22

^a Control (CON) n = 49

^b Linseed Meal (LSM) n = 39