

FOR THE RECORD

Shazia Ahmad,¹ M.Sc.; and M. Seshadri,¹ Ph.D.

Polymorphism Data at D8S315 Locus Among Five Ethnic Groups of Kerala from South India

POPULATION: A total of 254 random, healthy individuals belonging to five distinct ethnic groups were analyzed for tetranucleotide repeat polymorphism at autosomal microsatellite locus D8S315. The five distinct ethnic groups: Ezhavas, Nairs, Arayas, Vishwakarma, and Muslims belonged to Kerala state of South India. Muslims are religio-ethnic group while other populations mentioned above belong to distinct section of Hindu religion. All these population groups speak "Malayalam," an Indo-Dravidian language.

KEYWORDS: forensic science, DNA typing, Indian population, short tandem repeat, tetranucleotide repeat, D8S315

Genomic DNA was extracted using rapid, non-enzymatic method (1).

PCR amplification was carried out using locus specific primers (2) flanking the repeat region (AAAG₂₂₋₃₅), in Eppendorf™ Gradient Master Cycler. The forward primer was fluorescently labeled using Cy5 dye amidite. The amplicons were electrophoresed on 6% denaturing polyacrylamide gel containing 7M urea using Alf Express DNA Sequencer (Amersham Pharmacia Biotech). Analysis was carried out using Fragment Analyzer software (3). In addition to external standard (107, 228, 395 bps), internal standards were also used in each lane of the gel.

Access to data: Via electronic mail from communicating author.

Analysis of Data: Allele frequencies were calculated by Gene Counting method. Heterozygosity was calculated using software Popgene ver 1.31 (4). The polymorphism information content (PIC) was calculated as per Bolstein et al. (5) and power of discrimination (PD) as mentioned by Fisher (6).

Allele frequencies for D8S315 are presented in Table 1. Thirty-two repeat alleles were predominant among Ezhavas and Nairs while Arayas, Vishwakarmas and Muslims had 31 repeat alleles as the predominant allele. The expected and observed heterozygosity did not show any significant difference. All five populations were in Hardy Weinberg equilibrium. High PIC (≥ 0.891) and PD (ranging

from 0.814–0.978) value of this STR showed this marker is informative and can be used for forensic DNA typing and paternity testing.

References

1. Lahiri K, Numberger JL. A rapid non-enzymatic method for the preparation of HMW DNA from blood for RFLP studies. *Nucleic Acid Res* 1991;19:5444. [[PubMed](#)]
2. Ping He, Nata M, Kanekate J, Ji G, Yan W, Liand X, et al. Polymorphism of short tandem repeat (STR) loci PLA2,D3S2459, D8S315(kw38), CYP19, D3S1359, FGA, and D8S1132 in the Japanese and Chinese populations. *Tohoku J Exp Med* 1997;183:251–62. [[PubMed](#)]
3. Fragment Analyser Software ver 1.0 Amersham Pharmacia Biotech U.K. 1998.
4. Yeh FC, Yang R, Boyle T. Popgene ver 1.31. Microsoft Window-based Freeware for population genetic analysis. University of Ulberta and Centre for International Forestry Research August 1999.
5. Bostein D, White RL, Skolnick M, Davis RW. Construction of genetic linkage map in man using restriction fragment length polymorphism. *Am J Hum Genet* 1980;32:314–31. [[PubMed](#)]
6. Fisher R. Standard calculations for evaluating a blood group System. *Heridity* 1951;5:95–102.

Additional information and reprint requests:
M. Seshadri, Ph.D.
Low Level Radiation Studies Section
Bhabha Atomic Research Centre
Trombay, Mumbai-400085
Maharashtra, India.
E-mail: msesh@apsara.barc.ernet.in

¹ Low Level Radiation Studies Section, Bio-Science Group, Bhabha Atomic Research Centre, Trombay, Mumbai-400085, Maharashtra, India.

TABLE 1—Allele frequency distribution at D8S315 in five Indian population groups.

Alleles		Ezhavas (n = 186)		Nairs (n = 84)		Arayas (n = 78)		Vishwakarmas (n = 40)		Muslims (n = 120)	
Repeats	Size (bp)	No. Obs	Freq	No. Obs	Freq	No. Obs	Freq	No. Obs	Freq	No. Obs	Freq
22	336	2	0.011	0	...	0	...	1	0.025	0	...
23	340	0	...	0	0	...
24	344	7	0.038	6	0.071	6	0.077	3	0.075	4	0.033
25	348	27	0.145	5	0.059	7	0.090	4	0.100	13	0.107
26	352	9	0.048	1	0.012	3	0.038	1	0.025	4	0.033
27	356	3	0.016	4	0.048	1	0.013	2	0.050	5	0.040
28	360	23	0.124	9	0.107	9	0.115	5	0.125	9	0.074
29	364	18	0.097	9	0.107	8	0.103	1	0.025	11	0.098
30	368	12	0.065	10	0.131	6	0.077	6	0.150	12	0.098
31	372	30	0.161	11	0.119	18	0.231	8	0.200	19	0.156
32	376	33	0.177	15	0.179	9	0.115	3	0.075	18	0.148
33	380	9	0.048	14	0.167	6	0.077	3	0.075	18	0.148
34	384	6	0.032	0	...	3	0.039	2	0.050	6	0.057
35	388	7	0.038	0	...	2	0.025	1	0.025	1	0.008

n = No of chromosomes.

TABLE 2—Statistical analysis of D8S315 microsatellite loci.

	Ezhavas	Nayers	Arayas	Vishwakarmas	Muslims
No of Alleles	13	10	12	13	12
H	0.860	0.857	0.795	0.900	0.820
h	0.904 ± 0.029	0.886 ± 0.044	0.891 ± 0.049	0.918 ± 0.061	0.896 ± 0.039
P	0.338	0.325	0.569	0.979	0.097
PIC	0.895	0.897	0.891	0.898	0.897
PD	0.926	0.959	0.973	0.814	0.978

H: Observed Hetrozygosity; h: Expected Hetrozygosity; P: Probability value for maximum likelihood ratio test for Hardy Weinberg Equilibrium; PIC: Polymorphism Information Content; PD: Power Of Discrimination.