Retrovirology

Poster presentation

P17-07. Insertion of a vaccinia virus host range (hr) gene into NYVAC-B genome potentiates immune responses against HIV-1 antigens

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Background

Highly attenuated poxvirus strains such as MVA and NYVAC expressing HIV components have been evaluated as vaccines in monkeys and in human trials with encouraging results.

Methods

In an effort to further improve the immunogenicity of poxvirus based vaccine candidates against HIV/AIDS, we have developed a novel vector by inserting a VACV host-range (hr) gene in the attenuated NYVAC-B recombinant which expresses HIV-1 antigens from clade B (Env, Gag, Pol and Nef). We have previously described that the presence of hr gene in NYVAC genome prevents the induction of apoptosis and renders the vector capable of replication in human and murine cell lines while maintaining an attenuated phenotype in mice (Najera et al., 2006).

Results

In the present study, we have compared the in vitro antigen expression after NYVAC-B or NYVAC-B-(hr) infection using fluorescent-activated cell sorting to score Gag expressing cells. The immunogenicity of the recombinants in Balb/c mice after DNA-prime/Poxvirus-boost regime was evaluated by ELISPOT and intracellular cytokine staining assay. Both recombinants elicited robust, broad and multifunctional antigen-specific T-cell responses targeting the four immunogens included in the vectors. However, priming with DNA-B followed a booster with NYVAC-B-(hr) significantly enhanced the magnitude and quality of the specific cellular immune responses in comparison to that elicited in animals that received DNA-B/NYVAC-B.

Conclusion

These data demonstrate the possibility to enhance the immunogenicity of the highly attenuated NYVAC vector by the insertion of a host-range gene and suggest the use of this modified vector as an improved vaccine candidate against HIV/AIDS.