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Abstract

In this study, the effect of liposomal lipid composition on the physicochemical characteristics and adjuvanticity of liposomes was investigated. Using a design of experiments (DoE) approach, peptide-containing liposomes containing various lipids (EPC, DOPE, DOTAP and DC-Chol) and peptide concentrations were formulated. Liposome size and zeta potential were determined for each formulation. Moreover, the adjuvanticity of the liposomes was assessed in an *in vitro* dendritic cell (DC) model, by quantifying the expression of DC maturation markers CD40, CD80, CD83 and CD86. The acquired data of these liposome characteristics were successfully fitted with regression models, and response contour plots were generated for each response factor. These models were applied to predict a lipid composition that resulted in a liposome with a target zeta potential. Subsequently, the expression of the DC maturation factors for this lipid composition were predicted and tested *in vitro*;