

CATIONIC BILAYER FRAGMENTS AS IMMUNOADJUVANTS

Nilton Lincopan¹, Noeli M. Espíndola², Adelaide J. Vaz² and
Ana M. Carmona-Ribeiro¹

¹Departamento de Bioquímica, Instituto de Química, Universidade de São Paulo,
São Paulo, SP, Brazil.

²Departamento de Análises Clínicas, Faculdade de Ciências Farmacêuticas,
Universidade de São Paulo, São Paulo, SP, Brazil.

Cationic bilayer fragments (BF) of dioctadecyldimethylammonium bromide (DODAB) have been successfully used for drug solubilization, coverage of hydrophobic drug granules, or for production of bilayer-covered particles. In this work the immunoadjuvant effect of DODAB BF is further investigated. Two model antigens were employed: 1) bovine serum albumin (BSA); 2) purified 18 kDa/14 kDa proteins from *Taenia crassiceps* (18/14-*Tcra*). DODAB BF/antigen dispersions were physically characterized at 1 mM NaCl, over a range of DODAB concentrations (0.005 - 1 mM) and final [BSA] of 0.5 mg/mL or [18/14-*Tcra*] of 0.050 mg/mL. Methods were dynamic light scattering for particle sizing, zeta-potential analysis and determination of proteins adsorption isotherms onto supported DODAB bilayer. In mice, humoral and cellular immunoresponses were evaluated from IgG in serum and footpad swelling tests, respectively. At 0.1 mM DODAB BF, over a range of antigen concentrations (0.001-0.050 mg/mL antigen), protein aggregation was practically absent. In this condition, DODAB BF/antigen complexes were nanosized (60 - 200 nm mean diameter), positively charged (20 mV of zeta-potential) and highly immunogenic in contrast to antigens alone. In summary, cationic bilayer fragments could be suitable as a general immunoadjuvant for antigen presentation and vaccine design.

Financial support: FAPESP and CNPq