Effects of anthelmintic treatment on production performance, carcass quality, and predominant nematode species in feedlot cattle from western Canada

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Introduction

The objective of this study was to determine the effects of currently used anthelmintics on production performance, carcass quality characteristics, and species diversity in western Canadian feedlot calves. Changes in climate and anthelmintic susceptibility are changing the epidemiology of gastrointestinal nematodes in livestock. However, the production impact of gastrointestinal nematodes in beef cattle from western Canada has not been studied in decades.

Materials and Methods

A randomized controlled trial was conducted with 234 auction market-derived, weaned, fall-placed steer calves. Calves were assigned to three treatment groups: control; injectable ivermectin; combination of injectable ivermectin and oral fenbendazole. Each group contained replicates of 6 pens with 13 animals per pen. Calves were treated according to individual body weights and manufacturers' specifications. Individual fecal samples were collected to determine the pre- and post-treatment fecal egg counts by modified Wisconsin sugar flotation. The predominant parasite species in each treatment group was determined using a deep-sequencing nemabiome assay. Monthly body weights and pen level feed intake were used to determine the average daily gain and feed efficiency. Carcass quality information was obtained at slaughter. Pens were considered the experimental unit.

Results

Anthelmintic treatment had no effect on the average daily gain and feed efficiency during backgrounding or finishing. However, compared to the control group, some superior carcass quality traits (quality grade, yield grade, and marbling score) were significantly more frequent in anthelmintic treated calves. *Ostertagia ostertagi* was the predominant parasite species in all calves before anthelmintic treatment and in control calves 14 days post-treatment. After treatment, *C. oncophora* was the predominant parasite species in ivermectin-treated calves while no parasite eggs were recovered from calves given the combined treatment.

Significance

Anthelmintic treatment improved some carcass quality traits in these calves, the economic significance of which remains to be determined. *Ostertagia ostertagi* in control calves may suppress superior carcass characteristics and this requires further research.