FOR THE RECORD

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Population Data of Two Minisatellite Loci (D1S80 and D17S5) Among Five Distinct Ethnic Groups of India

Population: Five distinct ethnic population groups of India were studied: Konkanastha Brahmins (Konkanasthas) and Marathas from the state of Maharashtra (Western India) and Nairs, Ezhavas and Muslims from the state of Kerala (Southern India).

Keywords: forensic science, DNA typing, D1S80, D17S5, Indian population

Genomic DNA was extracted using a rapid nonenzymatic method (1). PCR amplification of both the loci was achieved by using locus specific primers flanking the repeat region (2,3) and carried out in a Hybaid™ thermal cycler. D17S5 locus required Expand Long Template system for PCR amplification as preferential amplification of shorter alleles was frequently observed when Taq polymerase was used (4). A total of 364 samples for D1S80 and 245 for D17S5 belonging to the five population groups have been studied. For both the loci, amplimers were resolved on 4% high-resolution polyacrylamide gel (170 × 190 × 1 mm) at 200V for 2 h and 30 min followed by silver staining (5). A composite allelic ladder (Cetus) was used for D1S80 while DNA molecular weight marker VIII (Roche Molecular Biochemicals) was employed for D17S5 locus.

Access to Data: Via electronic mail from communicating author.

Analysis of Data: The expected genotype frequencies for both the loci were calculated under the assumption of Hardy-Weinberg equilibrium expectation. The expected heterozygosity or gene diversity was calculated as by Nei et al. (6). The Polymorphic Information Content was determined according to Botstein et al. (7) and the Power of Discrimination was calculated as by Fisher (8).

For D1S80, the most common alleles 18 and 24 were distinctly most predominant among all the five population groups and their frequencies did not vary much within the population groups except for Nairs (Table 1). In case of D17S5, unlike D1S80 locus, none of the allele was predominant across all the populations (Table 2). The expected and observed heterozygosity showed no significant differences.

References

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TABLE 1—*Distribution of allele frequencies at D1S80 locus among five Indian population groups.*

Allele	Konkanasthas (N = 113) Freq ± S.D	Marathas (N = 87) Freq ± S.D	Nairs (N = 51) Freq ± S.D	Ezhavas (N = 60) Freq ± S.D	Muslims (N = 53) Freq ± S.D
14	0.013 ± 0.008 (3)	…	…	…	…
15	0.009 ± 0.006 (2)	…	0.010 ± 0.010 (1)	…	…
16	0.049 ± 0.014 (11)	0.046 ± 0.016 (8)	0.059 ± 0.023 (6)	0.042 ± 0.018 (5)	0.009 ± 0.009 (1)
17	0.004 ± 0.004 (1)	…	…	…	…
18	0.297 ± 0.030 (67)	0.345 ± 0.036 (60)	0.431 ± 0.049 (44)	0.350 ± 0.044 (42)	0.330 ± 0.046 (35)
19	0.009 ± 0.006 (2)	0.046 ± 0.016 (8)	…	0.025 ± 0.014 (3)	0.009 ± 0.009 (1)
21	0.004 ± 0.004 (1)	0.035 ± 0.014 (6)	0.010 ± 0.010 (1)	0.017 ± 0.012 (2)	0.009 ± 0.009 (1)
22	0.022 ± 0.010 (5)	0.035 ± 0.014 (6)	0.069 ± 0.025 (7)	0.042 ± 0.018 (5)	0.028 ± 0.016 (3)
23	0.022 ± 0.010 (5)	0.035 ± 0.014 (6)	0.020 ± 0.014 (2)	0.008 ± 0.008 (1)	0.028 ± 0.016 (3)
24	0.305 ± 0.031 (69)	0.305 ± 0.035 (53)	0.226 ± 0.042 (23)	0.325 ± 0.043 (39)	0.293 ± 0.044 (31)
25	0.035 ± 0.012 (8)	0.017 ± 0.010 (3)	0.010 ± 0.010 (1)	0.042 ± 0.018 (5)	0.066 ± 0.024 (7)
26	0.013 ± 0.008 (3)	0.012 ± 0.008 (2)	0.020 ± 0.014 (2)	0.008 ± 0.008 (1)	0.009 ± 0.009 (1)
27	0.040 ± 0.013 (9)	…	…	…	0.009 ± 0.009 (1)
28	0.053 ± 0.015 (12)	0.040 ± 0.015 (7)	0.040 ± 0.020 (4)	0.050 ± 0.020 (6)	0.066 ± 0.024 (7)
29	0.018 ± 0.009 (4)	0.029 ± 0.013 (5)	0.030 ± 0.017 (3)	0.017 ± 0.012 (2)	0.028 ± 0.016 (3)
30	0.013 ± 0.008 (3)	0.006 ± 0.006 (1)	0.010 ± 0.010 (1)	…	0.009 ± 0.009 (1)
31	0.066 ± 0.017 (15)	0.052 ± 0.017 (9)	0.059 ± 0.023 (6)	0.058 ± 0.022 (7)	0.085 ± 0.027 (9)
32	0.013 ± 0.008 (3)	…	…	…	…
33	…	…	…	…	0.019 ± 0.013 (2)
34	0.009 ± 0.006 (2)	…	…	0.008 ± 0.008 (1)	…
38	…	…	…	0.008 ± 0.008 (1)	…
39	0.004 ± .004 (1)	…	0.010 ± 0.010 (1)	…	…
H	0.65	0.74	0.82	0.75	0.81
h	0.81 ± 0.02	0.80 ± 0.02	0.76 ± 0.03	0.77 ± 0.03	0.79 ± 0.03
PIC	0.78	0.75	0.72	0.73	0.76
PD	0.94	0.92	0.90	0.90	0.89

