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Otomi Amerindian population (Mexico) characterized by HUMVWA, HUMTH01, HUMTPOX, HUMCSF1PO, D3S1358, and D19S253 STR-PCR polymorphisms

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Abstract

Six STR (HumvWA, HumTH01, HumTPOX, HumCSF1PO, D3S1358 and D19S253) have been analyzed in an Otomi population sample from Mexico. No deviations from Hardy–Weinberg equilibrium were found for all systems studied. Significant differences in allele frequencies were found between the Aymara and Otomi populations for four systems (HumTH01, HumvWA, D3S1358 and D19S253). This suggest a certain degree of genetic differentiation between the two populations.

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1. Introduction

The aim of this study was to report allele frequency distributions for HumvWA, HumTH01, HumTPOX, CSF1PO, D3S1358 and D19S253 in an Otomi population of Ame-

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Allele	VWA (N=53)	TH01 (N=83)	TPOX (N=81)	CSF1PO (N=78)	D3S1358 (N=72)	D19S253 (N=71)
7		0.410				0.113
8		0.006	0.444			0.014
9		0.006	0.012	0.006		0.035
9.3 + 10		0.205				
10			0.019	0.186		0.021
11			0.407	0.288		0.120
12	0.019		0.117	0.481		0.345
13				0.038	0.007	0.232
14	0.047				0.049	0.113
15	0.028				0.576	0.007
16	0.330				0.174	
17	0.321				0.174	
18	0.198				0.014	
19	0.038				0.007	
20	0.019					
HWE Exact test	P = 0.512	P = 0.108	P = 0.605	P = 0.624	P = 0.541	P = 0.344

Table 1 Allele frequencies in the Otomi population sample studied

rindian ethnic origin, from El Buena and San Andrés Dabotxtá (Ixmiquilpan Valley, Hidalgo State, Mexico).

2. Material and methods

DNA was extracted from single hair root samples by ChelexTM 100 using the method described by Walsh et al. [1]. PCR amplifications were accomplished with fluorescein labeled primers by methods described by Gené et al. [2–4]. Genotypes were analyzed in denaturing 6% polyacrylamide gel electrophoresis, using a monochrome automated laser fluorescence sequencer. For the indicated markers, possible divergence from Hardy–Weinberg equilibrium (HWE) was determined by using the exact test proposed by Guo

System	Н	PD	CE
VWA	0.751	0.893	0.517
TH01	0.655	0.805	0.364
TPOX	0.626	0.871	0.342
CSF1PO	0.654	0.816	0.383
D3S1358	0.609	0.800	0.371
D19S253	0.791	0.925	0.592
Accumulated value		0.999	0.968

Table 2 Statistical parameters of medico-legal interest

H: Observed heterozygosity value.

PD: Power of discrimination.

CE: Chance of exclusion.

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and Thompson [5]. From a forensic point of view, the power of discrimination (PD) [6] and the a priori chance of exclusion value (CE) [7] were calculated. The Otomi data were compared with those from the Aymara population using a $R \times C$ contingency table χ^2 test for homogeneity.

3. Results and discussion

Allele frequencies are shown in Table 1. The distribution of genotypes for all loci was in Hardy–Weinberg equilibrium. The PD and CE values for the six systems are shown in Table 2. The results were compared with those of Aymara Indians previously studied by our group [8]. The comparisons have been carried out only with four polymorphisms (HumvWA, HumTH01, D3S1358 and D19S253). Statistically significant differences were observed for all the systems. This suggests some genetic diversity between the two groups.

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