

Effects of DNA extraction procedures on *Bacteroides* profiles in fecal samples from various animals determined by terminal restriction fragment length polymorphism analysis

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A major assumption in microbial source tracking is that some fecal bacteria are specific to a host animal, and thus provide unique microbial fingerprints that can be used to differentiate hosts. However, the DNA information obtained from a particular sample may be biased depending on the performance of the extraction procedure. In this study, we compared profiles generated by T-RFLP analysis to determine the diversity of *Bacteroides* communities in different animal hosts obtained by different DNA extraction procedures. A total of 29 feces from nine animals and three sludge samples from a wastewater treatment facility were collected and tested to identify unique T-RFs. DNA was extracted using five different commercial DNA purification kits, amplified with FAM-labeled general *Bacteroidales* marker (Bac32F) and digested with *Hae*III for 16 hrs at 37°C. Fecal DNA was generally extracted more efficiently by the kits employing the bead-beating method; however, T-RFs profiles displayed more background noise. Profiles of T-RFs indicated that the diversity of fecal *Bacteroides* varied significantly in fecal material from the same animal source when extracted using different procedures. Therefore, the extraction procedure needs to be taken into consideration when studying the structure and composition of the microbial community as output from the different procedures may influence the perceived diversity of the sample. *Bacteroides* T-RFs were more abundant in fecal DNA from ruminants which were found to be distinctly different from the patterns derived from other animal fecal communities. Host specific T-RFs were identified in the fecal DNA from pig, deer, and sheep, regardless of the kit used for DNA extraction. The variability of T-RFs among feces from various animals could be used for identification of host-specific fingerprints in microbial source tracking studies.

Topic: Q11 Indicators of Fecal Pollution

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