It is Feasible to use Test-day Information (DHI Milk Control Data) for the Estimation of Energy Uptake in Dairy Cows

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Introduction

Low energy balance increases the incidence of disease and contributes to poor reproductive performance. Monensin (an ionophore) increases energy precursors in the rumen. Monensin-treated cows had higher milk yield and lower serum ketone bodies, and thus better energy status, than control cows. This study aimed to validate a previously developed model for the prediction of energy balance from test-day information. Predicted energy balance was compared for cows with or without monensin supplementation.

Material and Methods

Data of eight randomized trials, including 600 lactations, were used to validate the model. Trials were designed to evaluate the effect of monensin on milk production, metabolic state and cow health. Monensin was mixed in the concentrate and fed from Week 5 of lactation for about six months. The calculation of predicted energy balance (pEB) was based on lactation week, parity, milk yield, percentage milk protein and the ratio of percentage fat to percentage protein. Energy-corrected milk was obtained from test-day information and added to pEB to estimate energy uptake (eEU). The eEU of monensin and control cows was statistically compared by a mixed model. The model included fixed effects for trial and parity and a random-cow effect for repeated measures on the same cow.

Results and Conclusion

Monensin increased milk yield and decreased the milk fat percentage. Blood ketone bodies were lower in the monensin cows. The Prince Edward Island (PEI) of monensin cows was not statistically different from that of the control cows between Week 2 and Week 5 of lactation (the pre-supplement period). After starting with monensin supplementation, the PEI of the monensin cows was significantly higher throughout the observation period (Figure 1). It was concluded that PEI was a valid measure of energy intake and a suitable tool to monitor energy intake in DHI herds.

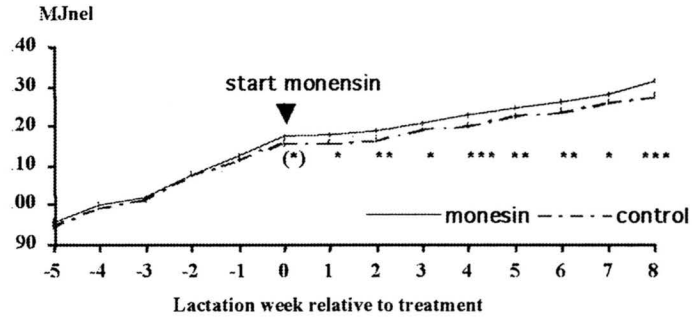

Figure 1. Estimated energy uptake +/- standard error.