

T HELPER (TH) 1 AND TH2 CYTOKINE EXPRESSION PROFILE IN DENGUE AND MALARIA INFECTION USING MAGNETIC BEAD-BASED BIO-PLEX ASSAY

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Abstract. Dengue and malaria infections are two very common vector-borne diseases annually affecting millions of people around the world. Both diseases show a variety of clinical presentations, ranging from mild symptoms of dengue fever (DF) to severe dengue hemorrhagic fever (DHF) in dengue infection, and low and high parasitemia in malaria infection. T helper (Th)1 and Th2 cytokine expressions in mild and severe forms of dengue virus type-2 (DENV-2) and *Plasmodium falciparum* infection, were compared to normal human sera using high throughput magnetic bead-based Bio-Plex assay. A significant elevation of Th1 and Th2 cytokines expression [interleukin (IL)-2, IL-4, IL-5, IL-10, IL-13, granulocyte-macrophage colony-stimulating factor (GM-CSF), interferon (IFN)- γ , and tumor necrosis factor (TNF)- α] was detected in DENV-2 and *P. falciparum* malaria infections compared with normal controls ($p < 0.05$). DENV-2 infection showed a slight higher expression of Th1 and Th2 cytokines in DHF than DF, except for IL-13. In *P. falciparum* infection, high parasitemia showed a significantly higher expression of IL-4, IL-10, GM-CSF, and TNF- α ($p < 0.05$). Both DENV-2 and *P. falciparum* malaria infections manifested high IL-10 expression, greatest among the cytokines examined, and in the severe forms of infection. The results of this study should lead to a better understanding of pathogenesis of dengue infection and *P. falciparum* malaria.

Keywords: dengue, malaria, T helper, cytokines, Bio-Plex

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