# THE EFFECTS OF LASALOCID ON MILK PRODUCTION IN PASTURED SPRING-CALVING DAIRY COWS

A thesis submitted in partial fulfilment of the requirements for the degree of Master of Agricultural Science at Massey University.

**NHAMO GEORGE GOZHO**

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# ABSTRACT

Ionophore supplements are widely used in the ration of fattening beef cattle, especially in the United States. Studies have indicated benefits in terms of a faster growth rate and live weight gain and a reduction in feed intake in beef cattle fed either monensin or lasalocid. In recent years interest has been growing on the possible use of ionophores in dairy cattle. This is because changes in rumen metabolism associated with ionophores could increase milk production in lactating ruminants and/or reduce health and reproductive problems.

Two experiments were conducted with dairy cows at grazing to evaluate the effects of Bovatec 20 (lasalocid) on milk production and performance in early and mid–lactation. In Experiment 1 thirty multiparous Friesian cows aged between three and nine years were assigned to two similar treatment groups of 15 cows balanced for age, previous lactation production, body weight and body condition prior to calving. Treatments consisted of no lasalocid (control) and 400 mg lasalocid per cow per day (drenched twice daily) and the experiment commenced 7 days postpartum. Milk yield and composition were measured at weekly intervals and the treatment continued for ten weeks. Gross energy content of milk was estimated from milk composition. Blood was sampled by tail venipuncture at weekly intervals during morning milking and serum harvested. Serum was analyzed for concentrations of non–esterified fatty acids, ß–hydroxybutyrate, glucose, magnesium and calcium. Reproductive parameters (calving to first oestrus, calving to conception intervals and the number of services per conception) were calculated from farm records collected during the experiment.

No differences in milk, milk fat, protein, or lactose yields were observed. Significant ($P<0.01$) lasalocid by period interaction was observed for milk fat yield. Gross energy content in milk did not differ between groups but period effects were significant ($P<0.10$) during weeks 3, 6, 7 and 9. Period by

lasalocid interaction for gross energy content of milk was also significant ($P<0.10$). Lasalocid treatment did not affect live weight changes of cows in early lactation. Lasalocid treated cows lost significantly ($P<0.05$) more condition than control cows. Plasma concentrations of ß–hydroxybutyrate, non–esterified fatty acids, glucose, magnesium and calcium were unaffected by lasalocid. Period by lasalocid effects for non esterified fatty acids and for magnesium were significant ($P<0.05$ and $P<0.10$, respectively). Reproductive parameters were unaffected by lasalocid supplementation.

In Experiment 2 forty–five multiparous Friesian cows in mid–lactation were divided into three groups using the criteria as in Experiment 1. The groups were randomly allocated to three treatments. Treatments consisted of a control group, a group treated with Bovatec 20 (lasalocid) as in Experiment 1, and a third group treated with Bloatenz (a bloat preventive formulation). Treatments lasted 10 weeks. Milk yield and composition, live weight and body condition scores were measured as in Experiment 1. Cows were also scored for intensity of bloat for two periods each of 7 days.

Treatment with either Bovatec 20 or Bloatenz did not affect milk, fat, protein or lactose yields of cows in mid–lactation. Period effects for fat yield were significant ($P<0.05$). Gross energy content in milk was unaffected by treatment. Live weight changes were unaffected by treatments but cows treated with Bovatec 20 and Bloatenz lost less condition compared to control cows. The pastures used failed to induce bloat and hence there were no data for this aspect of the study.

It was concluded that feeding lasalocid resulted in only small numerical increases in milk production in early lactation with no milk production responses in mid–lactation. Lasalocid had minor negative influence on body condition in early lactation and a significant positive influence in mid–lactation.

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