

P1049

Abstract (poster session)

Designing and studying of defensin peptides analogues as a mucosal adjuvant/microbicide: a study towards the development of peptide-based vaccine against AIDS

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Background: The mechanisms of resistance to HIV infection in the human oral cavity are incompletely understood while salivary components have been implicated in protection. **Methodology:** We have synthesized HIV and Defensin peptides and their corresponding analogues by making some modifications in the natural sequence. We have done Anti HIV, Anti-microbial and other characteristic study of defensins to prove them active. Then, immunized these formulations in Outbred and Two different Inbred mice (H2b, H2d) through IN route using Microsphere as delivery vehicle. We have studied Humoral Response of HIV peptides with and without Defensins by estimating antibody levels (IgG/IgA) in the serum as well as in lung, intestinal, vaginal and rectal washes till day 120. For cell mediated immune response, peptide specific T cell proliferation and cytokine/chemokine levels were studied in the cells isolated from the three different mucosal sites i.e. spleen, lamina propria and peyer's patches of the primed mice. We have also done Cytolytic activity analysis, by estimating IFN-gamma/Perforin secretion by CD4+/CD8+ also through FACS, which was checked by IFN-gamma/Perforin secretion. **Result & Discussion:** All the HIV peptide with defensins in different formulations has increased titre significantly both in sera (1,02,400-4,09,600) and washes (800-12,800) ($p < 0.05$) as well as the proliferation response was also significantly higher (upto 2 fold ranging from 10-50 stimulation index) ($p < 0.001$) as compared to HIV peptide alone. The cytokine measurement profile showed mixed Th1 and Th2 type of immune response. The FACS analysis data revealed that CD8+/ CD4+ T cells showed significantly higher Cytolytic activity in the HIV with Defensin peptide formulations. Surprisingly, CD4+ T-cells were also showing Cytolytic property. **Conclusion:** Thus, the results reported here demonstrate the effectiveness of synthetic defensin peptide analogues to induce strong and long lasting humoral and cellular immune response through intranasal route using PLG- microsphere as a delivery vehicle. Our findings may have implications in the development of new antiviral agent for AIDS therapy.