

New insights into molecular identification of equine cyathostomes: significant scope for improved diagnosis and infection control

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Cyathostomes or cyathostomins (Nematoda, Strongylida) are currently considered the most important helminth parasites of horses. They cause intestinal syndromes and distress with symptoms of different degree of severity. Moreover, the larval cyathostomes encyst in the large intestinal mucosa and their synchronous emergence from the colon and cecum wall cause a life-threatening syndrome known as “larval cyathostomosis” or “larval cyathostominosis”. In the past decades drug resistance has emerged as a serious threat for the control of cyathostomes and for the health management of horses in several countries. Nonetheless, information at species level on the diffusion, biology, epidemiology and pathogenic role of resistant cyathostomes strongyles are few, mainly due to inherent difficulties in the identification at any biological stage. Recently, the ability of a Reverse Line Blot (RLB) assay to identify the most common species of cyathostomes was demonstrated. The assay relies on the specific hybridization of PCR-amplified InterGenic Spacer (IGS) fragments of ribosomal DNA (rDNA) to membrane-bound species specific probes. Specifically, thirteen cyathostome species can be unequivocally identified and simultaneously discriminated from each other with such assay, enabling an accurate and rapid identification irrespective of their life cycle stage. This assay opens important possibilities for a better understanding of the biology and epidemiology of cyathostomes, and the pathogenesis of associated diseases. This innovative molecular method is also a powerful diagnostic tool to determine the role of individual species in the pathogenesis of mixed infections and to elucidate little known aspects of cyathostominosis. A further application of this highly sensitive and specific RLB assay would be useful in the detection and monitoring for the presence of anthelmintic resistant cyathostomes and their distribution at species level, thus opening new options for the control of equine cyathostomosis.