TWO SIMPLE IMMUNOASSAYS USING ENDEMIC LEPTOSPIRAL ANTIGENS FOR SERODIAGNOSIS OF HUMAN LEPTOSPIROSIS

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Abstract

Two simple enzyme immunoassays, a conventional microplate and dot-ELISA, were developed to detect specific IgM antibodies using pool sonicated antigen prepared from three of the most reactive serovars of Leptospira associated with disease in Thailand. Both assays were evaluated and compared with the standard microscopic agglutination test (MAT) performed with 343 serum samples. A battery of 16 pathogenic serovars of \textit{L. interrogans} was used as antigens in the MAT assay. The result of MAT at serum titers ≥1:400 showed three pathogenic serovars of leptospira, Bratislava (71.88%), Sejroe (63.54%) and Pyrogenes (36.46%), were among the most commonly reacted serovars and they were selected for preparation of pool sonicated antigen for both IgM ELISA tests. The microplate IgM-ELISA, performed with sera at 1:80 dilution using the cutoff OD of 0.60, demonstrated sensitivity, specificity and efficiency of 87.50, 97.57, and 94.75%, respectively. The same values for IgM dot-ELISA performed with sera at 1:160 dilutions were 98.96, 93.93, and 95.33%, respectively. Both ELISA methods showed results with statistically significant differences from MAT (p<0.05). The agreement rate of IgM dot-ELISA compared with microplate IgM-ELISA was 0.85 by Kappa analysis. Both assays offered relatively high negative predictive values (95.26-99.57%), thus making the assays ideally suited for rapid screening. Future applications of the IgM dot-ELISA as a test kit would be suitable for use at the peripheral level as a rapid screening test for human leptospirosis.