

HLA, HPA AND HFE POLYMORPHISMS IN SRI LANKA



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Introduction

As part of a study of the clinical effects of commercial salt iodination in Sri Lanka we recently reported on the HLA-A, B, DR and DQ gene and haplotype frequencies in 110 random unrelated, mostly (94.6%) Sinhalese, pregnant women (Eur J Immunogenet (2000) 27, 306). The Sinhalese originated from Northern India and now form the majority of the population of Sri Lanka.

We have now determined the HLA-C (essentially at the split specificity level), HFE and Human Platelet Antigen (HPA) -1 to -6, alleles of this population sample.

Methods

All typing was done using our standard PCR-SSP methods and population genetics analysis used our published strategy (Exp Clin Immunogenet (1998) 15, 69).

Results

HLA-C

Eleven HLA-C 'specificities' were found. Hardy-Weinberg and homozygosity analysis showed a good fit to that expected (all p-values >0.88).

The most frequent phenotypes were: Cw7 (44.6%), Cw10 (30.0%) and Cw4 (24.6%). No examples of Cw2, Cw5, Cw13, Cw17 or Cw18 were found. HLA-C frequencies are summarised in Table 1.

Table 1. HLA-C phenotype and gene frequencies.

HPA-	Phenotype freq. (%)	Gene freq.	HPA-	Phenotype freq. (%)	Gene freq.
Cw1	9.09	0.04545	Cw8	8.18	0.04091
Cw9	7.27	0.03919	Cw12	18.18	0.09091
Cw10	30.00	0.16590	Cw14	3.64	0.01818
Cw4	24.55	0.13042	Cw15	11.82	0.06238
Cw6	23.64	0.12971	Cw16	1.82	0.00909
Cw7	44.55	0.25600			

Table 2 shows the highest 2- and 3-locus haplotype frequencies (HF), with significantly positive Δ values ($p_{\text{corr}} < 0.05$).

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Table 2. Highest HLA-A/C and A/B/C haplotype frequencies.

Haplotype	HF	Δ values
B*58 Cw*10	0.139	0.114
B*44 Cw*07	0.114	0.085
B*35 Cw*04	0.100	0.084
A*33 B*58 Cw*10	0.107	0.100
A*33 B*44 Cw*07	0.068	0.062
A*01 B*57 Cw*06	0.040	0.038

HFE

The frequency of the HFE-1 (lacking both H63D and C282Y mutations) and HFE-2 (H63D mutation) alleles was 94.1% and 5.9%, respectively. No HFE-3 alleles (C282Y mutation) and associated with inherited haemochromatosis, were identified; 13 subjects (11.8%) possessed the HFE-2 gene and none were homozygous.

There was a good fit to Hardy-Weinberg equilibrium and the proportion of homozygotes was as expected (all p-values >0.9).

No significant linkage disequilibrium ($p_{\text{corr}} < 0.05$) between HFE-2 and HLA-A alleles was found.

HPA

The HPA-1,2,4,5,6 a and b allele frequencies were all $\geq 90\%$ and $\leq 10\%$, respectively, -3a and 3b were 69.1% and 30.9%, respectively. HPA frequencies are summarised in Table 2.

Table 2. HPA phenotype and gene frequencies.

HPA-	Phenotype freq. (%)	Gene freq.	HPA-	Phenotype freq. (%)	Gene freq.
1a	98.18	0.90000	4a	100.00	0.99545
1b	18.18	0.10000	4b	0.91	0.00455
2a	99.09	0.94091	5a	100.00	0.92727
2b	10.91	0.05909	5b	14.55	0.07273
3a	89.09	0.69091	6a	100.00	0.99545
3b	50.91	0.30909	6b	0.91	0.00455

All HPA genotype frequencies showed a good fit to Hardy-Weinberg equilibrium (p-values >0.5). This population provided our first examples of subjects possessing HPA-4b and HPA-6b.

Comment

This analysis has provided additional information that will serve as useful control data for further studies of genetic polymorphisms and disease in the Sri Lankan population.