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FLAGELLIN ANTIGEN AND ITS SIGNIFICANCE IN SERODIAGNOSIS OF
TYPHOID FEVER. THESIS ADVISORS : SUTTIPANT SARASOMBATH, M.D.,
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Typhoid fever is a bacterial disease caused by *Salmonella typhi* infection. The current laboratory diagnostic techniques are unsatisfactory. We previously produced monoclonal antibodies (MAbs) specific to *S. typhi*. The epitope recognized by these MAbs has been located on a 52 kDa flagellin protein which is the monomer of bacterial flagellar filament. The study reported here was undertaken to map the epitope recognized by the MAbs on flagellin protein and to determine its possible uses for improvement of typhoid fever serological diagnosis. Using the polymerase chain reaction (PCR) and recombinant DNA technology, the specific epitope recognized by the MAbs was shown to be located within *S. typhi* flagellin hypervariable region IV (nucleotides 514 to 909). In addition, analysis of the amino acid sequence showed that this region IV of the flagellin has the highest different degree of amino acid sequence when compared with different phase-1 *Salmonella*'s flagellins. Such information confirmed that this region could be used as a specific antigen for diagnostic purposes. Therefore, the hypervariable region IV of *S. typhi* flagellin was expressed, purified and used to detect the specific IgM antibodies in patients' sera by microtiterplate ELISA. Sera from patients who were hemoculture positive for *S. typhi*, *S. paratyphi* A, *Salmonella* group C, other gram-positive and gram-negative bacteria, and sera of patients with dengue hemorrhagic fever as well as healthy control subjects were used to evaluate the serodiagnosis test. The calculated diagnostic sensitivity, specificity, accuracy, positive and negative predictive values of the established assay, as compared with hemoculture method, are 83.69%, 98.97%, 94.06%, 97.47% and 92.75%, respectively.