Chapter 1: Abstract

The immune response to some pathogenic microorganisms fails to protect the individual from severe infection and disease. Subsets of lymphocytes play a role in the outcome of an infection, particularly two subsets of T cells, called T-helper (T\textsubscript{H}1 and T\textsubscript{H}2) lymphocytes. When preferentially stimulated, the T\textsubscript{H}2 cells are often inadequate or inappropriate in controlling certain microbes and as a result serious infection develops. The T\textsubscript{H}1 response, on the other hand, may result in the resolution of the severe infection.

In this study, we attempted to determine if leptin, cyclosporin A (CsA), and/or FK506 could switch the immune response in *Leishmania major* infected BALB/c mice from a T\textsubscript{H}2 to a T\textsubscript{H}1 type response thereby protecting them from severe disease. Groups of mice were infected with *L. major* and treated prophylactically with one of the above three drugs. The mice were compared to non-treated, infected animals using a variety of observations including ulcer development, footpad size, quantification of *L. major* in tissues and cytokine production. Data suggests that FK506 and CsA are very effective immunomodulatory drugs, while the amount of leptin is critical for the balance between T\textsubscript{H}1 and T\textsubscript{H}2.