

FOR THE RECORD

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Analysis of Penta D (15q) and Penta E (21q) STR Polymorphism in a Southern Italian Population Sample

POPULATION: Caucasians ($n = 134$)

KEYWORDS: forensic science, DNA typing, short tandem repeat, polymerase chain reaction, population genetics, South Italy, Sicily, penta D, penta E

Allele and genotype frequency data for two STR (pentanucleotide repeats) loci, penta D (15q) and penta E (21q), were obtained from a population study on a sample of 134 unrelated and healthy Caucasian inhabitants from the province of Messina (Eastern Sicily). After DNA extraction by Chelex[®] 100 method (1), PCR amplification was carried out on a thermal cycler ("PCR sprint," Hybaid) using, as primers, the same sequences contained in the "PowerPlex[®] 16 System" kit (2). Each PCR reaction was performed with 2.5 μ L extract (5–250 ng DNA), 0.5 μ M of each primer, 2.5 μ L Taq buffer (10 \times PCR Buffer II, Applied Biosystems), 2 μ L MgCl₂ 25 mM (Applied Biosystems), 0.5 μ L dNTPs mix (10 mM PCR Nucleotide Mix, Promega), 1 U Taq polymerase (DyNAzyme II DNA Polymerase, Finnzymes) in a total volume of 25 μ L. A total of 30 cycles were carried out with an initial incubation (preliminary denaturation) step at 96°C for 2 min and then, for first 10 cycles, as follows: at 94°C for 1 min (denaturation), at 60°C for 1 min (annealing) and at 70°C for 1.5 min (extension) and for last 20 cycles, as follows: at 90°C for 1 min (denaturation), at 60°C for 1 min (annealing) and at 70°C for 1.5 min (extension). A final extension step at 60°C for 30 min was also performed. The amplified products were vertically electrophoresed on ultrathin (0.2–0.4 mm) layer polyacrilamide denaturing gels (6% - urea 7M) in TBE buffer 1X and then revealed by silver staining (3). The allele classification was based on the number of repeats starting from standard DNA templates: K562, 9947A and 9948 as

TABLE 1—Penta D and Penta E allele frequencies and forensic efficiency data in a Southern Italian (Sicilian) population ($n = 134$).

Allele	Penta D	Penta E
3	0.003	...
5	...	0.078
7	0.007	0.175
8	0.014	0.041
9	0.223	0.014
10	0.164	0.067
11	0.179	0.070
12	0.089	0.175
13	0.190	0.111
14	0.089	0.041
15	0.029	0.067
16	0.003	0.041
17	0.003	0.052
18		0.022
19		0.026
20		0.003
21		0.011
HWE χ^2	0.56	0.88
P-value (exact test)	0.07	0.98
Hobs.	0.87	0.91
Hexp.	0.83	0.89
CE	0.67	0.79
DP	0.94	0.99

indicated in the "PowerPlex[®] 16 System technical manual" (4). Allele and genotype frequencies were determined and Hardy-Weinberg equilibrium was tested using a Chi-square method and an exact test according to an updated version (3.4, J) of the GENEPOP software (5).

The complete data (also including some statistical parameters) are available to any interested researcher upon request.

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