

## DNA vaccine encoding Hantavirus Gn, targeted to the MHC class II compartment by LAMP, significantly elicits specific immune responses and induces immune protection against Hantavirus challenge *in vivo*

Dongbo Jiang, Yuanjie Sun, Linfeng Cheng, Chen Dong, Kuocheng Yan, Fanglin Zhang and Kun Yang  
The Fourth Military Medical University, P. R. China

Lysosome-associated membrane protein (LAMP) can target and bind the endosome/lysosome, one of the most important components of the MHC class II-processing compartment (MIIC) in the exogenous antigen-processing pathway. LAMP targeting could greatly enhance the immune response against a number of antigens and DNA plasmids encoding endogenous antigen could take advantage of LAMP and be carried directly into MIIC. Hantavirus glycoprotein N-terminal, named Gn, could induce neutralizing antibody production with a low serum titer as natural infection. To analyze the influence of LAMP on Hantaan virus (HTNV) Gn vaccine potency and develop a novel effective vaccine against HTNV, we constructed three eukaryotic vectors as naked DNA vaccine named pVAX-Gn, pVAX-LAMP and pVAX-LAMP/Gn, respectively. Balb/c mice were immunized with those plasmids, the specific humoral and cellular responses elicited against HTNV Gn were measured by ELISA, cytotoxicity assays, cytokine release (IFN- $\gamma$  and IL-4) and ELISPOT assay. To measure the protective efficacy, virus challenging *in vivo* and neutralizing antibody valence were conducted by viral load detection (qRT-PCR and sandwich ELISA) and the cell microculture neutralization test. We found that HTNV Gn showed a strong immunogenicity to elicit both humoral and cellular responses with LAMP as a chimera. Results of protection assay *in vivo* indicated that the immune response established was HTNV specific and protective. These findings not only demonstrate that the LAMP as a trafficking molecule can introduce Gn to MHCII presenting pathway and significantly enhance HTNV specific immune response, but also suggest that the pVAX-LAMP/Gn as a DNA vaccine has potential application on clinic for HTNV infection immunoprophylaxis.

**Keywords:** Gene vaccine, Hantaan Virus Gn, lysosome associated membrane protein, major histocompatibility complex II compartment, immune protection

**Abbreviations:** HTNV, Hantaan virus; Gn, Glycoprotein N-terminal; LAMP, lysosome associated membrane protein; ELISpot, enzyme-linked immunospot assay; APCs, antigen-presenting cells; MHC, the major histocompatibility complex; MIIC, MHC class II processing compartments; pVAX-LAMP/Gn, pVAX-LAMP HTNV Gn construct; pVAX-Gn, pVAX-HTNV Gn construct; PVAX-LAMP construct; HFRS, haemorrhagic fever of renal syndrome.

### Biography

Dongbo Jiang is studying bachelor's majoring in Clinical Medicine in the Forth Military Medical University. He is about to become a member of national immunology society. He has 3 second author publications in academic journal or conference proceedings and his new work is yet to be published.

387783851@qq.com