AIMS AND OBJECTIVES

Leishmaniasis is a parasitic disease that poses a major health problem in a large number of countries. Around the world some 350 million people per year are at risk of acquiring the infection, whereas approximately 12 million people are already infected. Though enormous efforts have been made to eradicate the leishmanial infections through vaccination and chemotherapy but progress on this front is still not very satisfactory. On the one hand vaccines currently tested against several forms of leishmaniasis has so far shown no promise to rely upon, while on the other hand the chemotherapeutic agents commonly used for combating the disease have a number of side effects including toxicity and immunosuppression. In view of the rather gloomy future, the only alternative is that the search for a new candidate vaccine(s) must continue.

Present research represents one such step in that direction, where a preliminary effort has been made to search/identify some candidate vaccine(s) against visceral leishmaniasis.

The experimental details of the proposed plan of study included work involving some of the following aspects:

1. Maintenance of axenic in vitro, cultures of *L. donovani* (NICD: C II Strain).
2. Isolation and purification of different antigenic fractions: whole, soluble and particulate antigen isolates.

3. Biochemical characterization of antigenic fractions by estimating their protein, carbohydrate and DNA concentrations. Immunologic characterizations were carried out by means of IFA, IHA and ELISA.

4. Physico-chemical characterisation/identifications were carried out by determining their molecular weights in SDS PAGE.

5. Vaccination studies were carried out by immunizing golden hamsters with purified and characterized whole, soluble and particulate antigens through intraperitoneal routes.

6. Various antigen fractions were immunopotentiated and then used for immunization of golden hamsters with purified whole, soluble and particulate antigen fractions in association with BCG (2 x 10^6 Bacille Calmette-Guerin).

7. Assessment of Humoral immune responses were carried out by means of IHA and ELISA assay techniques.

8. Immunoglobulin levels were assayed in immune and hyperimmune sera by using various radial immunodiffusion techniques.
9. The cell-mediated immune responses were also assayed in immunized and immunopotenti ated animals by making use of \textit{in vivo} DTH responsiveness or refractoriness.

10. Protection studies in several groups of experimental animals were carried out by challenging the test animals with fatal doses ($1 \times 10^6$ promastigotes) of \textit{L. donovani} (NICD: C II Strain).

11. Detection of humoral immune responses through assessment of antibody titres by means of IHA and ELISA were subsequently carried out on post challenged animals.

12. Post challenged animals were also tested for estimating their immunoglobulin levels.

13. Cell mediated immune responses were again assayed in the above animals by employing DTH responsiveness and macrophage migration inhibition tests.

14. The level of lysozomal enzymes (Acid Phosphatase) were estimated in the macrophages of immunized/immunopotenti ated animal groups.

15. Therapeutic efficacy of the drug, Stibogluconate, was also tested by using smaller/larger doses of drugs in immunized/nonimmunized animal groups.