

BRIEF COMMUNICATION

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Distribution of D1S80 Alleles in the Bahrainian Population

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ABSTRACT: This study demonstrates that the locus D1S80 is highly polymorphic in the Bahrainian population. There were 24 different D1S80 alleles and 51 distinct genotypes observed in 198 Bahrainians. There was one allele observed that was smaller than the 14 repeat allele. This data set meets the Hardy-Weinberg expectations (HWE) and could be a useful marker for parentage testing and forensic applications.

KEYWORDS: forensic science, D1S80, variable number of tandem repeats, population genetics, Bahrain, DNA typing, polymerase chain reaction

Population data on the D1S80 locus can be useful for forensic, paternity testing, and evolutionary studies. This paper presents allele frequency data for the D1S80 locus in the Bahrainian population.

Materials and Methods

Sample Preparation

Blood samples from 198 unrelated Bahrainians were collected in EDTA vacutainer tubes by venipuncture, dried stains prepared, and DNA was extracted as described previously (1).

D1S80 Typing

Amplification and typing of the D1S80 locus was carried out using standard protocols (2). Approximately 10 ng of genomic DNA were used as template. Amplification was carried out using a DNA thermal cycler model 480 (Perkin-Elmer Corp., Foster City, CA).

Alleles were separated by a SA32 vertical gel electrophoresis unit (Gibco-BRL, Gaithersburg, MD), using Geneamp detection gel (Perkin-Elmer Corp., Foster City, CA).

Statistical Analysis

The frequency of each allele was calculated and conformity to Hardy-Weinberg expectations (HWE) was determined as described previously (1).

TABLE 1—Allele frequencies in 198 unrelated Bahrainians.

Allele	Frequency (%)
<14	0.25
14	0.00
15	0.25
16	0.76
17	1.26
18	23.23
19	1.26
20	0.25
21	3.03
22	3.79
23	1.26
24	40.40
25	2.78
26	1.52
27	1.01
28	6.31
29	3.54
30	0.51
31	4.55
32	0.25
33	0.25
34	2.27
35	0.00
36	0.25
37	0.00
38	0.00
39	0.51
40	0.00
41	0.51
Total	100.00

Note: Observed homozygosity = 0.268; expected homozygosity (unbiased) = 0.227; HWE-Homozygosity test ($p = 0.174$), and exact test ($p = 0.199$).

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Results and Discussion

This study demonstrates that D1S80 is highly polymorphic in the Bahrainian population (Table 1). There were 24 different D1S80 alleles and 51 distinct genotypes observed in 198 Bahrainians. Consistent with other population studies, alleles 18 and 24 were the most frequent alleles observed. There was one allele observed that was smaller than the 14 repeat allele (smallest in the ladder). Observed heterozygosity was 73.2% and the data are in agreement with Hardy-Weinberg expectations ($p = 0.199$) (Table 1). The results indicate that the D1S80 locus in the Bahrainian population can be a useful genetic marker for forensic and paternity applications.

References

1. Budowle B, Baechtel F, Smerick J, Presley K, Giusti A, Parson G, et al. D1S80 population data in African Americans, Caucasians, southeastern Hispanics, southwestern Hispanics, and Orientals. *J Forensic Sci* 1995;40:38-44.
2. AmpliFLPD1S80 kit user's manual, Perkin-Elmer Corp., Foster City, CA.

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