Retrovirology

Poster presentation

P19-04. A synergistic effect of a combined bivalent DNA-protein anti-HIV-1 vaccine containing multiple T- and B-cell epitopes of HIV-1 proteins

A Ilyichev*, L Karpenko, L Lebedev, R Uzhachenko, T Ilyicheva and S Bazhan

Address: Depatment of Immunology, State Research Center Virology and Bitechnology Vector, Koltsovo, Russian Federation
* Corresponding author

from AIDS Vaccine 2009
Paris, France. 19–22 October 2009

Published: 22 October 2009

Retrovirology 2009, **6**(Suppl 3):P324 doi:10.1186/1742-4690-6-S3-P324

This abstract is available from: http://www.retrovirology.com/content/6/S3/P324

Background

Immunogenic properties of the CombiHIVvac, comprising polyepitopeHIV-1 immunogens, one being the artificial polyepitope protein TBI, containing the T- and B-cell epitopes from Env and Gag proteins, and the DNA vaccine construct pcDNA-TCI coding for the artificial protein TCI, carrying over 80 T-cell epitopes (both CD4+ CTL and CD8+ Th) from Env, Gag, Pol, and Nef proteins, are studied in this work.

Methods

The vaccine constructs containing the immunogens TCI and TBI were produced using VLP technology. Several variants of these constructs were designed. The first variant is the candidate vaccine CombiHIVvac, the artificial micelle-like particles VLP-TBI-pcDNA-TCI The other two variants were the artificial micelle-like particles VLP-TBI-pcDNA and VLP-pcDNA-TCI, which were produced similarly to VLP-TBI-pcDNA-TCI, except that the vector plasmid pcDNA3.1. For control purposes, a construct consisting of the vector pcDNA3.1 coated with a spermidine-polyglucin conjugate was used. The conjugate was synthesized as described above except for TBI protein was not added to the reaction mixture.

Results

The data reported demonstrate clearly that a combination of two B- and T-cell immunogens (TBI and TCI) in one construct results in a synergistic increase in the antibody response to both TBI protein and the proteins from HIV-1 lysate. The level of antibodies induced by immunization with the constructs containing either immunogen alone (TBI protein or the plasmid pcDNA-TCI) was significantly lower as compared to that induced by the combined vaccine.

Conclusion

The analysis performed suggests that the presence of CD4+ T-helper epitopes, which can be presented by MHC class II, in the protein TCI, may be the main reason underlying the increased synthesis of antibodies to TBI protein due to a CD4-mediated stimulation of B-cell proliferation and differentiation.