

● 原著論文 ●

愛媛県の 228 家系における HLA 遺伝子頻度と ハプロタイプ分布

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要約: 愛媛県に住む 228 組 680 人の HLA 家系調査により, HLA-A, -B, -DRB1, -DQB1 の 4 座位の抗原・アレル頻度を分析した。血清学的検査法により A 座の 8 抗原, B 座の 23 抗原を, 遺伝子検査法により DRB1 座の 26 アレル, DQB1 座の 13 アレルを特定し, 合計 757 例の 4 座位のハプロタイプを得た。B-DRB1 の 2 座位間において B13-DRB1*1202, B37-DRB1*1001, B44-DRB1*1302, B46-DRB1*0803, B51-DRB1*1403, B52-DRB1*1502, B59-DRB1*0405, B62-DRB1*1406, B7-DRB1*0101 などは強い相関を示した。DRB1-DQB1 の 2 座位間はほぼ 1 対 1 の対応であったが, DRB1*0802, *1201, *1401 は 2 つの異なる DQB1 アレルと強い相関を示した。稀なアレルとされる DRB1*0809 は 3 家系から検出され, そのハプロタイプは A24-B60-DRB1*0809-DQB1*0402 が 2 例, A24-B54-DRB1*0809-DQB1*0402 が 1 例であった。1 例検出された DRB1*1402 のハプロタイプは, A26-B62-DRB1*1402-DQB1*0301 であった。HLA-A-B-DRB1-DQB1 のハプロタイプで頻度 2%以上を示した 6 タイプは, A24-B52-DRB1*1502-DQB1*0601(7.7%), A24-B7-DRB1*0101-DQB1*0501(3.3%), A24-B54-DRB1*0405-DQB1*0401(3.2%), A2-B46-DRB1*0803-DQB1*0601(3.0%), A33-B44-DRB1*1302-DQB1*0604/09(2.6%), A2-B61-DRB1*0901-DQB1*0303(2.5%)であった。愛媛での HLA 頻度を関東地方都市部と比較すると, A33, B44, B48, DRB1*0803, DRB1*1405, DRB1*1501, DQB1*0601, DQB1*0602 などに地域差があることが示された。

キーワード: アレル頻度, ハプロタイプ, 連鎖不平衡, 家系調査

HLA genes and haplotype frequencies based on 228 families in Ehime Prefecture, Japan

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Summary: We have investigated the distribution of HLA-A, -B, -DRB1, -DQB1 genes and haplotypes in 228 families with a total of 680 members living in Ehime Prefecture, Japan. HLA-A and -B antigens were typed by standard microlymphocytotoxicity assay, and high resolution typing of HLA-DRB1 and -DQB1 alleles were performed by PCR-RFLP method. A total of 8 HLA-A antigens, 23 HLA-B antigens, 26 HLA-DRB1 alleles and 13 HLA-DQB1 alleles, including two rare alleles, were detected. The rare alleles were HLA-DRB1*0809 and DRB1*1402. Most of HLA-DRB1 alleles were strongly associated with single HLA-DQB1 alleles. In contrast, DRB1*0802, *1201 and *1401 were associated with two different DQB1 alleles. The frequencies of HLA-DRB1*0803 ($p < 0.001$), and -DQB1*0601 ($p < 0.01$) were significantly increased in our family sample, whereas the frequencies of HLA-A33 ($p < 0.01$), -B44 ($p < 0.05$), -B48 ($p < 0.01$), -DRB1*1405 ($p < 0.05$), -DRB1*1501 ($p < 0.01$) and DQB1*0602 ($p < 0.001$) were decreased, when compared to the population living in the Kanto area, Japan. The six most common HLA-A-B-DRB1-DQB1 haplotypes of frequencies $> 2\%$ were HLA-A24-B52-DRB1*1502-DQB1*0601 (7.7%), HLA-A24-B7-DRB1*0101-DQB1*0501 (3.3%), HLA-A24-B54-DRB1*0405-DQB1*0401 (3.2%), HLA-A2-B46-DRB1*0803-DQB1*0601 (3.0%), HLA-A33-B44-DRB1*1302-DQB1*0604/09 (2.6%), and HLA-A2-B61-DRB1*0901-DQB1*0303 (2.5%). It was shown that the HLA-A-B-DRB1-DQB1 haplotypes of DRB1*0809 and *1402 were A24-B62-DRB1*0809-DQB1*0402 ($n = 2$), A24-B54-DRB1*0809-DQB1*0402 ($n = 1$) and A26-B62-DRB1*1402-DQB1*0301 ($n = 1$).