SOME ASPECTS OF THE HOST-PARASITE RELATIONSHIP BETWEEN GOATS AND GASTROINTESTINAL NEMATODES

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ABSTRACT

Experiments were conducted investigating the acquisition, by goats, of resistance to *Haemonchus contortus* and *Trichostrongylus colubriformis*. Neither 5.5 or 14 months old Saanen goats given a trickle infection with *H. contortus*, which was terminated with anthelmintic after 10 and 14 weeks respectively, showed significant resistance to a challenge infection. Serum pepsinogen levels rose significantly as a result of infection. Serum gastrin levels also rose as a result of infection but, following challenge, were generally higher for naive goats than previously infected goats. There were no significant correlations between worm counts, gastrin and pepsinogen levels at the time of slaughter.

By contrast, a high level of resistance to *T. colubriformis* developed in 9 months old Saanen goats given trickle and two challenge infections. Goats exposed only to the two challenge infections developed worm burdens intermediate between, and significantly different from both trickle-infected and previously uninfected goats given just the second challenge. Both priming infections were removed with anthelmintic. Globule leukocyte (GL) counts in the proximal small intestine of trickle-infected goats were significantly higher than in goats given a single challenge infection, whilst counts for the group given two challenge infections were intermediate and not significantly different from other treatments. Nematode fecundity (eggs per female) and male:female ratios were also significantly decreased in the previously infected goats.

Ninety four percent of all *T. colubriformis* were found in the proximal 50% of the small intestine in both young goats and older goats. Male:female ratios increased and eggs/female nematode decreased with distance down the small intestine. Only about 50% of adult *T. colubriformis* were recovered from recently killed goats by opening and massaging the small intestine under running water.

Antiparasite activity of intestinal mucus from groups of Angora-cross goats killed 9, 18 or 27 days after infection with *T. colubriformis*, increased significantly in infected versus uninfected goats with no difference between infected groups. However, the establishment rate (57-67%) suggests little immunity was being expressed. Following infection, proximal small intestinal GL counts fell with time but there was still a clear negative relationship between GL counts and worm burdens. Mucosal mast cell and eosinophil counts showed no significant trends relative to duration of infection or worm

burden. Differential cell counts were made using a monoclonal antibody to sheep mast cells developed with diaminobenzidine, combined with haematoxylin and Biebrich's scarlet. This method was shown to be superior to others tried. In Angora-cross goats killed sequentially after removal of an infection with *T. colubriformis*, proximal small intestinal GL counts increased with time. However, antiparasite activity of intestinal mucus was consistently low. GL counts in all these Angora-cross goats were generally higher further down the intestine beyond the location of a large proportion of the *T. colubriformis* burden.

In Angora goats fitted with ileal cannulae and infected with *T. colubriformis*, antiparasite activity of ileal contents increased significantly with time after infection in all goats. However, the establishment rate (10.6-61.8%) indicated only a moderate degree of resistance was being expressed although a large proportion of established worms were inhibited L3s.

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TABLE OF CONTENTS

Location of Appendices

LIST OF FIGURES

LIST OF TABLES