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CHANIYA LEEPIYASAKULCHAI : DEVELOPMENT OF ENZYME-LINKED IMMUNOSORBENT ASSAY (ELISA) FOR THE DETECTION OF STREPTOCOCCAL ANTIBODIES. THESIS ADVISORS : SUPHANNEE SARNTIVIJAI, M.Sc., CHONGRAK PERMMONGKOL, M.Sc. 137 p. ISBN 974-663-971-4

Rapid screening passive agglutination tests and conventional neutralization tests have been routinely used in the laboratory detection of streptococcal antibodies. Most of methods currently used in this country depend on the reagent imported from other countries. The controversy results of the rapid tests and the sensitivity of neutralization tests, furthermore, the unavailable of erythrocytes for the ASO test and lack of dye incorporated polymerized DNA-complex for the ADNase B test have discouraged the laboratory detection of ASO and ADNase B.

This study was aimed to develop the ASO-ELISA test and the ADNase B ELISA test using in-house preparation purified SLO and purified DNase B as an antigen in each test systems. SLO and DNase B were prepared from bacterial-free filtrate of *Streptococcus pyogenes* S.84 broth culture. The enzyme activities of the two enzymes were assayed and the chemical, physical and immunological properties were determined.

This SLO or DNase B was used as an antigen in the ELISA system. The optimal conditions for ELISA system were assayed. The detection limit of these ELISA was 12.5-1,250 or more TU/ml for ASO and 18.8-1,200 or more IU/ml for ADNase B. The sensitivity and specificity of the ASO ELISA test were 81.94% and 81.25% respectively when compared to the neutralization test when 351 relative ELISA units and 166 TU were used as cut off points for each method. The correlation of these two methods is good ($r$ =0.721). The sensitivity and specificity of ADNase B ELISA were 98.30% and 67.56% as compared to the neutralization test when 231 relative ELISA units and 200 IU/ml were used as cut off points for ELISA and neutralization tests, respectively. The correlation between these two methods showed a good correlation ($r$ =0.805)

ASO ELISA and ADNase B ELISA developed using in-house prepared SLO and DNase B have provided good correlation as compared to the conventional neutralization test. Furthermore, at least two streptococcal antibodies can be detected by a parallel method that made it possible to detect two specific antibodies at the same time and utilizes the same facilities. Therefore, these ASO ELISA and ADNase B ELISA are suitable to use in routine diagnostic laboratories.