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The induction of antigen-specific and protective cellular immune responses against *Mycobacterium tuberculosis*-specific proteins**Hussain A Safar**

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Tuberculosis and asthma are worldwide public health problems of major concern. Effective vaccines are needed to control these diseases globally. In both diseases, the protective immunity is mediated by T-helper (Th)1 cytokines (primarily interferon-gamma, IFN- γ), whereas, Th2 (IL-5), Th17 (IL-17A) and T regulatory (IL-10) cytokines are pathologic. The aim of this study was to obtain recombinant *Mycobacterium tuberculosis*-specific proteins and study the induction of protective (Th1) and pathologic (Th2, TH17 and Treg) immune responses by immunizing mice. The genes encoding *Mycobacterium tuberculosis*-specific proteins ESXA, ESXB, ESXO, ESXV and PE35 were cloned into pGES-TH1 vector and expressed in *Escherichia coli*. The recombinant proteins were purified to homogeneity using affinity chromatography. Female BALB/c mice were immunized and boosted with purified recombinant proteins emulsified in incomplete Freund's adjuvant. Two weeks after the last booster, mice were euthanized and spleen cells were cultured *in vitro* in the presence of Concanavalin A and mixture of synthetic peptides covering the sequence of immunizing proteins. The culture supernatants were collected after appropriate time intervals and the concentrations of secreted INF- γ , IL-5, IL-10 and IL-17A were quantified using enzyme-linked immunosorbent assay. All the genes were successfully expressed in *E. coli* and the recombinant proteins were purified to homogeneity. The experiments with spleen cells from the immunized mice showed that ESXO, ESXV and PE35 stimulated only Th1 responses. The induction of protective Th1 responses in mice immunized with PE35, ESXO and ESXV proteins suggests their potential as new candidate vaccines against tuberculosis and asthma.

Biography

Hussain A Safar is currently a PhD candidate at Kuwait University and his area of specialization is medical microbiology and bacterial immunology specifically.

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