Retrovirology

Poster presentation

P17-15. Immunogenicity studies of chimeric yellow fever 17D viruses carrying HIV-1 p24 antigen

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Background

We reported previously the construction, in vitro characterization and preliminary immunogenicity studies of a novel recombinant 17D yellow fever vaccine expressing HIV-1 p24 (17Dp24). Here we further evaluated 17Dp24-induced Ag-specific cell-mediated immune responses as well as compared this p24-specific immune reactions to those of other viral vectors (MVA and Ad) carrying the same HIV-1 antigen with the goal to compare the quantity and quality of the different immune responses.

Methods

The Ag-specific polyfunctional T cell response was measured by multi-parameter intracellular cytokine staining (ICS) and cytokine release was measured by cytokine beads array(CBA). The quality of 17Dp24 induced cell-mediated immunity was further investigated with a mouse challenge model using a recombinant vaccinia virus expressing HIV-Gag (including p24).

Results

Mouse immunogenicity experiments indicated that the 17Dp24 vaccine candidates were able to induce a robust CD8+ and CD4+ T-cell response. Upon Ag stimulation in vitro, INFγ, IL-2 as well as the expression of both cytokines were observed in up to 1.5% of both T-cell populations. Although a 1,5-fold greater INFγ CD8+ T-cell response is generated for MVA and Ad5 when comparing the immune responses with those of our 17D recombinants, two to threefold more polyfunctional CD4+ and CD8+ T-cells, expressing both INFγ and IL-2, was noticed for the recombinant 17D viruses. Furthermore in contrast to the other vectors 17D recombinants were also able to generate IL-4 and IL-5 producing Ag-specific CD4+ T-cells. Lastly, viral titers were reduced 100-fold when mice previously immunized with the 17Dp24 vaccine candidate were challenged with the vaccinia-Gag virus, indicating a functional 17Dp24 induced cell-mediated immune response.

Conclusion

These studies confirmed that the 17D yellow fever virus vaccine strain could be pursued as alternative viral vector for HIV vaccine development.