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WAEWTA TEMPROM: DETERMINATION OF TUMOR NECROSIS FACTOR-ALPHA LEVELS IN DENGUE AND NON-DENGUE PATIENTS BY BIOTIN-STREPTAVIDIN ENZYME-LINKED IMMUNOSORBENT ASSAY. THESIS ADVISORS: LEERA KITTIGUL, Ph.D, CHAIVAT KITTIGUL, M.Sc., DUSIT SUJIRARAT, M.Sc. 125 p. ISBN 974-662-341-9

Dengue hemorrhagic fever/dengue shock syndrome (DHF/DSS) is the most severe manifestation of an acute dengue virus infection. Tumor necrosis factor-alpha (TNF-α) is the cytokine that might play a role in severe pathologic manifestations of dengue virus infection. A case-control study was carried out by using a developed biotin-streptavidin enzyme-linked immunosorbent assay (BS-ELISA) for quantitation of TNF-α in the sera of dengue infected patients (100 cases) and control groups (100 cases; non-dengue patients 59 cases and healthy subjects 41 cases). The sensitivity of the BS-ELISA for detection of TNF-α in human sera was as low as 3.3 pg/ml. The TNF-α was found in 42% (mean ± SD; 24.01 ± 35.2 pg/ml) of dengue infected patients, 49.1% (24.97 ± 30.8 pg/ml) of non-dengue patients and 7.3% (4.20 ± 15.6 pg/ml) of healthy subjects. The percentage of detectable TNF-α in the sera of DHF grade II (58.3%) and grade III patients (56.3%) were higher than in DHF grade I (41.2%) and DF patients (31.6%). The mean TNF-α level was highest in DSS or grade III patients (37.44 ± 42.0 pg/ml) followed by DHF grade I (28.44 ± 42.7 pg/ml), DHF grade II (24.21 ± 25.4 pg/ml) and DF patients (14.10 ± 24.0 pg/ml). The TNF-α levels were observed in dengue infected patients' sera collected on days 2-6 and highest on day 5 after onset of fever. The TNF-α levels in dengue infected patients were significantly higher than in healthy subjects (p-value < 0.001), but not different from non-dengue patients (p-value, 0.266). The patients with DHF had significantly higher levels of TNF-α than DF patients (p-value, 0.020). Among DHF patients, the TNF-α values were not different in grade I-III (p-value, 0.295). These results indicate that TNF-α is associated with dengue virus infection and related to disease severity in DHF.