

ABSTRACT

Zika virus (ZIKV) is a mosquito-borne flavivirus that has infected hundreds of thousands of people worldwide and caused devastating healthcare and socioeconomic outcomes. Zika has gained the attention of healthcare community, given its emergence in a dengue virus (DENV) endemic region and the high antigenic homology between both flaviviruses, which has been linked to cross-reactive immune responses observed *in vitro* and *in vivo*. This study aimed to measure the cross-reactive antibody response of IgG against the whole virus in sera obtained from nonpregnant and pregnant cynomolgus macaques that received sequential challenges with DENV2 and ZIKV. Kinetics of IgG antibody responses and cross-reactivity were determined against whole virus antigens using indirect enzyme-linked immunosorbent assay (ELISA). Different IgG antibody responses and cross-reactivity were observed in all DENV-immune (n=3) and naïve cohorts (n=1). Pre-existing anti-DENV IgG was observed to cross-react to ZIKV and vice versa. Also, pre-existing immunity to DENV influenced the production of ZIKV-antibody upon secondary challenge. Although antibody cross-reactivity has been associated with antibody-dependent enhancement (ADE) in mouse models, the contribution of antibody cross-reactivity to disease enhancement or cross-protection in primates remains to be elucidated in the future study.

Keyword: *Antibody, Cross-reactivity, DENV, Flavivirus, ZIKV*