

## TO POOP OR NOT TO POOP? THAT IS THE QUESTION!

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Fecal samples or fecal-matter stained tissue papers may be the only evidence left at a crime scene. Thus, human stool evidence can be a valuable source of forensic DNA evidence. However, due to large gastrointestinal microbial presence in the gastrointestinal tracts, extraction of human DNA from feces may be challenging. Furthermore, stool contains high levels of compounds that can degrade DNA, and inhibit downstream PCR reactions. These compounds must be removed for reliable analysis of extracted DNA. For these reasons, organic extraction or procedures such as Chelex<sup>®</sup> extraction may not be useful in extracting PCR-Quality DNA.

In the current study human stool samples from eight donors with known STR types were extracted by various procedures. QIAamp<sup>®</sup> DNA Stool Mini Kit from QIAGEN Inc., (Valencia, CA) and the UltraClean<sup>™</sup> Fecal DNA Isolation Kit from MO BIO Laboratories, Inc., (Solana Beach, CA) was used for extraction of DNA from human stools. All stool samples were also subjected to conventional organic extraction. The STR profiles of these donors were obtained from their bloodstains and buccal swabs. Conventional organic extraction and Chelex<sup>®</sup> DNA extraction procedures were used to obtain DNA from these samples.

DNA from each of the samples was quantitated using a QuantiBlot<sup>™</sup> Human DNA Quantitation kit from Applied Biosystems. The commercially available kits, AmpF/STR<sup>®</sup> Profiler Plus<sup>®</sup>, COfiler<sup>®</sup>, Identifier<sup>®</sup> from Applied Biosystems and the PowerPlex<sup>®</sup> 16 System from Promega Corporation were used to detect STR alleles from the stool samples. The male DNA samples were also amplified using Y-Plex 6 from ReliaGene Technologies, Inc., (New Orleans, LA).

Complete profiles of the STR loci were detected using the primers from the commercially available human identification kits. Alleles at the six Y-STR loci were detected from the male samples when primers were used from the Y-Plex 6 kit. The detection of the alleles was possible when DNA was extracted either by the QIAamp<sup>®</sup> DNA Stool Mini Kit from QIAGEN Inc., or by the UltraClean<sup>™</sup> Fecal DNA Isolation Kit from MO BIO Laboratories, Inc. Stool samples using organic extraction detected some of the STR alleles but inhibitors were commonly encountered in these samples.