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Sri Lankan population data on three short tandem repeat (STR) loci D16S539, D7S820 and D13S517

DNA typing, fingerprinting or profiling is the characterization of individuals at the level of their hereditary material, DNA.

Short tandem repeat (STR) analysis is the latest method and is fast becoming the method of choice in forensic DNA testing. STR loci or microstellites is a subgroup of the highly polymorphic variable number of tandem repeats (VNTR). They are composed of tandemly repeated sequences of 1 to 6 bp in length and are abundant in the human genome. Three tetrameric STR loci, D16S539, D7S820, D13S517 were size fractionated by polyacrylamide gel electrophoresis and visualized by silver staining, and allele size determined by comparison with an allelic ladder marker.

The objective of this study was to evaluate the suitability of these STR loci, for identity testing and paternity testing in individuals of the Sri Lankan population, and establish theoretical values for various statistical parameters, which are used in the expression of the accuracy of the tests.

Allele and genotype frequencies, for 109 unrelated individuals in the Sri Lankan population were determined. At none of the three loci was any genotype that occurred above 30% frequency, thereby indicating the efficiency of these loci for discrimination as well as parentage exclusionary purposes. The heterozygosities for the three loci for the Sri Lankan population were relatively high, ranging from 76.9% to 86.5%.

The matching probability for all three loci was 2.76×10^{-4} or a match in all three loci for 1 in every 3616 individuals. The polymorphism information content indicated that all three loci were highly informative, and the paternity index for the three loci was 23.267 and the combined power of exclusion was 0.2558. The three STR loci show a high degree of polymorphism and power of discrimination, and are suitable for forensic casework in Sri Lanka and paternity testing.