Y-CHROMOSOME SPECIFIC STRs ANALYSIS USING Y-PLEX™ 6 AMPLIFICATION KIT

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The human Y chromosome is male specific and is present in normal males in single copy. DNA polymorphism detected on the human Y-chromosome is equivalent to its autosomal counterparts. The analysis of Y-chromosome polymorphism is useful for paternity involving male offspring or missing male offspring, evolutionary studies and for human identification. It is particularly useful in sexual assault cases where mixtures of male and female body fluids are involved. In evidence samples where the body fluids of male and female donors are mixed, Y-chromosome markers can yield specific information about the perpetrator. In seminal stains encountered in sexual assault cases where small amounts of male DNA fraction are mixed with a large amount of female DNA, it is possible to type the male DNA specifically. In sexual assault cases where there might be more than one male contributor, detection of Y-chromosomal STR alleles can be used to determine the number and the identity of all contributors.

DNA was isolated from blood, hair and body fluids such as semen from vasectomized men, stained semen smear slide, postcoital slides, toothbrush, paraffin embedded tissue, bones, nails, envelopes, bloodstains deposited on Isocode® card, and FTA® Micro Card etc. by organic extraction or by using Chelex® extraction procedures. Bloodstain from various animals were also extracted. Amplification and the reactions for PCR were prepared according to the manufacturer's recommended protocol. Approximately 1.0-2.0 ng of the extracted DNA from each sample was used for amplification with the Y-PLEX™6 amplification kit. The amplified products were analyzed by capillary electrophoresis on an ABI PRISM® 310 Genetic Analyzer instrument. The data was analyzed by GeneScan® Analysis Software.
Y-Typer template was used for the automated genotyping of the 6 STR loci.

Results indicated that Y-chromosome specific STR locus profiles can be generated from a wide variety of samples using Y-PLEX™6 STR kit. The data can be used for y-chromosomal analysis in forensic casework. Alleles were not detected using non-human DNA, thus the primers used are human specific.