INTERACTION OF *SALMONELLA TYPHIMURIUM* WITH MURINE MACROPHAGES AND DENDRITIC CELLS

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Salmonella is an important bacterial pathogen causing infections in humans and animals ranging from food poisoning to enteric fever. Initiation of a specific immune response to *Salmonella* requires the activation of antigen presenting cells (APCs) and subsequent presentation of bacterial antigens to T cells. Macrophages and dendritic cells (DCs) are the important APCs involved in innate as well as adaptive immune responses.

The objective of this study was to identify the phenotypic and functional changes that take place in murine macrophages and DCs in response to *Salmonella enterica* serovar *Typhimurium*.

The association of salmonellae with macrophages and DCs was revealed by performing bacterial invasion assays and confocal microscopy. After stimulating the APCs with live or heat killed *Salmonella* for variable periods of time at 37 °C, the induction of cytokines, inducible nitric oxide synthase (iNOS) by APCs, and the changes in the expression of surface molecules were analyzed. In response to salmonellae both cell types secreted proinflammatory cytokines (TNF-α and IL-1β) and nitric oxide as shown by Enzymes Linked Immunosorbant Assay (ELISA) and Griess assay, respectively. The induction of cytokines and iNOS were multiplicity of infection (m.o.i.) dependent. The induction of iNOS also appeared to be influenced by viability of salmonellae. Bacterial stimulation resulted in changes in the expression of cell surface molecules as revealed by flow cytometry. Upregulation of B7.1, B7.2 and CD40 molecules on both cell types were seen. Most importantly, macrophages as well as DCs presented *Salmonella*-derived antigen to CD4 T cells as shown by antigen presentation assay.

These data show that *S. typhimurium* interaction with macrophages and DCs activate these cells in ways that may enhance their ability to productively stimulate *Salmonella*-specific T cells following phagocytic processing and presentation of *Salmonella* antigens.