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Antibodies are not required to a protective immune response against dengue virus elicited in a mouse encephalitis model

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Generating neutralizing antibodies have been considered a prerequisite to control dengue virus (DENV) infection. However, T lymphocytes have also been shown to be important in a protective immune state. In order to investigate the contribution of both humoral and cellular immune responses in DENV immunity, we used an experimental model in which a non-lethal DENV2 strain (ACS46) is used to intracranially prime Balb/C mice which develop protective immunity against a lethal DENV2 strain (JHA1). Primed mice generated envelope-specific antibodies and CD8+ T cell responses targeting mainly non-structural proteins. Immune sera from protected mice did not confer passive protection to naïve mice challenged with the JHA1 strain. In contrast, depletion of CD4+ and CD8+ T lymphocytes significantly reduced survival of ACS46-primed mice challenged with the JHA1 strain. Collectively, results presented in this study show that a cellular immune response targeting non-structural proteins are a promising way in vaccine development against dengue.

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