THE SEROTYPE-INDEPENDENT BUT CONCENTRATION-DEPENDENT ENHANCING ANTIBODIES AMONG THAI DENGUE PATIENTS

Chai Teerasut[1], Huan-Yao Lei[2], Khuendee Natthakorn[3], Akanitt Jittmittraphap[3], Suwich Thammapalo[4], Prasong Witayathawornwong[5], Ya-Tin Lin[2], Richard G Jarman[6], Pathom Sawanpanyalert[7], Wipawee Jampangern[3] and Kriengsak Limkittikul[8]

[1]Si Sa Ket Provincial Hospital, Office of Permanent Secretary, Ministry of Public Health, Si Sa Ket; [2]Department of Microbiology and Immunology, College of Medicine, National Cheng Kung University, Tainan, Taiwan; [3]Department of Microbiology and Immunology, Faculty of Tropical Medicine, Mahidol University, Bangkok; [4]Department of Disease Control, Ministry of Public Health, Nonthaburi; [5]Phetchabun Provincial Hospital, Office of Permanent Secretary, Ministry of Public Health, Phetchabun; [6]Armed Force Research Institute of Medicine Science, Bangkok; [7]Department of Medical Sciences, Ministry of Public Health, Nonthaburi; [8]Department of Tropical Pediatrics, Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand

Abstract. Antibody-dependent enhancement of infection (ADE) is central to explaining the development of severe disease at the end of post-dengue virus infection. Non-neutralizing anti-dengue antibodies bound to the dengue virion enhances the virus entrance into the target cells via the Fc receptor. The titer of enhancing antibodies in dengue patients is not determined during dengue virus infection. Sensitive flow cytometry detecting dengue virus-infected K562 cells was used to quantitate enhancing activity among Thai DF and DHF patients against four serotypes and the patient's dengue isolate. The titer was defined as the reciprocal of the final dilution that loses enhancing activity. The serum of Thai patients confirmed to have dengue infection were found to have high titers of enhancing antibodies and increased gradually through the convalescent phase of infection. The enhancing antibody titers were not different among the four serotypes or from the infecting isolate. The anti-dengue antibodies from dengue patients can enhance dengue virus infections in a concentration-dependent, serotype-independent manner.

Keywords: anti-dengue antibody, concentration, serotype, DF, DHF

Correspondence: Dr Kriengsak Limkittikul, Department of Tropical Pediatrics, Faculty of Tropical Medicine, Mahidol University, 420/6 Ratchawithi Road, Bangkok 10400, Thailand.
Tel: +66 (0) 2354 9100 ext 1665; Fax: +66 (0) 2354 9163
E-mail: tmklk@mahidol.ac.th
Huan-Yao Lei, Department of Microbiology and Immunology, College of Medicine, National Cheng Kung University, 1 University Road, Tainan, 70101, Taiwan.
Tel : +886 6 2353535 ext 5643; Fax: +886 6 2082705
E-mail: hylei@mail.ncku.edu.tw