Retrovirology

Poster presentation

P02-06. The adjuvancy of OX40 ligand (CD252) on an HIV-1 canarypox vaccine

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Background

The immunogenicity of current human immunodeficiency virus-1 (HIV-1) canarypox vaccines is weak and needs to be improved. Ligation of OX40 (CD134), a member of tumor necrosis factor receptor superfamily (TNFRSF), by its ligand OX40L (CD252), a tumor necrosis factor superfamily (TNFSF) molecule, has been demonstrated to provide a pivotal costimulatory signal to enhance CD4 T cell help of humoral and cytotoxic T cell immune responses. The present study examined whether an OX40L expressing vector could boost the immunogenicity of the HIV-1 canarypox vaccine, vCP1452, in mice.

Methods

Female Balb/c mice were vaccinated 3 times with 2-week intervals according to the following schedule: group 1: naive unimmunized mice; group 2: 10 pfu of vCP1452 + 10 pfu empty vector ALVAC II; group 3: 10 pfu of vCP1452 + 10 pfu vCPmOX40L; group 4: 10 pfu of vCP1452 + 5 × 10 pfu vCPmOX40L + 5 × 10 pfu vCPmCD40L. Six weeks after the last immunization, mice were sacrificed and spleens and sera were collected for immunological analysis, including IFN-γ ELISPOT, tetramer staining, ICS, CFSE proliferation assay, and anti-Gag ELISA.

Results

Co-immunization of mice with OX40L-expressing canarypox and vCP1452 augmented HIV-1 specific CD8 T cell responses in terms of frequency and cytokine expression. OX40L-expressing canarypox enhanced the frequency of antigen specific CD8 T cells with an effector (CD127 CD62L) phenotype, which was associated with an *ex vivo* expansion of HIV-1 specific CD4 T cells. Surprisingly, OX40L did not enhance antibody responses elicited by the HIV-1 canarypox vaccine. We saw no added benefit by combining OX40L and CD40L vectors as an adjuvant strategy for vCP1452.

Conclusion

Our results indicate that, similar to CD40L, OX40L can enhance the cellular but not humoral immunogenicity of HIV-1 canarypox vaccines. In summary, our findings show that OX40L can be used as a molecular adjuvant to enhance T cell immune responses.