ALLELE AND GENOTYPE FREQUENCIES OF 3 STR LOCI IN TURKISH POPULATION

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INTRODUCTION

Many short tandem repeats (STR) are widely used in the field of forensic medicine. Population surveys of each loci are needed before introducing them into routine use. Because of this , many STR studies have been published in different population. Current study investigated Turkish population data for 3 STR loci : HumTHOl, HumTPOX, HumCSFlPO.

MATERIALS AND METHODS

Our donors were sampled from all different regions of Turkey. Whole blood samples from 223-481 unrelated Turkish Caucations were drawn into EDTA vacutainer tubes, also bloodstains were prepared on sterilized cotton cloth, and air dried. The DNA was extracted by the salting out method according to the prosedure described by Miller et al, and Chelex extraction was done for bloodstain.

Amplification were performed by strictly following the manifacturer's recommended protocol, and using the commercially available CTT triplex kits (Promega). The PCR was carried out in a MJ Research PTC-200 Thermal Cycler. Electrophoresis seperation of PCR products were performed by vertical denaturing 4% polyacrylamide gel (36 cm well-to-read). Silver staining of the gels was performed according to the method described by Budowle et al. Allele designation was carried out by side to side comparison with allelic ladders.

Allele frequencies for each locus were calculated from the numbers of each genotype. The statistical tests for Hardy-Weinberg Equilibrium by the exact test were performed using the HWE-Analysis program. Heterozygosity, power of discrimination, power of exclusion, matching probability, and polymorphism information content were carried out as described previously.

RESULTS AND DISCUSSION

The distrubition of observed allelic frequencies for our Turkish population samples are presented in Table 1. The observed heterozygosity values for STR loci vary from 66% to 76% (Table 2). Heterozygosity observed in these population demonstrates high degree of polymorphism associated with these loci. Polymorphism information content varies from 0.810 to 0. 839 for the STR loci given (Table 2). CSF1PO locus displays highest power of discrimination (PD) value and TPOX, the lowest (0.884 and 0.816 respectively). We have not observed departure at any loci from Hardy-Weinberg equilibrium (HWE). In comparison with Caucasians, Turkish data of all 3 loci are statistically similar. In conclusion, the use of these PCR-based STR loci gives extreme power for the forensic analyses and paternity testing and can be used as a reference for future studies.

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Table 1

Distrubition of allele frequencies for tree STR loci in Turkish population

TR allele frequencies	THOl n=962	TPOX n=784	CSFIPO n=446
6	0.279		
7	0.164	0.001	
8	0.126	0.528	
9	0.224	0.117	0.040
9b	0.174		
10	0.030	0.076	0.287
11		0.237	0.271
12		0.034	0.318
13			0.070
14			0.009
15			0.004

Tablo 2

Statistical parameters for HUMTHOl, HUMTPOX, HUMCSF1PO in Turkish population samples

	THOl	TPOX	CSF1PO
HR	0.767	0.661	0.717
PE	0.540	0.370	0.456
PD	0.93	0.816	0.885
df	15	15	21
2p	0.293	0.338	0.429
X^2	17.428	16.684	21.490
PIC	0.77	0.60	0.839
MP	0.070	0.184	0.115

(HR: heterozygosity rate, PE: power of exclusion, PD: power of discrimination, df: degree of freedom, PIC: polymorphism information content, MP: matching probability)

Presentation Number: F3

ANCIENT DNA OLD AS CITY OF SPLIT

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Ancient DNA is an important tool for diverse disciplines, such as anthropology and archeology. Individual archeological site has been found occasionally, at the northern part of Split city, outside of the Diocletians palace. Extended male skeleton, age 30-40, lying on the back was found in the pit together with ceramics from later Roman period. On the right hand he had a bracelet, made of copper, with open ends. The expected maximum stature based on the length of the long bone was 167 cm (Trotter, Gleser). Estimated time since death was approximately 1760±80 years (by 14 C method). DNA was succesfully extracted by the AFDIL modified method, based on standard proteinase K-phenol extraction, followed by purification with microconcentrators (Alonso A. et al. DNA Typing from Skeletal Remains: Evaluation of Multiplex and Megaplex STR Systems on DNA Isolated from Bone and Teeth Samples. Croatian Medical Journal 2001;42:260-266). We simultaneously amplified nine human short Gandem repeats (STR) systems and the amelogenin locus, employing AmpFISTR Profiler. According to our experience, the high quality of extracted DNA as well as an extremely successful DNA amplification could be due to characteristics found in Split area (clay ground).

Presentation Number: F4

ALLELE AND GENOTYPE FREQUENCIES OF 3 STR LOCI IN TURKISH POPULATION

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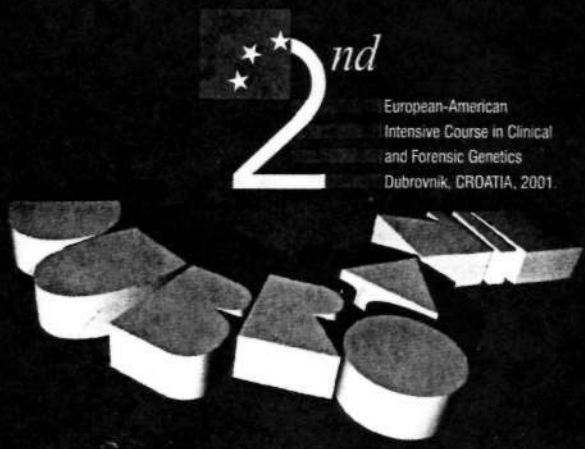
Many short tandem repeats (STR) are widely used in the field of forensic medicine. Population surveys of every locus is necessary before introducing it into routine use. Because of this, allele and genotype frequencies of 3 STR loci were carried out on the samples of unrelated Turkish individuals from all geographic areas of Turkey. The STR polymorphisms were analyzed by PCR using, GenePrint STR Systems kit (Promega) according to the recommendations of the manufacturer. HumTHOI, HumTPOX, CSF1PO loci were carried out. No deviations from Hardy-Weinberg equilibrium were found for all three loci examined. The results showed no significant differences between the Turkish and other Caucasian population data. Present study gives the data of highest number of individuals studied for these loci published on Turkish population (n=481 for HumTHOI; n=392 for HumTPOX; n=223 for CSF1PO). Heterozygosity rate (H) and power of discrimination (PD) are as follows: HumTPOX, H: 0.66, PD: 0.81; CSF1PO, H: 0.71, PD:0.88; HumTHOI, H: 0.76, PD: 0.84. These frequency data can be used for DNA based forensic analyses in the Turkish population.



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