FOR THE RECORD

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Population Frequencies for CSF1PO, TPOX, TH01, F13A01, FES/FPS and VWA in Seven Amerindian Populations from Colombia

POPULATION: The Amerindian population of Colombia represents around 1.7% of the population (1,2). They belong to different linguistic families (Chibcha, Tukano, Arawak, Guahibo, Choco, Maku, Karib, and Quechua among others). The Amerindian tribes of Colombia are located in the Amazonian/Orinoquian region, the Northeast, Southwest and Pacific regions of Colombia. Few studies have been carried out for STR variability among Amerindian tribes (3–5). On the other hand, several studies have been performed for STR variability in Caucasian and Afro-Colombian populations (1,2,6–10).

We have carried out a study in 7 Amerindian populations named Cubeo (n = 49), Curripaco (n = 32), Desano (n = 28), Tucano (n = 26), Embera (n = 31), Puinabe (n = 77), and Nukak (n = 29) for 6 STR loci (CSF1PO, TPOX, TH01, F13A01, FES/FPS and VWA) to determine allele frequencies and other parameters of forensic importance.

KEYWORDS: forensic science, DNA, short tandem repeats, population genetics, Amerindian, Colombia

The F13A01, FES/FPS, VWA, CSF1PO, TPOX and TH01 STR loci were amplified from DNA isolated from whole blood using two triplex systems (GenePrint, Promega Corporation). The amplification conditions were identical to those proposed by the manufacturer. All amplifications were carried out in a MJ Research PTC100 VG thermocycler.

The amplification products were resolved in a 4% Acrylamide-Bis-Acrylamide denaturing gel and silver nitrate stained. Allelic designations were based on the recommendations by the DNA Commission of the International Society for Forensic Genetics (ISFG) (11) with the aid of allelic ladders provided in each kit. Quality control and proficiency testing for these systems have been carried out for the GEP-ISFG working group and CTS (Collaborative Testing Services).

The statistical evaluation was carried out with the aid of GDA and PowerStats software packages (12,13). The analysis included the possible divergence from Hardy-Weinberg equilibrium, observed and expected heterozygosity, power of exclusion (PE), polymorphic information content (PIC), discrimination power (DP) and an analysis for association between loci. Minimum allele frequencies for PCR-based loci, based on statistical and population genetics theory (14), were determined. Thus, a greater confidence of the DNA profile frequency estimates can be attained with current size databases.

Statistical significant differences were detected in allele frequencies when compared the Amerindian populations with the Caucasian-Mestizo and Black populations of Colombia (data not shown). In addition, a limited number of alleles were detected for all loci analyzed; despite of this finding, the heterozygosity level was comparable to those observed in Caucasian-Mestizo and Afro-Colombian populations.

All seven populations do not deviate from Hardy-Weinberg expectations with the exception for VWA in the Desano tribe.
observed in the sample population shows that the observed num-

bers of distinct heterozygote and homozygote genotypes (15) are in accordance with their respective HWE predictions.

There were four possible associations found out of the 75 comparisons performed representing a 5% (near to the expected). They corresponded to F13A01/VA/W in the Desano tribe (0.0075), TPOX/FESFPS (0.0155) in the Tucano tribe, TPOX/FESFPS (0.0295) in the Cubeo tribe and TPOX/TH01 (0.0045) in the Embera tribe. The data suggest that there is little evidence of deviation from independence in the populations studied.

The complete dataset is available to any researcher via electronic mail from the corresponding author at jjyunisl@unal.edu.co

References


8. Gomez MV, Reyes ME, Cardenas H, Garcia O. Genetic variation for 7 STR loci in a Colombian population (Department of Valle del Cauca).


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