THE FREQUENCIES OF HLA-D ANTIGENS IN THE POPULATION OF SR CROATIA

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Despite of the significant correlation between the majority of serologicaly defined HLA-DR antigens and HLA-D antigens defined by homozygous typing cells (HTC), the correlation between HLA-Dw6/DRw6 and some newly defined HLA-D/DR antigens is rather low. Assuming these facts and the findings of crossing over between HLA-D and DR loci (1,2,3), one may draw conclusion that HLA-D and DR are two distinct but very closely linked loci. However, the relationship between HLA-D and DR determinants is not clearly understood.

The HLA-D antigens are not commonly used in paternity testing, but they may be useful in some cases as well as in the population and in HLA and disease studies (4).

We have typed 62 couples randomly taken from the forensic medicine cases of paternity testing. The HLA-D typing was performed using 4 HTC for each HLA-D specificity, except 3 for determining HLA-Dw7 and 2 for HLA-Dw8 specificity. The 11 HTC were of local origin, and the others were submited by Prof.J. Van Rood (Leyden) and Prof. H. Grosse-Wilde (Essen). The relative responses to each HTC were double normalized (DNRR) according to the method of Mendell et al. (5). DNRR below 40% represented a typing response. An individual was considered to be positive for certain HLA-D specificity when 3 out of 4 typing responses to relevant HTC were obtained. The mixed lymphocyte culture test (MLC) was also performed in all couples to determine the degree of HLA-D compatibility between the woman and man in each couple. DNRR below 35% in both directions identified HLA-D compatibility, and DNRR below 70% HLA-D haploidentity.

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These results were compared to the results obtained by HLA-D typing using HTC. The HLA-D frequencies are shown on the Table 1. The most frequent HLA-D antigens are HLA-Dw5 (28.23%) and HLA-Dw1 (26.61%) and there was no significant difference in HLA-D antigen frequencies between Croatian population and other Caucasoid populations in Europe.

Table 1. The HLA-D antigen frequencies in 124 nonrelated individuals from the population of Croatia

Antigen HLA-D	women N=62	men N=62	total N=124
HLA-Dw1	25.81	27.42	26.61
-Dw2	20.97	19.35	20.16
-Dw3	17.74	16.13	16.94
-Dw4	14.52	12.90	13.71
-Dw5	29.03	27.42	28.23
-Dw6	19.35	17.74	18.55
-Dw7	14.52	16.13	15.32
-Dw8	8.06	6.45	7.26

The evaluation of HLA-D compatibility between two individuals using lymphocyte culture test seems to be useful as well as the HLA-D typing with HTC, Table 2.

The disagreement in the determination of HLA-D compatibility using these two methods was found only in 4.8% of tested couples.

It is evident that the HLA-D typing may be useful in some cases of paternity evaluation, but further analysis of HLA-D and DR determinants would bring a final decision upon this matter.

Table 2. The degree of HLA-D compatibility obtained by mixed lymphocyte culture test (MLC) and HLA-D typing using homozygous typing cells (HTC)

HLA-D compatibility in tested couples	MLC	HTC
HLA-D identical	1	1
HLA-D haploidentical	23	20
HLA-D different	38*	41

* disagreement in 3 couples (4.8%)

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