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HLA Typing – A Comparison of Serology and DNA Techniques

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ABSTRACT DNA based HLA typing is fast replacing conventional Microlymphocytotoxicity based method, which has been regarded as the gold standard. Many laboratories in Mumbai have already switched over to molecular methods, as the results are far superior. This study was undertaken to compare the results of generic molecular typing by sequence specific primers (SSP) with that by serology in our laboratory. A pilot study was performed in which available data tissue typing results of 200 patients and their donors were analysed. DNA was extracted from whole blood or buffy coat using QIA amp@ DNA Mini kit from Qiagen (Germany). SSP based low resolution typing was performed for 50 individuals using commercial kits from Biotest (Germany) and Genovision (USA). Microlymphocytotoxicity based tissue typing was also done for twenty individuals using commercial sera, while the remaining were typed by SSP alone. Samples were run in two different time phases labeled in Table as first and second run. DNA quality and quantity was found to be sufficient by the method for tissue typing. Of the pilot study of 200 cases typed earlier by serology, all six HLA antigens were identified only in 40% individuals, with maximum number of blanks in DR typing. DNA typing results were best for class II typing and not very satisfactory for HLA B typing. The results of DR SSP typing were far superior and almost 90% of alleles were identified. The cost of molecular typing was approximately \$ 82 – 124 per sample while for serology it was \$ 64 – 69. The SSP based HLA typing is an economical, rapid, precise, technically simple and reproducible method. Further the non availability of specific HLA antisera from native populations, large number of blank alleles, and comparable cost of immunomagnetic isolation of B cells, it is suggested that DNA based methods must completely replace serology.

[Home](#)

[Back](#)