ABSTRACT

Allele frequencies for nine short tandem repeats (STRs) gene loci (CSF1PO, TPOX, TH01, F13A01, FESFPS, vWA, D16S539, D7S820, D13S317) were obtained from analyses of saliva DNA from 109 unrelated healthy Sikh individuals residing in Malaysia. DNA was extracted using phenol/chloroform/isoamly alcohol method. 2ng of DNA for each sample was amplified following the instruction in GenePrint® STR Systems (Promega Corporation) CTT, FFv and SilverSTR III Multiplex kits. PCR products were separated in denaturing polyacrylamide gel electrophoresis and silver stained using Promega DNA Silver Staining System. The results were then calculated and processed to establish a statistical database for Sikh community. Chi-square test showed agreement in Hardy-Weinberg equilibrium. Average heterozigosity is 85.53. Power of Discrimination is 0.9999999996 and Power of Exclusion is 0.999213. The data was then compared to the reported allele frequencies in the Malay, Chinese and Indian ethnic communities from Malaysia. There is no significant difference in the pattern of distribution of allele frequencies for all the 9 STR among the Sikh community and the other ethnic communities (Malay, Chinese and Indian) in Malaysia.

ABSTRAK

Kekerapan allele bagi 9 STRs (short tandem repeats) loci gen (CSF1PO, TPOX, TH01, F13A01, FESFPS, vWA, D16S539, D7S820, D13S317) telah didapati melalui analisa terhadap DNA air liur 109 individu Sikh sihat yang tidak mempunyai hubungan persaudaraan di antara satu sama lain yang menetap di Malaysia. DNA telah diperolehi dengan menggunakan cara phenol/chloroform/isoamyl alcohol. 2ng DNA daripada setiap sampel telah digandakan berdasarkan tatacara GenePrint® STR Systems (Promega Corporation) CTT, FFv and SilverSTR III Multiplex kits. Hasilan PCR tersebut diasingkan secara polyacrylamide gel electrophoresis serta diwarnakan dengan menggunakan system Promega DNA Silver Staining. Keputusannya dikira dan diproses demi merangka suatu database statistik untuk masyarakat Sikh. Ujian Chi-square menunjukkan keseimbangan dalam Hardy-Weinberg. Purata heterozigosity adalah 85.53. Power of discrimination adalah 0.9999999996 dan Power of Exclusion adalah 0.999213. Data tersebut kemudiannya dibandingkan dengan kekerapan allele masyarakat Melayu, Cina dan India di Malaysia. Tiada perbezaan ketara dari segi corak taburan kekerapan allele untuk kesemua 9 STR di kalangan masyarakat Sikh dengan masyarakat suku kaum lain (Melayu, Cina dan India) di Malaysia.

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LIST OF ABBREVIATIONS AND SYMBOLS

^{o}C	degree Celsius
%	percent
µg	micrograms
µl	microliters
A	adenine
bp	basepair
C	cytosine
cc	cubic centimeter
cm	centimetres
dH_2O	deionized water
DNA	deoxyribonucleic acid
EcoR I	*escherichia coli* restriction site I
e.g.	for example
EDTA	ethylenediamine tetraacetic acid
EtBr	ethidium bromide
G	guanine
g	gram
H_2O	water
HCl	hydrochloric acid
i.e.	that is
kb	kilobase pairs
l	litre

M	molar
$MgCl_2$	magnesium cloride
mg	milligram
ml	milliliters
MLP	multi-locus probing
mm	millimeters
mol	moles
NaCl	sodium Chloride
NaOH	sodium hydroxide
ng	nanogram
PAGE	polyacrylamide gel electrophoresis
PCR	polymerase chain reaction
PGM	phosphoglumutase
pH	potency of hydrogen (H) ions
RFLP	restriction fragment lengths polymorphism
rpm	revolution per minute
SDS	sodium dodecyl sulfate
SLP	single locus probing
SNP	single nucleotide polymorphism
STR	short tandem repeat
T	thymine
TAE	tris-acetate-EDTA buffer

Taq	*Thermus aquaticus* DNA (polymerase)
TBE	tris-borate-EDTA buffer
TE	tris-EDTA buffer
TEMED	tetramethylethylenediamine
Tris	tris (hydroxymethyl) methylamine
U	units
UV	ultraviolet light
VNTR	variable number of tandem repeat