DISTRIBUTION OF HLA-DR AND -DQ ALLELES REVEALED BY RESTRICTION FRAGMENT LENGTH POLYMORPHISM ANALYSIS IN DONORS FROM ST.-PETERSBURG.

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As is known, class II HLA molecules are characterized by a wide allelic polymorphism which be defined by various immunologic methods. However, the immunologic approaches in the characterization of class II molecule polymorphism is associated with certain limitations put by both the errors of methods and impossibility to define all structural distinctive features of these molecules. In recent years, the successful studies on the allelic polymorphism of class II molecules became possible because of introduction of new approaches based on the investigations into HLA genes structure. Among them, the method based on the RFLP analysis of genes is the most reliable and accurate.

In the present work, the results of identification of HLA-DRB, DQA and DQB alleles in 118 healthy donors from St.-Petersburg as well the analyzed date on the association found out between different alleles of the above loci are presented.

The HLA-DRB and -DQ alleles were determined by restriction fragment length polymorphism (RFLP) analysis using DRB, DQB and DQA probe after TaqI digestion of DNA and Southern blotting. Identification of class II DRB, DQA and DQB alleles was made according by J. Bidwell [1]. The allele frequencies of DRB, DQB and DQA loci, linkage disequilibria between DR and DQ loci and haplotype rates were calculated. Also, allelic polymorphism within HLA-DR and DQ antigens were determined by microlymphocytoxicity method.

The RFLP analysis allowed to identify 18 HLA-DRB, 7 HLA-DQB and 5 HLA-DQA alleles. Distribution of DR and DQ alleles is presented in Table. It is to point out that among the donors examined, 18 (7.6%) were homozygous for DRB, 68 (28.8%) for DQA and 38 (16.4%) for DQB loci.

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T a b l e. Distribution of DRB, DQA and DQB alleles determined by RFLP method in donors from St.-Petersburg.

DRB alleles	Number of alleles	DQA and DQB alleles	Number of alleles
DRB-1	23 (9.7)	DQA-1A	27 (11.4)
DRB-15	23 (9.7)	DQA-1B	43 (18.2)
DRB-16	9 (3.8)	DQA-1C	25 (10.6)
DRB-17-1	16 (6.8)	DQA-2	68 (28.8)
DRB-17-2	16 (6.8)	DQA-3	73 (30.9)
DRB-4	36 (15.3)		
DRB-11	24 (10.2)		
DRB-12	4 (1.7)	DQB-1A	43 (18.2)
DRB-13a1	12 (5.1)	DQB-1B	38 (16.1)
DRB-13a3	6 (2.5)	DQB-X	7 (3.0)
DRB-13a4	6 (2.5)	DQB-2A	33 (14.0)
DRB-13в	3 (1.3)	DQB-2B	16 (6.8)
DRB-14a	3 (1.3)	DQB-3A	45 (19.1)
DRB-14в	2 (0.8)	DQB-3B	54 (22.9)
DRB-7-1	4 (1.7)		
DRB-7-2/9	33 (13.9)		
DRB-8	12 (5.1)		
DRB-10	4 (1.7)		

Note: allele designated as DRB-7-2/9 corresponds to two alleles DRB-7-2 and DRB-9 which cannot be separated by the RFLP method; allele frequency in per cent is given in parentheses.

The distribution of HLA-DRB, - DQA, -DQB alleles in donors from St.-Petersburg was compared with data obtained in the German population [2,3]. The increase in frequency of DRB17-2 allele was found in donors from St.-Petersburg as compared to the German population (6.8% vs. 2.8%). Furthermore, in the group of healthy donors DRB16 frequency was also slightly increased(P =0.07). Frequencies of other alleles of DRB locus did not

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differ significantly in the groups compared. In addition among donors from St.-Petersburg decrease in frequency of DQB-1B allele and increase in rate of DQB-X was significant as compared to the German population. The distribution of DQA alleles in donors from St.-Petersburg did not differ from that in the German population.

The date on high statistical significance of linkage between the DRB and the two DQ loci has been confirmed although, according to our findings, the incomplete association between DQB-3A and DQA-1B alleles was observed as compared to the German population.

Moreover, rare associations between DR and DQ loci (DRB-1/DQB-3B; DRB-11/DQB-1B; DRB-1/DQA-2; DRB-15/DQA-1C) were revealed.

In 17 (15.4%) individuals there are differencies between results obtained by HLA-DR DNA-RFLP and serological typing (mainly in definition of HLA-DR-3 and DR-6 specificities).

Thus the results obtained have confirmed the usefullnes of the RFLP method in typing class II HLA molecules; a new information about the distribution of alleles DRB,DQA and DQB loci in St.-Petersburg's group of donors is gathered and the differences in their distribution in the two populations are given.

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