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T helper-1 cells responses against HIV-1 Virus like particles entrapped in Archaeal liposomes obtained from *Methanobrevibacter smithii*

Ali Sharifat Salmani
Islamic Azad University, Iran

Abstract

Despite the worldwide efforts made in the field of HIV vaccine development, an efficient AIDS vaccine strategy is still vague. Virus-like particles (VLPs) are one of the introduced aspects for HIV vaccine development since the non-replicative nature of HIV VLPs, resulted from the lack of viral genomic RNA, makes them suitable for broad applications. We have previously designed and introduced non-infectious VLPs (mzNL4-3) by introduction of a deletion mutation in the reverse transcriptase and integrase coding regions of HV-1. There are evidences suggesting that an effective cellular immune response against HIV-1 is able to control and suppress viremia during primary and chronic HIV infections. In the present study we have evaluated the potency of mzNL4-3 VLPs mixed with Archaeal liposomes (Archaeosomes) obtained from *Methanobrevibacter smithii*, which is among the microbial components with proved adjuvant properties, to induce humoral and cellular responses against HIV-1. Analysis of anti-HIV-1 responses elicited in immunized BALB/c mice following different immunization regimens indicated the archaeosome-entrapped HIV VLPs as immunopotent combination which significantly induced anti-HIV-1 IgG with IgG2a dominancy. Results of cytokine and ELISpot assays also showed the capability of this combination for effective induction of IFN-γ and IL4 secreting cells and further suggested the promotion of Th1-oriented response that was evidenced with the increased IFN-γ/IL4 secretion ratio. According to our study, HIV-1 VLPs entrapped in archaeosomes obtained from *Methanobrevibacter smithii* seem to be a promising approach in vaccine development against HIV-1.

Biography

Ali Sharifat Salmani has recently completed his PhD in Microbiology. He has published more than 10 papers based on his M. SC and PhD theses and his experiences in the field of bacterial and viral vaccines. He has been one of the researchers of Hepatitis and AIDS department of Pasteur institute and currently is an assistant professor of biology department of Tehran Science and Research University.