Nine vervet monkeys (Cercopithecus aethiops) were infected intradermally with 8 x 10(7) virulent L. donovani promastigotes. Four animals developed clinical visceral leishmaniasis and died over a period of 18 months. The remaining five animals have remained asymptomatic for a period of 3 years now. Attempts to isolate parasites from spleen and liver through biopsies were fruitless. Immunological responses of these subclinically infected animals were examined. Enzyme-linked immunosorbent assay (ELISA) and western blot analyses demonstrated Leishmania specific antibodies in these animals, but the antibody titres were low. When proliferation of peripheral blood monocytes (PBMC) to Concanavalin A (Con A) of these animals was compared with control 'disease free animals' there were no significant differences in response. However, L. donovani antigen (fixed promastigotes) specific proliferation was demonstrated in the five subclinically infected animals. High and varying levels of interferon gamma (IFN-gamma) were secreted in PBMC cultures from the five vervet monkeys when stimulated with either Con A or L. donovani antigens. In control animals, IFN-gamma was only detected when PBMC were stimulated with Con A. Marked delayed-type hypersensitivity (DTH) responses were demonstrated in the five subclinically infected animals 48 h after injection with formalin fixed promastgotes. It was concluded that the visceral Leishmania disease spectrum due to L. donovani observed in humans could be induced in vervet monkeys and that L. donovani asymptomatic/cryptic infected animals have competent humoral and cellular responses to homologous parasites.