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P112. CONSTRUCTION AND FORMULATION OF ARCHAEOSOME NANOPARTICLES CONTAINING UE6/UE7/UL1 CHIMERIC PLASMID AS A THERAPEUTIC PAPILLOMAVIRUS TYPE 16 VACCINE

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Objective: Cervical cancer is the second most common cancer in women worldwide and is highly associated with high-risk human papillomavirus (HPV) infection, most often HPV16. Among therapeutic HPV vaccines, DNA vaccines have emerged as a potentially promising approach due to their safety profile, simplicity of preparation and stability. DNA vaccine alone have limited immunogenicity, therefore, several strategies are used for increasing their potency. For bypassing the coming problem, we used archaeosomes as a potent adjuvant. Archaeosomes are liposomes which are prepared from archaeobacterial glycerolipids, with great adjuvant activity and comparatively high stability during oxidative stress, high temperatures, alkaline pH, etc. The aim of this study is application of Halobacterium salinarum polar lipid archaeosomes for formulation of the E6/E7/L1 chimeric gene as a HPV vaccine candidate. Methods - Animal(s): The recombinant pIRES2-plasmid containing E6/E7/L1 chimeric genes of HPV-16 were purified. Halobacterium salinarum total polar lipids are prepared by the method of Bligh and Dyer. The formation of the archaeosome-pDNA complex was achieved by the addition of plasmid DNA to archaeal lipid solution. Particle sizes and zeta potential of the samples was measured using dynamic light scattering. After development of tumor by administration of TC-1 cells in C57BL/6 mice, ability of the construct for stimulation of cellular immunity and reduction of tumor size by was evaluated in animal model. The T-cell immune response was evaluated by different cytokines assays such as IFN-Î³ , IL-2, IL-10 and IL-4. Main Outcome Measure(s) - Result(s): Results showed that although immunization with plasmid DNA containing E6/E7/L1 chimeric genes alone could induce strong cellular immune responses, and showed significant rate of inhibition of tumor growth comparing with control groups ($p<0.05$), but higher immunogenicity was achieved in combination of target DNA vaccine candidate with archaeosome. Conclusions: The archaeosomes encapsulated E6/E7/L1 chimeric gene plasmid induced HPV16-specific cellular immune responses and protect against TC-1 induced tumor in vivo. Generally, Nanodelivery Systems may be an adequate alternative to viral vectors for gene therapy. The archaeosomes are easy and cost- economic to prepare, highly stable with great promise as vaccine delivery vehicles.

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