

Immunologic Evaluation of DNA Vaccine Expressing Hepatitis C Virus NS3 Gene in C57BL/6 Mouse Model

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Background & Objectives: Hepatitis C virus that infects 3% of world population, which is the causative agent of chronic hepatitis and finally liver cancer. But so far it has not been an effective vaccine. Non-structural NS3 gene is a hydrophobic Protein of 69 Kd and it has two functional helices and serine proteases that can suppress the host antiviral immune system. Therefore, the NS3 gene is attractive target for design of HCV DNA vaccine. The ability of NS3-based genetic vaccines for inducing humeral and cellular responses to hepatitis infections is cleared.

Methods: The NS3 gene was inserted into recombinant plasmid pCDNA3.1 and then large quantities of DNA vaccines were prepared. In order to evaluate the immune responses against gene NS3 DNA vaccine, female C57BL6 mice are immunized three times. One month after the first injection, lactate dehydrogenase (LDH assay), lymphocyte proliferation (MTT assay) and measurement of cytokines such as IL-4 and IFN- γ are performed to analyze cellular immune responses to HCV DNA vaccine.

Results: The results of MTT and LDH release assay and also cytokines analysis suggests that injected Intramuscular NS3 DNA vaccine induce strong cellular immune responses and stable protection in the mouse model.

Conclusion: DNA vaccines encoding NS3, as attractive candidate can induce significant cellular immune responses against HCV.

Keywords: NS3 Gene; DNA Vaccine; MTT Assay; IFN- γ