

A COMPARATIVE STUDY OF *GIARDIA* AND *CRYPTOSPORIDIUM*
INFECTIONS IN FEEDLOT CATTLE IN WESTERN AUSTRALIA AND
ALBERTA, CANADA

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I declare that this thesis is my own account of my research and contains as its main content work that has not previously been submitted for a degree at any other educational institution.

Signed
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Abstract

A comparative study of the parasites *Cryptosporidium andersoni* and *Giardia duodenalis* in feedlot cattle in Western Australia (n=502) and Alberta, Canada (n=852) was conducted. The objectives were to determine the prevalence, infection patterns and impact on cattle performance of these protozoan parasites. Utilizing molecular tools *G. duodenalis* was genotyped and *C. andersoni* samples were confirmed positive.

C. parvum was absent from all cattle sampled in Alberta, Canada and Western Australia, likely due to the advanced age of the cattle being sampled (6-36 months of age). No *C. bovis* or *C. ryanae* were observed in the study cattle.

C. andersoni was present in 25% of the groups of feedlot cattle sampled in Western Australia with a prevalence range of 0-26% and in all 3 of the Alberta, Canada study groups with a prevalence range of 2.9-12%. All three Alberta, Canada studies collected performance data, however, there was no significant difference between infected and non-infected steers' ADG in the feedlot.

G. duodenalis was present in 83% of the groups sampled in Western Australia with prevalence ranging from 0 – 22% and all three study groups sampled in Alberta, Canada were positive with a prevalence ranging from 39 – 82%. The prevalence of *G. duodenalis* is significantly higher in the Alberta, Canada

studies as compared to the Western Australia studies, probably due to climatic factors.

Molecular characterization of a small number of the Alberta, Canada *G. duodenalis* positive samples (10) revealed 30% (3) genotype A, and 70% (7) genotype E. The same characterization of the Western Australia samples (10) showed 20% (2) genotype A, 40% (4) genotype E, 10% (1) genotype B, 10% (1) genotype C, 10% (1) genotype D and 10% (1) genotype B and E. Due to the unusual finding of genotypes C and D in cattle on such a small number of samples this result should be further studied to either confirm or refute the existence of genotypes C and D in cattle. Based on these results 30% of the animals from Alberta, Canada have the potential to be zoonotic (genotypes A and B) and 40% from the Western Australia studies.

The results of this study demonstrate that *C. andersoni* and *G. duodenalis* are prevalent in the study feedlot cattle in Western Australia and Alberta, Canada however the impact of these parasites was not negative on animal performance in the Alberta, Canada studies where it was measured.

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