

## Long-term effects of feeding monensin on methane production in lactating dairy cows

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### Abstract

The objective of this study was to determine the long-term effects of feeding monensin on methane (CH<sub>4</sub>) production in lactating dairy cows. Twenty-four lactating Holstein dairy cows (1.46 +/- 0.17 parity; 620 +/- 5.9 kg of live weight; 92.5 +/- 2.62 d in milk) housed in a tie-stall facility were used in the study. The study was conducted as paired comparisons in a completely randomized design with repeated measurements in a color-coded, double-blind experiment. The cows were paired by parity and days in milk and allocated to 1 of 2 treatments: 1) the regular milking cow total mixed ration (TMR) with a forage-to-concentrate ratio of 60:40 (control TMR; placebo premix) vs. a medicated TMR (monensin TMR; regular TMR + 24 mg of Rumensin Premix/kg of dry matter) fed ad libitum. The animals were fed and milked twice daily (feeding at 0830 and 1300 h; milking at 0500 and 1500 h) and CH<sub>4</sub> production was measured prior to introducing the treatments and monthly thereafter for 6 mo using an open-circuit indirect calorimetry system. Monensin reduced CH<sub>4</sub> production by 7% (expressed as grams per day) and by 9% (expressed as grams per kilogram of body weight), which were sustained for 6 mo (mean, 458.7 vs. 428.7 +/- 7.75 g/d and 0.738 vs. 0.675 +/- 0.0141, control vs. monensin, respectively). Monensin reduced milk fat percentage by 9% (3.90 vs. 3.53 +/- 0.098%, control vs. monensin, respectively) and reduced milk protein by 4% (3.37 vs. 3.23 +/- 0.031%, control vs. monensin, respectively). Monensin did not affect the dry matter intake or milk yield of the cows. These results suggest that medicating a 60:40 forage-to-concentrate TMR with 24 mg of Rumensin Premix/kg of dry matter is a viable strategy for reducing CH<sub>4</sub> production in lactating Holstein dairy cows.