

Immunologic Evaluation of DNA Vaccine Encoding Influenza Virus M2 Gene in Type A- Influenza Mice Model

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Abstract

Background and Objective: The M2 gene expressing the conserved protein in influenza virus can be used to make a single-dose vaccine with permanent immunity.

Material and Methods: The mice were allocated to one case group immunized with pcDNA3-M2 and two control groups with pcDNA and PBS, in three doses with interval of two weeks. Two weeks after the last injection, Cellular immunity was analyzed by MTT lymphocyte proliferation, interferon gamma (IFN-gamma) and interleukin 4 (IL-4) ratio assays. The remaining animals were challenged with PR8 virus.

Results: The production rate of IFN8 and IL4 in pcDNA - M2 group was higher than that of control groups ($P > 0.0001$). Given the results of lymphocyte proliferation, Stimulation index (SI) in vaccinated mice was significantly higher than that of control groups ($P < 0.05$). In comparison with mortality rate of 100% in control groups, the animals Challenged with PR8 vaccine had a 50% fatal rate implying a high protection level for this vaccine.

Conclusion: The pcDNA3-M2 Vaccine can be considered as a promising vaccine against influenza infections.

Keywords: Influenza Virus - Gene Vaccine, M2 Protein