

Posters

Parasitology of sucking beef calves treated with macrocyclic lactone anthelmintics in either an extended-release injectable formulation or a pour-on formulation

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Introduction

The objective of this trial was to test the hypothesis that treating suckling beef calves grazing summer pastures with an extended-release injectable parasiticide containing eprinomectin (ERE) would result in changes in GI parasite loads when compared to a pour-on ivermectin (POI) formulation. ERE contains the anthelmintic with poly(lactic-co-glycolic acid) (PLGA) polymer allowing slow release of eprinomectin following injection with a label claim for protection against reinfection with *Cooperia oncophora* and *punctata* for 100 d and *Ostertagia ostertagi* for 120 d. POI claims 21 d control for *Cooperia punctata* with 14 for *Ostertagia ostertagi* and *Cooperia oncophora*.

Materials and Methods

Nine-hundred twenty-nine spring-born calves grazing on 22 pastures in Virginia, USA, were measured. Pastures were permanent and continuously grazed (stocking rate of 0.5 to 1.5 ha/ pair). Cattle grazing these pastures have been dewormed with macrocyclic lactone products for many years. One-third of the calves in each pasture were assigned to ERE, the other two-thirds were assigned to POI. Calves assigned to treatments were blocked by sex, sire AI vs natural service, Angus vs Simmental sired, and age. Calves were assigned and treated in late June and early July when gastrointestinal parasite infections in calves increase. Also at start, at least 5 g of fecal material was collected from a subset of 20 calves (10 ERE and 10 POI) from each pasture and analyzed for strongyle type fecal egg counts (FEC) using either the Modified Wisconsin or 3-chamber McMaster technique. Twenty randomly selected fecal samples were analyzed by coproculture to distinguish the genera of strongyle helminths contributing to the FEC. Fecal samples were taken from a subset of calves 14 d later for a fecal egg count reduction technique evaluation and again at weaning. Care givers and study personnel were blinded to calf treatment assignments. FEC were analyzed using PROC GLM of SAS version 9.3. Other variables in the models were location, gender, cross-

breed, AI vs natural sire, age of dam, treatment (ERE or POI), and 2-way interactions. Backward elimination procedure created a final model ($P \leq 0.1$ for inclusion) with treatment forced into the model.

Results

Fecal egg count analyses and coprocultures confirmed that pastures were naturally infected with both *Cooperia spp* and *Ostertagia spp* of gastrointestinal parasites. EPG means for ERE and POI were similar at start (113.7 EPG and 100.8 EPG $P=0.87$). The average fecal egg count reduction for the POI treated animals was less than ERE treated animals (12.51% vs 89.92% ($P < 0.01$)). At weaning ERE treated calves had lower EPG than POI treated calves (64.2 EPG vs 235.2 EPG $P < 0.01$). Also significant in the model were location (farm) and calf age ($P < 0.05$). The weight gain performance of this trial is reported in a separate abstract in detail but there was a 5.40 lb (2.45 kg) advantage in weight gain for the ERE over the POI calves ($P=0.04$) from start to weaning over the 99 to 109-day trial period.

Significance

Treatment of nursing calves at mid-summer with ERE resulted in a decrease in fecal strongyle EPG compared with POI treated calves. Also influencing fecal strongyle EPG were locations nested in farms and age of the calves. Differences in FEC reduction between the formulations might indicate that prolonged exposure to the parasites was necessary for control, that the pour-on route was not effective in delivering drug to the parasites or that there is resistance to ivermectin but not eprinomectin. Housing all of calves in same pasture might have had an influence on the outcome but was preferable to housing ERE and POI calves in separate pastures where pasture variation might have large and immeasurable effects. Calves treated with ERE might have consumed and killed larvae, thus reducing the contamination challenge for the POI calves. In light of the current very high price for weaned calves, even the modest increase in gains makes the use of ERE financially viable.