Int J Legal Med (1997) 110 : 109

SHORT COMMUNICATION

N. Dimo-Simonin · F. Grange · C. Brandt-Casadevall

F13B and CD4 allele frequencies in South West Switzerland

Received: 14 October 1996 / Accepted in revised form: 6 January 1997

Abstract Allele frequencies of the two short tandem repeat (STR) systems F13B and CD4 were determined in a population sample from South West Switzerland using PCR analysis. We found five alleles for both STRs in a population sample of 205 unrelated individuals. No significant deviation from Hardy-Weinberg equilibrium was observed.

Key words Short tandem repeat (STR) · F13B · CD4 · Population study · Switzerland

Introduction

The use of the short tandem repeat (STR) sytems F13B [1] and CD4 [2] is increasing in forensic cases as well as in paternity testing [3–7].

This study was performed to test the allele frequencies in a South West Swiss population sample.

Materials and methods

Blood samples DNA from 205 unrelated individuals from the Lausanne, Fribourg and Sion area were extracted using a saline procedure [8]. For amplification 1–5 ng was used according to published primer sequences and protocols [2, 6]. Electrophoresis conditions were according to Grange et al. [9] with some modifications. Alleles were designated by comparison with the specific ladders from Serac (Bad Homburg, FRG).

In addition, we have also analysed allele segregation in 46 paternity cases confirmed by RFLP-VNTR.

Statistics

The Hardy-Weinberg equilibrium hypothesis was tested using the software HWEANA19.EXE (HWE-Analysis, Version 3.2) developed and refined by Puers (1994/1995).

Results

The allele frequencies for F13B and CD4 in a South West Swiss population are shown in Tables 1 and 2, respectively. We found five alleles for each system. This population showed no significant deviation from Hardy-Weinberg equilibrium ($P > 0.05$) for both systems.

No mutations were found in 46 paternity cases confirmed by RFLP-VNTR sytems.

N. Dimo-Simonin (✉) · F. Grange · C. Brandt-Casadevall
Institut Universitaire de Médecine Légale, Rue du Bugnon 21, CH-1005 Lausanne, Switzerland

Table 1 Allele frequencies for F13B (n = 205 individuals)

Allele	Frequency
6	0.126
7	0.014
8	0.265
9	0.209
10	0.382

MEC = 0.476, MEP = 0.466, PIC = 0.674, pM = 0.123, D = 0.876. Observed and expected heterozygosities are = 0.703 and 0.738 respectively

Table 2 Allele frequencies for CD4 (n = 205 individuals)

Allele	Frequency
5	0.351
6	0.314
10	0.304
11	0.022
12	0.007

MEC = 0.403, MEP = 0.406, PIC = 0.618, pM = 0.158, D = 0.841. Observed and expected heterozygosities are 0.653 and 0.688 respectively

The discrimination power is 0.876 for F13B and 0.841 for CD4.

Acknowledgements The authors would like to thank Dr. Ch. Puers for computing the statistical work.

References

1. Nishimura DY, Murray JC (1992) A tetranucleotide repeat for the F13B locus. Nucleic Acids Res 20:1167
2. Edwards MC, Clemens PR, Tristan M, Pizzuti A, Gibbs RA (1991) Pentanucleotide repeat length polymorphism at the human CD4 locus. Nucleic Acids Res 19:4791
3. Alper B, Meyer E, Schürenkamp M, Brinkmann B (1995) HumFES/FPS and HumF13B:Turkish and German population data. Int J Legal Med 108:93–95
4. Glock B, Schwartz DWM, Schwartz-Jungl EM, Mayr WR (1995) Sequence determination of an allelic ladder for the STR polymorphism at the CD4 locus and application of the ladder in testing an Austrian Caucasian population sample. Forensic Sci Int 78:125–130
5. Martin P, Alonso A, Budowle B, Albarran C, Garcia O, Sancho M (1995) Spanish population data on 7 tetrameric short tandem repeat loci. Int J Legal Med 108: 145–149
6. Neuhuber F, Radacher M, Krasa B (1996) F13B and CD4 allele frequencies in an Austrian population sample. Int J Legal Med 108:227–228
7. Piccinini A, Möller K, Wiegand P (1996) Hum FES/FPS and HumF13B: population genetic data from North Italy. Int J Legal Med 108:283–284
8. Miller SA, Dykes DD, Polesky HF (1988) A simple salting out procedure for extracting DNA from human nucleated cells. Nucleic Acids Res 16:1215
9. Grange F, Dimo-Simonin N, Brandt-Casadevall C (1995) HUMTH01 (TC11) and HUMFES/FPS (FES) alleles distribution in a South West Swiss population. Acta Med Leg 44:28–31