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**SOME INVESTIGATIONS INTO THE LARVAL DEVELOPMENT  
ASSAY AND TRICHOSTRONGYLID NEMATODES OF SHEEP.**

**A thesis presented in partial fulfillment of the requirement of the  
requirements for the degree of Master of Veterinary Science at Massey  
University.**

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## Abstract

Two experiments were conducted to investigate the change over time in  $LD_{50}$  values in an *in vitro* larval development assay.

In each experiment, six field-reared Romney lambs were effectively treated with an anthelmintic and housed. In experiment I, six three month old lambs were given a single infection of 35000 infective larvae of *T. colubriformis*. From ten days post infection (DPI) three lambs (Group 1.1) were treated twice weekly with 0.5mg/kg of dexamethasone trimethylacetate whilst the other three (Group 1.2) served as controls and remained untreated. In experiment II, three lambs (Group 2.2), six month old were infected with a single dose of 22000 infective larvae of *T. colubriformis* whilst the other three (Group 2.1) of the same age were trickle-infected with 2000 infective larvae once weekly for 14 weeks. Larval development assays were conducted weekly for 14 weeks with ivermectin in Experiment I and ivermectin, avermectinB2 and levamisole in Experiment II.

In Experiment I and II for ivermectin, the  $LD_{50}$  values rose to a 4x increase between 50-70 DPI and fell again. The general pattern seen following a single infection with all anthelmintics was for the  $LD_{50}$  values to be relatively constant from 21-35 DPI, then rose 2.5-7x increase to peak 49-56 DPI and declined at the same rate again to original starting values by 84 DPI where they remained until the end of the experiment.

In Experiment I, the steroid treated group started with similar values but had a 5x fall by 42 DPI which was not seen in the single infection group. The trickle infection group in Experiment II generally resulted in a small increase of 1-1.5x from 42-77 DPI and then declined again to starting values until the remainder of the experiment.

The study demonstrates that there is a similar change in the  $LD_{50}$  values

with time for *T. colubriformis* with all three anthelmintics tested and that the change was prevented in steroid treated animals and was less apparent in trickle-infected animals.

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