other co-surfactants. We evaluated the physical characteristics and transfection efficiencies of DNA/SLN complexes in non-small cell lung carcinoma cells (H1299). The DOTAP-SLN formulation was tested for in vivo transfection efficiency and its retention time within the organs by applying the DNA/SLN complexes on hair-removed dorsal skin of mice non-invasively. Results : The SLNs have small sizes and positive zeta potential values. Gene trasnfection efficiency of the DOTAP-SLN reached maximum and appeared comparable to Lipofectin^{R} at 1: 14 (the ratio of lipid to DNA). The DOTAP-SLN formaulation was capable of penetrating the intact skin of mice when topically and transdermally applied. Conclusion : A cationic SLN/DNA complex system may be applied potentially for dermal gene delivery.

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Synthesis of Peptides of L-Aspartic Acid Derivatives by Solid Phase Peptide Synthesis Methodology

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The polyene macrolide amphotericin B (AmB) is the most effective antibiotic for the treatment of systemic and visceral fungal infections in humans. The main advantages of this drug are: broad antifungal spectrum, fungicidal activity, and high activity against multidrug resistant strains. AmB binds to ergosterol, the sterol of fungal membranes, and destroys them. Unfortunately, its usefulness is limited by its pronounced side effects both immediate (chills, fever, nausea, headache) and delayed with dose-limiting nephrotoxicity, in particular. It is a matter of interest to design new formulations/admixtures that, like the recently commercialized AmB alternatives, can provide a better ratio between activity and toxicity compared with that of classically used formulation, Fungizone (AmB-deoxycholate [AmB-Doc]). Our present study involves the synthesis of deca-L- aspartic acid derivatives and their uses as admixture with AmB in an attempt to reduce the toxicity associated with AmB application for fungal diseases.We have used Solid Phase Peptide Synthesis (SPPS) Chemistry to synthesize our desired peptides. The intended carboxyl terminal amino acid is anchored to a solid support and the next N-protected amino acid is coupled to the first one. After the coupling step, the block is removed from the primary amino group and the coupling reaction is repeated with the next amino acid. The process continues until the peptide is completed. Then, the molecule is cleaved from the solid support and groups protecting amino acid side chains are removed. We report herein the preparation of peptide derivatives of aspartic acid with some beta-carboxyl groups blocked as aryl alkyl esters. Their applications along with amphotericin B is in progress and the results will be reported later.