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Characterization of recombinant vaccine constructed by individually cloning of HIV1 C gag, env and polRT genes using Semliki Forest virus vector

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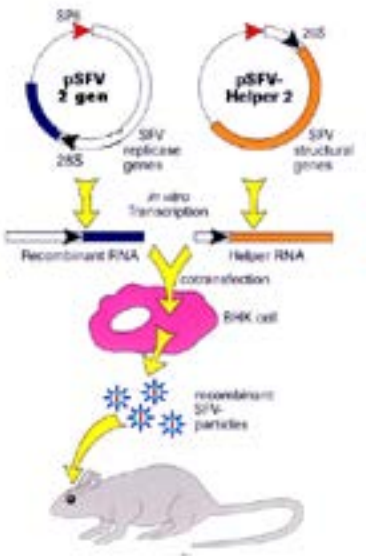
The development of a safe, immunogenic, globally effective and affordable vaccine may be useful in the control of HIV/AIDS. The recombinant vaccines developed by cloning of HIV genes using different vectors have not been found to be effective due to poor or moderate immunogenicity and/or safety. Semliki Forest virus (SFV), an alpha virus does not have pre-existing immunity, has the cytoplasmic but not nuclear expression of heterologous proteins and non-pathogenic in humans. Therefore HIV1 Indian subtype C gag, env, and polRT genes were individually cloned using SFV vector to develop recombinant SFV2gen replicon RNA constructs and subsequently constructed recombinant SFV2gen viral like replicon particles (VRP) designated as rSFV2gen/gag VRP, rSFV2gen/env VRP, and rSFV2gen/polRT VRP by co-electroporation with Helper RNA. In vitro studies demonstrated high levels of expression of respective HIV1 proteins and their localization in the cytosol and not nucleus from all three recombinant constructs following infection of BHK-21 cells. The recombinant RNA constructs and VRPs individually and in a combination of three constructs elicited significantly high cell-mediated immune responses as detected by INF gamma and IL2 Assay and humoral immune responses in mice. VRPs have been found to be more immunogenic as compared to RNA constructs. Studies demonstrated that all three recombinant SFV2gen based vaccine constructs of Indian subtype C gag, env, and polRT genes were highly immunogenic in the mice model and therefore promising preventive and therapeutic candidate vaccines and therefore may be effective in control and management of HIV/AIDS.



Biography

A H Bandivdekar completed his PhD Degree from Mumbai University. He was Post-Doctoral and subsequently Carrier fellow at Population Council, New York. He has also been the visiting scientist at UC Davis Primate Center. He has major research contributions at National Institute for Research in reproductive health in the field of reproductive health and understanding mechanism of sexual transmission and pathogenesis of HIV. He has developed recombinant vaccine which elicited significant cell mediated and humeral immune responses against HIV. He also developed formulation for prevention of sexual transmission of HIV which prevents HIV binding to hMR and CXCR4 and CCR5 coreceptors. He has also developed nonsurgical method of fertility regulation using synthetic peptide of sperm specific antigen. He has published more than 80 papers in peer reviewed journals and also the book and two conference proceedings. He also has six National and International awards for his scientific contributions

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