

Population data for CSF1PO, TPOX, THO1, D16S539, D7S820, D13S317, FESFPS, vWA and F13B short tandem repeat (STR) polymorphisms in Sri Lanka

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Short tandem repeats (STR) are highly polymorphic loci containing tandemly repeated sequences and widely used for human identification and parentage testing. For the purpose of applying DNA technology to human identity testing and with a view of establishing a national DNA data base, this preliminary study was carried out to determine the allele frequencies and forensic efficiency parameters for the STRs CSF1PO, TPOX, THO1, D16S539, D7S820, D13S317, vWA, FESFPS and F13B in a sample population of Sri Lankans. Test samples were obtained from individuals and forensic specimens that were referred to the Molecular Medicine Unit by the legal and forensic authorities. DNA was extracted from whole blood using chelex-100 and amplified by PCR using locus specific primers (Promega). The alleles, separated in denaturing polyacrylamide gels, were assigned by comparison with appropriate allelic ladders and the final DNA profiles were analyzed for forensic efficiency parameters and paternity indices by the Promega software, PowerStats version 12. The common forensic efficiency parameters: matching probability (MP), power of discrimination (PD), polymorphic information content (PIC); paternity statistics: power of exclusion (PE), typical paternity index (TPI); and allelic parameters: homozygotes, heterozygotes, common allele frequencies, common genotypes were calculated for the 9 STR loci used in this study.

Most of the common alleles included in the allelic ladders were found to be present in this study population. Most frequent alleles were 11 and 12 of CSF1PO, 8 and 11 of TPOX, 6 and 9 of THO1, 11 and 12 of D16S539, 10 and 8 of D7S820, 11 and 12 of D13S317, 11 and 12 of FESFPS, 16 and 17 of vWA, and 8, 9, 10 for F13 B. The most common genotypes for loci CSF1PO, TPOX, THO1, D16S539, D7S820, D13S317, FESFPS, vWA, and F13B were 11/12, 8/11, 9/9, 11/12, 10/11, 11/12, 11/12, 16/17, 10/10 respectively. PIC values >0.5 for all 9 STR loci indicate this STR system to be informative and useful for identification purposes. The vWA locus is the most polymorphic of the system studied which results in the relatively high values of the calculated indices. In conclusion, results of this preliminary study indicate the 9 STR loci system can be used in human identification for forensic and parentage testing for legal purposes. However, different population studies are necessary to generate a more representative and informative national database.

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