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SHORT COMMUNICATION

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Population data for the STR systems HumTH01, HumVWA and FES/FPS in a population sample from Lower Franconia

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Abstract Population data studies for the three tetranucleotide STR systems HumTH01, HumVWA and FES/FPS were carried out on a Caucasian population sample from Lower Franconia (Germany). The observed heterozygosities were 0.83, 0.80 and 0.73, respectively, and the discrimination power of the triplex was 0.9995. All loci were in accordance with Hardy-Weinberg equilibrium tested using the χ^2-analysis.

Key words STR · PCR · HumTH01 · HumVWA · HumFES/FPS · Population studies

Introduction

STR analysis is increasingly gaining importance in forensic science [1, 2]. We present data for the STR systems HumTH01, HumVWA and FES/FPS in a population sample from Lower Franconia.

Materials and methods

DNA was extracted from whole liquid blood samples as previously described [3]. PCR, polyacrylamide gel electrophoresis and silver staining were performed for HUMTH01 [2], for HUMVWA and HUMFES/FPS [4] as described previously.

The efficiency data were calculated as previously described [5], and χ^2-tests were performed for k*2 contingency tables and to check for Hardy-Weinberg equilibrium (HWE). For the χ^2-test alleles with less frequencies than 5% were pooled.

Results and discussion

The distribution of allele frequencies were in good agreement with those of other investigations of Caucasian populations, despite the fact that allele 13 in HumVWA and allele 14 in FES/FPS were not found in this investigation. No significant deviations from Hardy-Weinberg equilibrium were found in all three STR systems ($P > 0.05$). Expected and observed heterozygosities and the power of discrimination are listed in Table 1. The combined power of discrimination was 0.9995. No mutations were observed in 57 (HumTH01), 86 (HumVWA) and 122 (FES/FPS) meioses. The statistical analysis revealed no significant differences between our data and other Caucasian population samples in the systems HumVWA and FES/FPS ($P > 0.05$), but a significant difference from a

Table 1 Allele frequencies for HumTH01 ($n = 183$), HumVWA ($n = 197$) and FES/FPS ($n = 214$) in a Franconian population

Allele	Frequency
HumTH01	
5	0.003
6	0.232
7	0.161
8	0.123
9	0.190
9.3	0.273
10	0.019
HumVWA	
14	0.094
15	0.127
16	0.180
17	0.302
18	0.193
19	0.076
20	0.025
21	0.003
FES/FPS	
8	0.018
9	0.002
10A	0.197
10	0.064
11A	0.030
11	0.392
12	0.243
13	0.053

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Table 2 Herterozygosity rates (*H-obs* observed heterozygosity, *H-exp* expected heterozygosity, *SE* standard error) and power of discrimination (*Pd*) for HumTH01, HumVWA and FES/FPS in a Franconian population sample

STR	H-obs	H-exp (± SE)	Pd
HumTH01	0.83	0.80 ± 0.028	0.92
HumVWA	0.80	0.81 ± 0.031	0.94
FES/FPS	0.73	0.74 ± 0.054	0.89

Turkish Caucasian population in the system HumTH01 ($\chi^2 = 22.63$; $P < 0.001$; df = 5) [6–12].

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