Effect of Monensin on Cow Health and Milk Production in Early Lactation

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Dry cows and springing heifers from twenty-five farms near Guelph, Ontario, Canada were enrolled in a large double blinded and randomized clinical trial designed to evaluate the impact of monensin on periparturient disease and milk production. A total of 503 cows were given monensin controlled release capsules and 507 animals were administered placebo capsules three weeks prior to expected calving date. Initial screening of the association between disease and monensin treatment was performed using two by two tables and chi square analysis. Diseases found to be associated with treatment at $p<.20$ were submitted to logistic regression modelling using the generalized estimating equation (GEE) which allowed for control of disease clustering by farm. The incidence of displaced abomasum was decreased by monensin treatment after controlling for the effects of retained placenta, parity and farm ($p<.05$, OR = .41 - .84). In addition, monensin treatment significantly reduced the incidence of repeated illness (more than one disease) after controlling for multiple births, parity, body condition and herd ($p<.05$, OR = .38 - .89). There were also trends noted for a reduced incidence of both clinical ketosis ($p = .11$) and culling ($p = .09$) in monensin treated cows.

The effects of treatment on milk production and milk components at the first three DHI tests were evaluated using repeated measures analysis of variance. Treatment with monensin tended to increase milk production, but this effect was dependent on body condition score (BCS) prior to calving. Cows that were classified as thin (BCS $\leq$ 3.0) did not respond to monensin treatment. Cows with fair body condition (BCS 3.25 - 3.75) gave significantly more milk at second DHI test (+0.85 kg, $p<.05$); while cows that were heavy (BCS $\geq$ 4.0) produced significantly more milk than controls during the first 94 days of lactation (+1.25 kg/day, $p<.05$). Monensin treatment had no significant effect on either milk fat percent or milk protein percent.

The results of this field study demonstrate that monensin treatment prior to calving was beneficial in both reducing health problems and improving milk production in early lactation.