World Academy of Science, Engineering and Technology
International Journal of Medical and Health Sciences
Vol:16, No:06, 2022

Humoral and Cellular Immune Responses to Major Human Cytomegalovirus Antigens in Mice Model

Authors : S. Essa, H. Safar, R. Raghupathy

Abstract : Human cytomegalovirus (CMV) continues to be a source of severe complications to immunologically immature and immune-compromised hosts. Effective CMV vaccine that diminishes CMV disease in transplant patients and avoids congenital infection remains of high importance as no approved vaccines exist. Though the exact links of defense mechanisms are unidentified, viral-specific antibodies and Th1/Th2 cytokine responses have been involved in controlling viral infections. CMV envelope glycoprotein B (UL55/gB), the matrix proteins (UL83/pp65, UL99/pp28, UL32/pp150), and the assembly protein UL80a/pp38 are known to be targets of antiviral immune responses. In this study, mice were immunized with five HCMV antigens (UL32/pp150, UL80a/pp38, UL99/pp28, and UL83/pp65), and serum samples were collected and evaluated for eliciting viral-specific antibody responses. Moreover, Splenocytes were collected, stimulated, and assessed for cytokine responses. The results demonstrated a CMV-antigen-specific antibody response to pp38 and pp65 (E/C >2.0). The highest titers were detected with pp38 (average E/C 16.275) followed by pp65 (average E/C 7.72). Compared to control cells, splenocytes from PP38 antigen immunized mice gave a significantly higher concentration of GM-CSF, IFN-γ, IL-2 IL-4, IL-5, and IL-17A ($P<0.05$). Also, splenocytes from pp65 antigen immunized mice resulted in a significantly higher concentration of GM-CSF, IFN-γ, IL-2 IL-4, IL-10, IL-12, IL-17A, and TNF- α. The designation of target CMV peptides by identifying viral-specific antibodies and cytokine responses is vital for understanding the protective immune mechanisms during CMV infection and identifying appropriate viral antigens to develop novel vaccines.

Keywords : hepatitis C virus, peripheral blood mononuclear cells, neutrophils, cytokines
Conference Title : ICVID 2022 : International Conference on Virology and Infectious Diseases
Conference Location : Montreal, Canada
Conference Dates : June 16-17, 2022