

University of Prince Edward Island

Faculty of Veterinary Medicine
Summary of Dissertation

Submitted in Partial Fulfilment
of the Requirements for the

DEGREE OF MASTER OF SCIENCE

Jaimie Amanda Butler
Department of Health Management

Supervisory Committee

Dr. Laurie McDuffee, Chair
Dr. J Trenton McClure (Co-supervisor)
Dr. Ben Stoughton, (Co-supervisor)
Dr. Jason Stull
Dr. Gary Conboy

Examination Committee

Dr. Emily John (Chair)
Dr. Ben Stoughton
Dr. Gary Conboy
Dr. Peter Foley

Prevalence of anthelmintic resistant cyathostomins in Prince Edward Island, Canada

Cyathostomins are the most common parasites of adult horses worldwide. There are currently three classes of anthelmintics to treat cyathostomin infections; however, due to widespread overuse, cyathostomins have developed varying degrees of anthelmintic resistance (AR) to benzimidazoles, pyrimidines, and macrocyclic lactones. The egg reappearance period (ERP) is defined as the week cyathostomin egg shedding returns after an effective anthelmintic treatment. Shortening of this period could be an indicator of AR and has been used to investigate early cyathostomin resistance. The objective of this study was to investigate the prevalence of cyathostomin AR to pyrantel pamoate and ivermectin, and to determine ERP on horse farms in Prince Edward Island (PEI), Canada. In addition, fecal cultures and larval identification were performed to evaluate large strongyle egg shedding in PEI. Fecal egg counts (FEC) were performed on 270 horses on 14 horse farms across PEI, and horses with 200 eggs per gram (EPG) were enrolled in the study (n= 101). Horses were treated with 6.6 mg/kg of pyrantel pamoate orally (n =101) and FEC were conducted at two-week intervals. Once individual FEC were above 200 EPG, horses were dewormed with 0.2 mg/kg of ivermectin orally (n = 80), and FEC were performed every 2-3 weeks. Fecal egg count reduction tests (FECRT) and ERP were used to evaluate the efficacy of each anthelmintic. Fecal egg count reduction tests detected pyrantel pamoate resistance on 5/ 14 farms. No signs of ivermectin resistance was detected, while reappearance of eggs occurred at 4-6 weeks and 7-9 weeks for pyrantel pamoate and ivermectin, respectively. Fecal culture detected *Strongylus vulgaris* on 2/ 14 farms. These findings can be used as a baseline for monitoring of AR and ERP in this region and will allow us to develop appropriate anthelmintic treatment protocols for horses in PEI.

Funded by The Sir James Dunn Animal Welfare Centre (SJDAWC) Grant. 2019, UPEI, Charlottetown, PE.