

Abstract

Prepartum Supplementation to Improve Transfer of Passive Immunity and Growth †

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Late pregnant cows often experience nutritional stress in northern Australia, which reduces colostrum secretion, health, and likelihood of survival of neonatal calves. The effect of prepartum supplementation on the transfer of passive immunity and growth of calves was investigated. The decline in prepartum progesterone was the hypothesised mechanism regulating the transfer of passive immunity. Ninety pregnant Droughtmaster heifers and 45 Brahman cows were used. Animals were stratified by body weight and expected calving date, and separated into two blocks of heifers and one block of cows. Animals were randomly allocated into nutritional treatments, where all were fed low quality Rhodes-grass hay: (1) Control hay only; (2) Protein (PRO), supplemented with 1 kg/d of protein supplement; and (3) Yeast fermentation products (YFP), protein supplement plus 14 g *Saccharomyces cerevisiae* fermentation product (NaturSafe™). Data for final analyses was available from 92 calves on transfer of passive immunity and from 59 cow/calf pairs on prepartum progesterone decline. Treatment means were compared via orthogonal contrasts for the effect of supplementation PRO and YFP. Protein supplementation for an average of 14 d hastened the decline in the concentration of serum progesterone before parturition ($p < 0.01$) and tended ($p = 0.09$) to increase growth rate of calves during the first 10 d (1.0 vs. 0.9 kg/d). However, there was no effect of PRO on neonatal calves plasma immunoglobulin-G1 (IgG1) concentration ($p = 0.43$). Adding YFP further hastened the progesterone decline before parturition ($p < 0.05$) and tended to increase plasma IgG1 ($p = 0.08$). Short term nutritional supplementation prepartum may improve transfer of passive immunity and neonatal calf growth.



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