N = No. of individuals; the number in the parenthesis denotes the observed number for each allele.
H = Observed heterozygosity; h = Expected heterozygosity; PIC = Polymorphic Information Content; PD = Power of Discrimination.

TABLE 2—*Distribution of allele frequencies at D17S5 locus among five Indian population groups.*

Allele	Konkanasthas (N = 80) Freq ± S.D	Marathas (N = 61) Freq ± S.D	Nairs (N = 35) Freq ± S.D	Ezhavas (N = 36) Freq ± S.D	Muslims (N = 33) Freq ± S.D
1	0.206 ± 0.032 (33)	0.246 ± 0.039 (30)	0.257 ± 0.052 (18)	0.153 ± 0.043 (11)	0.167 ± 0.046 (11)
2	0.119 ± 0.025 (19)	0.082 ± 0.025 (10)	0.043 ± 0.024 (3)	0.083 ± 0.033 (6)	0.136 ± 0.042 (9)
3	0.175 ± 0.030 (28)	0.107 ± 0.028 (13)	0.114 ± 0.038 (8)	0.139 ± 0.041 (10)	0.061 ± 0.029 (4)
4	0.225 ± 0.033 (36)	0.230 ± 0.038 (28)	0.214 ± 0.049 (15)	0.111 ± 0.037 (8)	0.136 ± 0.042 (9)
5	0.056 ± 0.018 (9)	0.066 ± 0.022 (8)	0.043 ± 0.024 (3)	0.083 ± 0.033 (6)	…
6	0.019 ± 0.010 (3)	0.033 ± 0.016 ((4)	0.043 ± 0.024 (3)	…	0.015 ± 0.015 (1)
7	0.031 ± 0.013 (5)	0.025 ± 0.014 (3)	0.014 ± 0.014 (1)	0.042 ± 0.024 (3)	0.045 ± 0.025 (3)
8	0.013 ± 0.008 (2)	0.016 ± 0.011 (2)	…	0.083 ± 0.033 (6)	0.030 ± 0.021 (2)
9	0.056 ± 0.018 (9)	0.057 ± 0.021 (7)	0.157 ± 0.044 (11)	0.153 ± 0.043 (11)	0.167 ± 0.046 (11)
10	0.056 ± 0.018 (9)	0.107 ± 0.028 (13)	0.071 ± 0.031 (5)	0.093 ± 0.035 (7)	0.167 ± 0.046 (11)
11	0.031 ± 0.013 (5)	0.008 ± 0.008 (1)	0.043 ± 0.024 (3)	0.055 ± 0.027 (4)	0.045 ± 0.021 (3)
12	…	0.016 ± 0.011 (2)	…	…	0.030 ± 0.021 (2)
13	0.013 ± 0.008 (2)	0.008 ± 0.008 (1)	…	…	…
H	0.90	0.87	0.69	0.83	0.79
h	0.85 ± 0.04	0.85 ± 0.04	0.87 ± 0.05	0.90 ± 0.05	0.88 ± 0.05
PIC	0.83	0.83	0.82	0.87	0.86
PD	0.96	0.96	0.96	0.98	0.97

N = No. of individuals; the number in the parenthesis denotes the observed number for each allele.
H = Observed heterozygosity; h = Expected heterozygosity; PIC = Polymorphic Information Content; PD = Power of Discrimination.