

'The Egyptian Population Data for 10 Y-Chromosome Specific STRs'

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Y chromosome-specific STRs have proved to be an important tool in paternity cases, especially when the alleged father is deceased. It is possible to determine his complete Y chromosome haplotype by analyzing any relative male in the patrilineage. Y-STRs are also useful for analysis of stains in forensic investigations when a male suspect is involved, as is the case in most violent crimes, including sexual offenses. Mixtures of body fluids from different individuals are frequent, and Y chromosome analysis allows detection of a male DNA fraction in stains involving male/female mixtures and the direct determination of the Y haplotype without differential extraction. This is advantageous in cases of rape committed by azoospermic individuals.

Y-STRs are the most used Y chromosome markers in the forensic field due to their typing simplicity and high level of diversity. STR typing involves simple and reliable polymerase chain reaction (PCR), these markers are the best characterized for amplification performance and specificity, multiplex amplification strategies, sequence structure and nomenclature, as well as worldwide allele frequency distributions.

Objective : The objective of the present work : 1.To establish basic data base as regards the 10 Y-chromosome STR loci for Egyptians. 2. To evaluate the significance of an inclusion with Y-chromosome specific STRs after establishing haplotype frequencies for the examined population group.

Nature of Study : Population Study.

Materials, Methods and Results: The study was conducted on blood samples which were collected from unrelated healthy Egyptian adult males. DNA was extracted by both the organic phenol-chloroform, and FTATM paper extraction protocols, After quantitation of the extracted DNA (organic extraction only) amplification was carried out using about 1 ng of genomic DNA in a total reaction volume of 25 µl - one amplifications - for 10 loci - (DYS19, DYS385, DYS389I, DYS389II, DYS390, DYS391, DYS392, DYS393, DYS438 and DYS439) using PowerPlex Y-STR kit from Promega. The amplified product was tested on the ABI 310 genetic analyzer and the obtained profiles were interpreted and analyzed using Gene Scan analysis software (PE Applied Biosystems) and the genotypes were determined by using the Genotyper DNA fragment analysis software (PE Applied Biosystems) with the Power Typer Y Macro. Haplotype frequencies were calculated for each STR locus for U.A.E. population and other population groups, frequencies were calculated through the gene counting method, haplotypes and gene diversity was calculated. The obtained results were compared with relevant Arab and other ethnic groups database.

Key Words :

Forensic DNA, Y-Chromosome STRs, Egyptian Population