POPULATION GENETIC DATA ANALYSIS AND ALLELE FREQUENCIES FOR TEN STR LOCI (D21S311, D18S51, D16S539, D13S317, D8S1179, D7S820, D5S818, TPOX , THO1 & vWA) IN IRANIAN TURK AND SISTANI ETHNICS

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Population genetics and forensic biology are linked together inextricably. Autosomal short tandem repeats (STRs) are hyper variable markers that can provide the better understanding needed to determine relationships among closely related populations in evolutionary history and provide the allelic distributions used in forensic calculations at the same time. The objective of this study was investigated genetically characterize and distribute the ten STRs allele frequencies (D21S311, D18S51, D16S539, D13S317, D8S1179, D7S820, D5S818, TPOX , THO1 & vWA) of 150 Iranian unrelated healthy donors (woman and man) living in different regions of Azarbayjan and Sistan & Baluchestan province. The PCR amplification was carried out in final volume of 25µl with the special annealing temperature for a pair of primer without the extension time. The PCR products were separated by

electrophoresis on denaturing 8% polyacrylamide gel, using the Gel Sequencing System of the Bio-RAD company. The PopGen32 and Power Stats v.1.2 software was used for investigation of population and forensic parameters. The most and least alleles were observed in D21S311 (13 alleles) and TPOX markers (6 alleles) and D21S311 (17 alleles) and TPOX markers (6 alleles) at the Turk and Sistan population respectively. The heterozygote content was different from 0.6414 ± 0.0469 (THO1) to 0.9179 ± 0.0469 (D5S818) and 0.6234 ± 0.0469 (TPOX) to 0.9519 ± 0.0469 (D21S311) for Turk and Sistan population respectively. Deviation from Hardy Weinberg equilibrium was seen in the locus of vWA (P=0.0425) and TPOX (P= 0.0347). This decrease in equilibrium was eliminated under the Bonfferroni correction ($P<0.05$). Based upon the allelic frequencies, several important forensic parameters were calculated. The Polymorphic Index Content were variable from 0.58 (TPOX) to 0.84 (D21S311) and 0.62 (TPOX) to 0.95 (D21S311), Power of Discrimination from 0.781 (TPOX) to 0.947 (D21S311) and 0.879 (TPOX) to 0.966 (D21S311), Power of Exclusion from 0.3519 (THO1) to 0.826 (D5S818) and 0.327 (TPOX) to 0.909 (D21S311) at the Turk and Sistan population respectively. The Paternity Index from were variable from 1.42 (THO1) to 5.88 (D5S818) and 1.35 (TPOX) to 11.13 (D21S311) at the Turk and Sistan population

respectively, that is indicative good information for all of the STRs. The results showed that the D18S51 locus was more effective marker to investigate Iranian Turk and Sistan ethnics population and microsatellite markers are useful for identification, paternal traits test and population genetic studies. Also, the results indicated that the integrative relationship between population genetics and forensic science parameters can be useful for a thorough genetic characterization of extant human ethnics populations.

Keywords: Allele frequencies, STRs marker, Turk and Sistan ethnics, Population genetics and forensic parameters.