Enhancement of immune response and protection in BALB/c mice immunized with liposomal recombinant major surface glycoprotein of Leishmania (rgp٦٣): The role of bilayer composition

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Abstract: Development of new generation vaccines requires adjuvants to elicit the type and intensity of immune response needed for protection. Liposomes have been shown to be an effective adjuvant formulation. In this study, the role of liposome bilayer composition with different phase transition temperature (T(c)) to induce a T helper ١ (Th١) type of immune response and protection against leishmaniasis in BALB/c mice was assessed. Liposome formulations with different bilayer compositions consisting of egg phosphatidylcholine (EPC, T(c) < ٠ degrees C), dipalmitoylphosphatidylcholine (DPPC, T(c) ٤١ degrees C),or distearoylphosphatidylcholine (DSPC, T(c) ٥٤ degrees C) were prepared. All liposomes were contained rgp٦٣ as a recombinant antigen and used to immunize mice subcutaneously ٣ times in ٣-week intervals. Evaluation of lesion development and splenic parasite burden after challenge with L. major, evaluation of Th١ cytokine (IFN-gamma) and Th٢ cytokine (IL-٤). and titration of IgG isotypes were carried out to assess the type of generated immune response and extent of protection. The results indicated the generated immune response in mice was influenced by the bilayer composition of liposomes, so that mice immunized with liposomes consisting of EPC induced a Th٢ type of immune response while liposome consisting of DPPC or DSPC induced Th١ type of immune response. It seems that liposomes prepared with higher Tin phospholipids are suitable formulation to induce Th١ type Of immune response and protection, and so might be used for further investigations to develop an effective vaccine against leishmaniasis. (C) ٢٠٠٩ Elsevier B.V. All rights reserved.

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