

# **Effects of Anthelmintics on Microbial Diversity in the Gastrointestinal Tracts of Horses**

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Bacteria play a crucial role in the gastrointestinal health of both humans and animals and these microbial populations can be easily disrupted by stress, antibiotics and other drug compounds. Horses are often given anthelmintic drugs to reduce internal parasite loads and although their modes of action are well known, there is a lack of knowledge of their effect on the gastrointestinal microflora in horses. Previous research in dogs has demonstrated that the oral administration of anthelmintic drugs has no effect on the microflora. In this study, nine horses received a single dose of pyrantel pamoate paste based on their body weight. After 60 d, the horses received a single dose of ivermectin based on their body weight. Fecal samples were collected prior to the administration of the anthelmintic (d0) and 2, 7 and 14 days post-anthelmintic administration to evaluate changes in the gastrointestinal microflora. Throughout the study, the horses will be housed in outdoor paddocks with access to shelter, water and mixed grass hay at all times. Bacterial DNA was extracted from the fecal samples using a modified Repeated Bead Beating Plus Column (RBB+C) method. The extracted DNA was purified and subjected to PCR using universal primers specific to 16S rRNA gene sequences. PCR products were then subjected to denaturing gradient gel electrophoresis (DGGE) analyses and images from DGGE were captured and analyzed with Bionumerics software to compare microbial diversity between anthelmintics. PCR using universal primers was successful in amplifying the 200 bp region of interest in all samples. DGGE analysis of the fecal samples revealed that the administration of anthelmintics influenced the microbial diversity in the gastrointestinal tracts of horses, regardless of the type of anthelmintic used.