Studies in Vaccine Induced Cell-Mediated Immunity in Cattle: *The Challenge*

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The concept that modified live vaccines and not killed vaccines will produce cell-mediated immunity and significant lymphocytic memory has long been held as scientific fact in veterinary immunology. However, evidence has been accumulating which indicates this concept is not necessarily true in all cases. As early as 1986, Stott, Thomas and Taylor in England demonstrated lymphocytic transformation following vaccination with adjuvanted killed vaccines. Recently Ellis, in Canada, demonstrated lymphocytic blastogenesis in cattle using killed and modified live respiratory vaccines. Early reports by Chase and Hurley at South Dakota indicate significant T-helper cell proliferation, cytotoxic T-cell activity and lymphocytic memory eleven months following vaccination with a commercial, killed, 5-way respiratory vaccine containing an unusually potent adjuvant.

Immunological research has identified the major cell types and the associated secretions that are critical to the immune response. Additionally, research shows that there is considerable overlap in the cells contributing to antibody-mediated immunity and cell-mediated immunity. The standard measure for determining antibody-mediated immune response has been antibody titer. The measure for cell-mediated immunity has included proliferation of T-lymphocytes. A reliable, inexpensive, valid measure of cell-mediated immunity is needed. Veterinary laboratories currently lack a standardized, cost-effective, commercially available measure for cell-mediated immunity. This situation requires cautious skepticism by the veterinarian when evaluating vaccine claims which emphasize cell-mediated immunity.

The purpose of this poster is to identify:

• The cells essential to the bovine cell-mediated response.

• Which cells when measured will best reflect the degree of activation of cell-mediated immunity.

• The bovine cell-mediated research efforts which have been attempted to date.