The Effect of Monensin and Sodium Bicarbonate on Milk Yield and Composition*

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Monensin, an ionophore antibiotic, is used in the dairy industry for the prevention of coccidiosis, ketosis, and lactic acidosis, as well as for increasing feed efficiency. It has been shown to result in increased milk yields, but often with a decrease in milk fat concentration. With the current skim milk powder surplus in Canada, feeding strategies are needed that maximize milk fat content and yield. The objective of this study was to determine if feeding buffers would offset the negative effects of monensin on milk fat content while maintaining high milk yields.

Thirty Holstein cows were randomly assigned to one of the following dietary treatments: 1) CTL = control; no feed additive, 2) MON = monensin at 22 ppm of dietary dry matter (~550 milligrams/cow/day), and 3) MSB = monensin (22 ppm) + sodium bicarbonate (225 grams/cow/day). The diets were fed once daily as a TMR for 18 days. The TMR consisted of 9.5% alfalfa hay, 31.1% barley silage, 11.8% alfalfa silage, 34.7% barley/corn grain mix and 12.9% protein supplement on a DM basis, and contained 16% crude protein, 19.3% ADF, and 31.8% NDF.

Feed intake was highest for CTL (21.7 kg/d), intermediate for MON (20.6 kg/d) and lowest for MSB (18.9 kg/d). Neither monensin nor sodium bicarbonate had an effect on milk yield and composition. Milk yield averaged 25.9, 25.9, and 26.0 kg/d for CTL, MON, and MSB diets, respectively, while milk fat content for the corresponding treatments was 3.73, 3.74, and 3.73%. The resulting milk fat yield for the three treatments was 955, 977 and 937 g/d. Milk protein (3.36%) and lactose (4.59%) content were unaffected by treatment, as was milk fat composition.

Implications: The results indicate that in terms of milk and milk fat yield, there were no benefits or disadvantages to feeding monensin or sodium bicarbonate, but there was a numerical increase in feed efficiency with the monensin treatments. It is possible that the effects of monensin on milk fat content may vary with the forage:concentrate ratio of the diet or stage of lactation.

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