

Antibody Reactivity of Synthetic Peptides Belonging to Proteins Encoded by Genes Located in Mycobacterium tuberculosis-Specific Genomic Regions of Differences

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Abstract : The comparisons of mycobacterial genomes have identified several *Mycobacterium tuberculosis*-specific genomic regions that are absent in other mycobacteria and are known as regions of differences. Due to *M. tuberculosis*-specificity, the peptides encoded by these regions could be useful in the specific diagnosis of tuberculosis. To explore this possibility, overlapping synthetic peptides corresponding to 39 proteins predicted to be encoded by genes present in regions of differences were tested for antibody-reactivity with sera from tuberculosis patients and healthy subjects. The results identified four immunodominant peptides corresponding to four different proteins, with three of the peptides showing significantly stronger antibody reactivity and rate of positivity with sera from tuberculosis patients than healthy subjects. The fourth peptide was recognized equally well by the sera of tuberculosis patients as well as healthy subjects. Predication of antibody epitopes by bioinformatics analyses using ABCpred server predicted multiple linear epitopes in each peptide. Furthermore, peptide sequence analysis for sequence identity using BLAST suggested *M. tuberculosis*-specificity for the three peptides that had preferential reactivity with sera from tuberculosis patients, but the peptide with equal reactivity with sera of TB patients and healthy subjects showed significant identity with sequences present in non-tuberculous mycobacteria. The three identified *M. tuberculosis*-specific immunodominant peptides may be useful in the serological diagnosis of tuberculosis.

Keywords : genomic regions of differences, Mycobacterium tuberculosis, peptides, serodiagnosis

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