Retrovirology

Poster presentation

P19-53 LB. Priming with recombinant BCG expressing HIV-1 Gag or RT and boosting with recombinant MVA induces an effective immune response in mice

H Stutz, R Powles, EG Shephard and A Williamson*

Address: University of Cape Town, Cape Town, South Africa
* Corresponding author

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Background

Mycobacterium bovis BCG (BCG) has a number of characteristics that give it great potential to act as a vehicle for the delivery of recombinant vaccines. However, its success depends on overcoming the challenges of poor antigen expression levels and genetic instability. Our studies using an optimized mycobacterial shuttle vector which utilizes the Mycobacterium tuberculosis mtrA promoter, induced upon infection of macrophages, and the M. tuberculosis 19 kDa signal sequence may overcome these issues. We have used this system to generate a recombinant BCG (rBCG) expressing HIV-1 subtype C full length Gag or reverse transcriptase (RT).

Methods

These rBCG vaccines were tested in BALB/c mice in heterologous prime-boost inoculation regimens where the rBCG was used as a primary vaccine and a matched rMVA (SAAVI MVA-C) was the booster vaccine.

Results

A low magnitude of ex vivo HIV antigen specific CD8+ T cells could be detected in spleens 7 days after a single intraperitoneal inoculation using an ex vivo IFN-γ ELISPOT assay. In addition a high magnitude of HIV antigen specific CD8+ T cells were detected ex vivo in the spleens of mice primed with rBCG and boosted with SAAVI MVA-C when both an IFN-γ ELISPOT assay and an H-2Dd MHC class I pentamer folded with the CD8 peptide to enumerate peptide specific cells was used. These results were observed for rBCG vaccines constructed using both wild type BCG Pasteur and an attenuated panthothenic acid auxotrophic strain.

Conclusion

Thus this rBCG vector system shows strong promise for development as a priming vaccine to be used in combination with a heterologous booster vaccine such as a rMVA.

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