Mucosal immunization of BALB/c mice with DNA vaccines encoding the SEN1002 and SEN1395 open reading frames of Salmonella enterica serovar Enteritidis induces protective immunity

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Resumen

Salmonella Enteritidis is the main cause of foodborne salmonellosis worldwide. The limited effectiveness of current interventions against this pathogen has been the main incentive to develop new methods for the efficient control of this infection. To investigate the use of DNA vaccines against S. Enteritidis in humans, immune responses stimulated by two plasmids containing the genes designated SEN1002, located in the pathogenicity island SPI-19 and encoding a Hcp protein involved in transport mechanisms, and SEN1395, located in the genomic island Phi SE14 and encoding a protein of a new superfamily of lysozymes, were evaluated. Humoral and cellular responses following intranasal immunization of two groups of BALB/c mice with the plasmids pV1002 and pV1395 plus adjuvant were evaluated and it was observed that the IgG2a/IgG1 ratios were sixfold higher than control groups. Both plasmids stimulated specific secretory IgA production. Increased proliferation of lymphocytes and IFN-gamma production were detected in both experimental groups. DNA-vaccinated mice developed protective immunity against a virulent strain of S. Enteritidis, with nearly 2 logs of protection level compared to the negative control values in the spleen. Therefore, DNA vaccines are efficient at stimulating cellular and humoral immune responses at systemic and mucosal levels.

Palabras clave

Palabras clave de autor: DNA vaccines; immune response; Salmonella Enteritidis; SEN1002; SEN1395

KeyWords Plus: VI SECRETION; SUPEROXIDE-DISMUTASE; BRUCELLA-ABORTUS; TYPHIMURIUM; INFECTION; LYMPHOCYTES; VACCINATION; ADJUVANTS; RESPONSES; VIRULENT

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