GENETIC DIVERSITY, ADMIXTURE, AND STRUCTURE OF THE MEXICAN POPULATION BASED ON THE X-STR DECAPLEX SYSTEM

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X-STRs have demonstrated to be an important tool to solve complex kinship cases, which requires population studies for interpretation purposes. Therefore, we studied the X-STR Decaplex system (Gusmao et al., 2009) in 529 DNA samples of Mexican-Mestizo (admixed) populations from five geographic regions (North-West, North-East, West, Center, and South-East). Forensic parameters were estimated for each and combined loci, demonstrating enough potential for individual discrimination and paternity analysis. In general, Hardy-Weinberg by locus and linkage equilibrium between loci was verified. Interestingly, non-significant differentiation was observed between Mexican-Mestizos for this X-linked genetic system (F_{st}= 0.0021; p= 0.74389), contrary to previous results with autosomal STRs, Y-linked and mtDNA loci, and genome-wide SNPs. We analyzed a Native American population sample for STRUCTURE analysis, including one African and one European population reference. Thus, we obtained a similar -but more even- pattern of admixture than the observed with autosomal STRs with prevalence of the Native American ancestry. This fact could explain the above-described relative genetic homogeneity for this X-linked system. In forensic casework, this allows that one unique database be used for interpretation of X-STR genotypes in Mestizos, which constitute most of the Mexican population (~90%).