

**Thesis Title** The Study on Normal Distribution and Percentile Cut-off Points for Differential Immunodiagnosis of Tuberculous Meningitis Using Specific Antigen from M. tuberculosis by ELISA  
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**Degree** Master of Science in Public Health  
**Thesis Supervisory Committee** (Infectious diseases) consisted of 21 patients with disorders and 21 patients without any

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**ABSTRACT**

The objective of this study was to evaluate the diagnostic value of the Normal distribution and Percentile cut-off points for the detection of antibody responded to two different kinds of specific antigens (M. tuberculosis H37Rv as STB-antigen and TL-antigen) in cerebrospinal fluid (CSF) and serum of Tuberculous Meningitis (TBM) patients.

CSF and serum samples were obtained from 79 patients with meningeal inflammatory disorders admitted in Maharaj Hospital (Chiang-mai Province) and Chiang-rai Prachanukruka Hospital (Chiang-rai Province) and also from 48 patients without neurological disorders at Chiang-rai Prachanukruka Hospital. Enzyme-Linked Immunosorbent Assay

(ELISA) has been done to measure the antibody levels in each CSF and serum specimen. All patients were followed-up for 8 weeks to obtain the result of true diagnosis (from clinical picture, cytological and biochemical test in CSF, CSF culture for M. tuberculosis and response to antituberculosis treatment). The studied patients were then divided into two groups. Group I (CASE) consisted of 20 patients with Tuberculous Meningitis. Group II (CONTROL) consisted of 21 patients with meningeal inflammatory disorders and 21 patients without any signs of infections in the central nervous system.

The results were as follows.

The sensitivity of the ELISA-test for TL-Ag in CSF were 100 percent using Percentile cut-off point at O.D. > 0.087 (Percentile 87) as compared to 95 percent by Normal distribution cut-off point at O.D. > 0.088 (MEAN + 2SD). The specificity of both cut-off points were equal (90.48 percent).

The sensitivity of the ELISA-test for TL-Ag in serum were 50 percent using Percentile cut-off point at O.D. > 0.378 (Percentile 84) as compared to 35 percent by Normal distribution cut-off point at O.D. > 0.467 (Mean + 2SD). The specificity were 92.86 percent using Percentile cut-off point as compared to 97.62 percent by Normal distribution cut-off point.

The sensitivity of the ELISA-test for STB-Ag in CSF and serum by both cut-off points (Normal distribution at MEAN + 2SD, O.D. > 0.499 in CSF and > 1.504 in serum and Percentile at P100, O.D. > 0.433 in CSF and > 1.482 in serum) were equal (70 and 30 percent respectively). The specificity of both cut-off points were equal

(97.62 and 100 percent respectively)

By using TL-Ag with Percentile cut-off point at  $O.D. > 0.087$  in CSF was proved to be more efficient for diagnosis of TBM than usual diagnosis 35 per cent.

14 out of 19 patients who were not classified as having TBM at admission and with positive tests for ELISA were successfully followed-up for one year. 8 ( 73.68 percent ) of them were found to be TBM cases by the criteria. Of these, 1 case was Definite TBM, 2 cases were Probable TBM and 5 cases were Possible TBM.