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Equine gastrointestinal parasites

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HBLB's Veterinary Advisory Committee

Keeping ahead of the worms!



Intestinal parasites (worms) in the horse can cause significant and potentially life threatening disease. Signs include ill-thrift, weight loss, colic and diarrhoea.



'Worms' can cause ill thrift in horses

Currently there is a real concern that worms are becoming resistant to the drugs used to expel them from the body. Dosing at intervals is expensive and often unnecessary and furthermore, the overuse of drugs promotes the development of parasite drug resistance.

Internal parasite control



It is important to keep worms under control, by pasture care (frequent and regular dropping removal) and the appropriate use of currently available medication (anthelmintic drugs).

It has become clear that worms are becoming increasingly resistant to these drugs and that their routine 'overuse' may even promote the development of resistance.

This means that pasture care is even more important and that drugs should be used on the basis of the needs of individual horses, requiring individual assessments.



Working in the laboratory

The HBLB (Horserace Betting Levy Board) over recent years has funded a great deal of research into certain areas of parasite control in horses and what follows is a summary of the type of work this funding has allowed and what that might mean for horse welfare.

Understanding the Species

One of the difficulties in knowing how to control horse worms is having an incomplete understanding of all the species that can affect

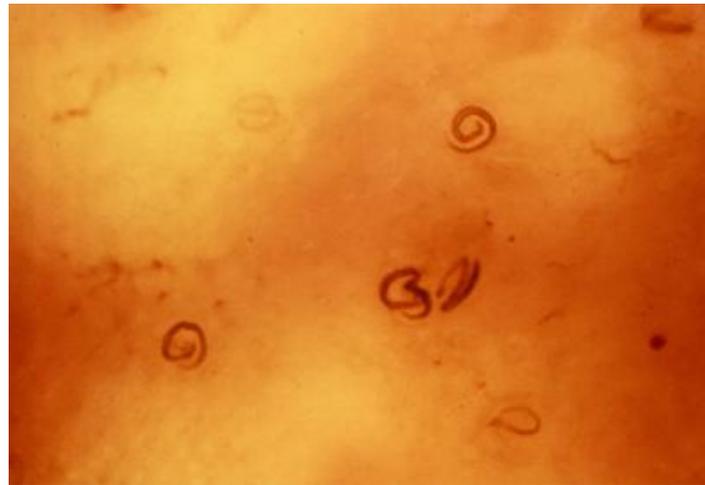


the horse; for example some of the more than 50 species of the small red worms (cyathostomins) are capable of causing more disease than others.

Knowing which are the more dangerous (pathogenic) is now possible thanks to HBLB funded work carried out by Professor J Matthews (Moredun Research Institute) and Professor S Love (Univ. Of Glasgow). Over the last 10-15 years the Matthews group, in particular, has developed DNA-based tools which have allowed non invasive identification of the species in the horse. This has been an important breakthrough as many of the species could only previously be identified when they were at the stage where they are buried in the gut wall or at least still in the intestine.



Knowledge of the different species and their pathogenicity will help with the development of treatment protocols that target the most important worms.



Cyathostomins developing larvae in the large intestine



Resistance to Drugs (Anthelmintics)

The drugs we have available to treat the most important round worms in horses i.e. small red worms (cyathostomins) fall into three types; the macrocyclic lactones (MLs) e.g. *Equest*, the tetrahydropyrimidines (THPs) e.g. *Strongid P* and the benzimidazoles (BZs) e.g. *Panacur*. Worryingly some worm populations have developed resistance to all three classes of drug. Knowing if there is resistance to a particular wormer in a population is most important and HBLB funded work by Professor J Matthews (Moredun Research Institute) and Dr J Hodgkinson (Univ. Of Liverpool) has already enabled an understanding of the species and mechanisms involved in drug resistance. The group has developed techniques, working at the gene level, which have greatly increased the speed and accuracy of detecting drug resistance in particular worm species.



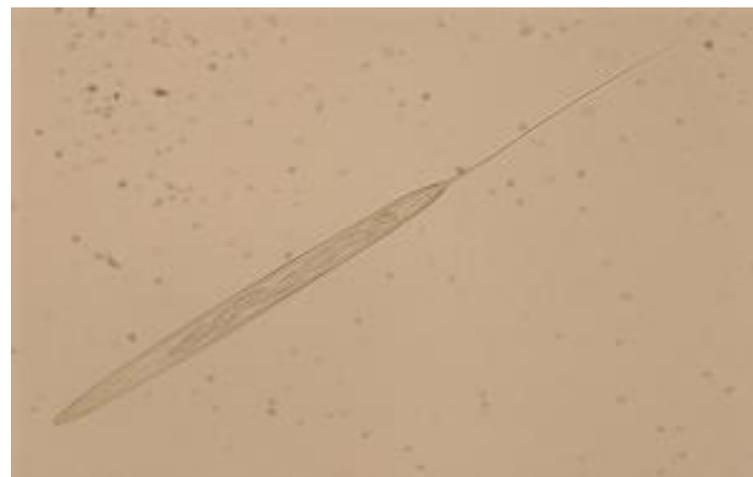
The faecal egg count reduction test i.e. noting the number of worm eggs in faecal samples before and after treatment with the routinely available drugs has been developed by the group and is being honed further to be a useful tool for monitoring the effectiveness of wormers used on individual premises.



*Strongyle eggs as detected by standard FEC method.
Image at 40X magnification.*



The larval migration assay (LMA) is a more sensitive method of detecting early signs of resistance to a drug in a worm population. Work has shown that once faecal egg count reduction tests have identified that a particular worm population has a proportion of worms that have developed resistance to the ML drugs it is too late to change that proportion of resistant worms. It is essential therefore to identify resistance as early as possible and the LMA technique developed by the Matthews group, funded by the HBLB, is helping to do just that.



Cyathostomin third stage larva. These are the infective stages. These are the stages used in the LMA



Finally, the Matthews group, again funded by the HBLB is in the process of developing what should be of great help in the quest for better management and control of those cyathostomins that do so much damage while protected in the gut wall of the horse host. They hope in the short to medium term to have a **commercially available diagnostic test**, a blood test that would give an accurate indication of the level of burden an individual horse is suffering. This would allow immediate targeted treatment at an earlier stage and of course show too if treatment was not needed which is also so important in preserving the effectiveness of the wormers (anthelmintics) we have available.



To find out more about HBLB's research go to:

- HBLB's Advances in equine veterinary science and practice

http://onlinelibrary.wiley.com/journal/10.1001/%28ISN%292042-3306/homepage/hblb_virtual_issue.htm
