

## Alterations in the Abundance of Ruminal Microbial Species during the Peripartal Period in Dairy Cows

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**Abstract :** Seven fistulated Holstein cows were used from 3 weeks prepartum to 4 weeks postpartum to determine the relative abundance of 7 different species of ruminal microorganisms. The prepartum diet was based on corn silage. In the postpartum, diet included ground corn, grain by-products, and alfalfa haylage. Ruminal digesta were collected at five times: -14, -7, 10, 20, and 28 days around parturition. Total DNA from ruminal digesta was isolated and real-time quantitative PCR was used to determine the relative abundance of bacterial species. *Eubacterium ruminantium* and *Selenomonas ruminantium* were not affected by time ( $P>0.05$ ). *Megasphaera elsdenii* and *Prevotella bryantii* increased significantly postpartum ( $P<0.001$ ). Conversely, *Butyrivibrio proteoclasticus* decreased gradually from -14 through 28 days ( $P<0.001$ ). *Fibrobacter succinogenes* was affected by time being lowest at day 10 ( $P=0.02$ ) while *Anaerovibrio lipolytica* recorded the lowest abundance at -7 d followed by an increase by 20 days postpartum ( $P<0.001$ ). Overall, these results indicate that changes in diet after parturition affect the abundance of ruminal bacteria, particularly *M. elsdenii* (a lactate-utilizing bacteria) and *P. bryantii* (a starch-degrading bacteria) which increased markedly after parturition likely as a consequence of a higher concentrate intake.

**Keywords :** rumen bacteria, transition cows, rumen metabolism, peripartal period

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