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STUDIES ON THE OCCURRENCE OF ANTHELMINTIC RESISTANCE IN GOAT PARASITES IN NEW ZEALAND

JURIAH KAMALUDEEN
2010
STUDIES ON THE OCCURRENCE OF
ANTHELMINTIC RESISTANCE IN GOAT
PARASITES IN NEW ZEALAND

A thesis presented in partial fulfilment of
the requirements for the degree of

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IN
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JURIAH KAMALUDEEN
2010
ABSTRACT

Two studies were conducted to investigate anthelmintic resistance in goat parasites in New Zealand. In Study 1 parasites from goats on a farm with a long history of problems with anthelmintic efficacy were used to infect sheep for a controlled slaughter study. Nineteen lambs were acquired, effectively drenched and housed. Each was infected with a mixture of larvae comprising *Haemonchus contortus*, *Teladorsagia circumcincta*, *Trichostrongylus colubriformis* and *Oesophagostomum venulosum*. After 28 days lambs were restrictively randomised into 3 groups based on faecal egg counts. Group 1 was left untreated (n=6), Group 2 (n=6) was given a single dose of abamectin (0.2mg/kg) + levamisole HCL (8mg/kg) + oxfendazole (4.5mg/kg) (“Matrix Oral Drench for Sheep”®, Ancare, New Zealand) and Group 3 (n=7) was treated at twice the dose rate of Group 2. Fourteen days after treatment all animals were killed for total worm counts. The mean burdens of *T. circumcincta* in Group 1 was 337, in Group 2 was 68 (efficacy 80%) and in Group 3 was 10 (efficacy 97%). The mean burdens of *T. colubriformis* in Group 1 was 375, in Group 2 was 220 (efficacy 41%) and in Group 3 was 81 (efficacy 78%). Although the worm burdens in these lambs were low, all animals were infected with each of these two species except for *T. circumcincta* in Group 3 where only 3 lambs were infected. Efficacy against other species was 100%. These results clearly indicate that a single dose of a combination drench was ineffective against two species and even when a double dose was used the efficacy against *T. colubriformis* was only 78%. In Study 2 a survey of drench efficacy was conducted on 17 goat farms using the DrenchRite® larval development assay. Evidence of concurrent resistance to benzimidazoles, levamisole and ivermectin was detected in *T. colubriformis* and *T. circumcincta* on 11/17 and 3/14 respectively. Only 5 of 14 farms had previously undertaken some form of testing for drench resistance prior to this survey. Evidence from these two studies suggests that severe anthelmintic resistance is common on goat farms in New Zealand.
ACKNOWLEDGEMENTS

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I am greatly indebted to the Malaysian Government for funding throughout the duration of my studies. Without this help, it would have been impossible for me to be here.

Thank you very much to my enthusiastic and understanding supervisor, Prof Bill Pomroy, who has provided me with parasitology nous and for his guidance from when I started my postgraduate diploma until the end of my master thesis. He has always been there to meet with me, discuss problems during my study and to ask me good questions in order to develop my critical thinking.

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<tr>
<td>AAD</td>
<td>Amino-acetonitrile derivative</td>
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