Retrovirology

Poster presentation

P19-10. Induction of dendritic cell maturation by a liposomally-delivered multivalent HIV vaccine

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Background

We have previously developed an innovative vaccine based on the genetic mutability and diversity of variable HIV-1 epitopes. This polyvalent peptide vaccine has been shown to induce a broadly reactive peripheral immune response in mice and macaques (Azizi A, J. Immunol, 2008). Our group recently developed a lipid-based vesicle as an oral vaccine delivery system for the induction of mucosal immunity within mucosal tissues. In this study, we take advantage of this technology to entrap our HIV-1 vaccine into this lipid-based vesicle. We then evaluated the ability of our vaccine formulations to induce maturation of mouse dendritic cells. In vitro experiments have shown our liposomally-delivered candidate vaccine to be effective in inducing the maturation of mouse dendritic cells, as demonstrated by increased cell surface MHCII and CD86 expression.

Methods

Mice were sacrificed and bone marrow from femur, tibia and humerus was collected. Marrow cells were then cultured in the presence of IL-4 and GM-CSF for 5 days before being loaded with antigen to induce maturation. The presence of cell surface markers related to dendritic cell maturation was then evaluated by flow cytometry.

Results

Stimulation of immature bone marrow-derived murine dendritic cells with liposomally-delivered HIV peptides induces maturation of these cells, as determined by increased expression of cell-surface markers MHCII and CD86.

Conclusion

Our data indicate that the incorporation of multiple HIV-1 epitopes into a lipid-based delivery system is effective in inducing the maturation of murine dendritic cells. Our findings suggest that a liposomal-based delivery system may act as an effective delivery vehicle.