

ABSTRACT FORM
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Abstract

Title:

**Authors and
Affiliation:**

Text:

DEVELOPMENT OF A NOVEL VACCINE STRATEGY AGAINST RIFT VALLEY FEVER VIRUS**Bhardwaj, Nitin**^{1,2} and Ross, Ted.M.²

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Objectives: Rift Valley Fever virus (RVFV) is an arthropod-borne Phlebovirus (family *Bunyaviridae*) associated with abortion storms, neonatal mortality in livestock and hemorrhagic fever or fatal encephalitis in a proportion of infected humans. Although, the inactivated RVFV vaccines have been used in livestock, there is no licensed vaccine available to protect the human population. Therefore, there is an urgent need for developing safe and effective vaccine that rapidly elicits protective immunity against RVFV infection.

Methods: To address this, DNA plasmids expressing RVFV Gn glycoprotein in conjunction with three copies of molecular adjuvant C3d were constructed and analyzed for its ability to act as a potent vaccine candidate against RVFV in mice. An experimental live-attenuated vaccine (MP-12) was used as a benchmark for comparison.

Results: The DNA plasmids successfully expressed RVFV glycoprotein Gn in conjunction with C3d and elicited anti-RVFV immune response after three immunizations as determined by anti-RVFV ELISA and neutralizing antibody response. Interestingly, our DNA plasmid derived vaccine elicited neutralizing antibody titers comparable to the MP-12 vaccine.

Discussion: DNA vaccines were constructed against RVFV and further compared with experimental live-attenuated MP-12 vaccine in mice. In these studies, the DNA plasmid constructs expressed successfully in cell culture and was able to induce anti-RVFV antibody response when administered to mice. Furthermore, sera from vaccinated mice neutralized virus.

Public Health Implications: Rift Valley Fever virus represents a significant threat to human health and there is a pressing need for the development of improved vaccines against this pathogen. This is a promising approach with DNA derived vaccines which will not only directly assess their potential as a vaccine candidate, but will also significantly enhance our general understanding of anti-RVFV immunity.

CATEGORY OF EMPHASIS

(check all that apply)

 Bioscience Education/Prevention