AIM AND SCOPE OF THE PRESENT WORK
The enzyme, Alkaline phosphatase (APase) is involved in several physiological functions of the cell like- transmembrane signaling function, transport of nutrients across cell membranes, ossification of bone, protein tyrosine phosphatase, phosphotranferase, cell adhesion, proliferation and differentiation. Mitogen / antigen stimulated B lymphocytes express Alkaline Phosphatase activity (in mice and rats). In resting B cells and in resting and activated T cells APase activity is negligible. Enhanced enzyme activity has been observed during the proliferative phase and differentiation of B cells. Normal human peripheral blood lymphocytes do not show APase activity even upon mitogenic stimulation while certain cancers and cancer cell lines of both murine and human origin show enhanced APase activity. This enhancement of APase activity could be due to functional involvement of APase isoenzymes in tumorigenesis and might be a crucial factor in the etiology of the disease. However the function of APase in malignancy remains largely unknown. Myeloma cells (malignant differentiated B cells) offer an experimental system to understand the role of APase in B cell differentiation and carcinogenesis. Levamisole is an inhibitor of tissue non specific alkaline phosphatase of mammalian type. Levamisole has also been shown to have anticancer property. It is presently being used as an adjuvant along with 5-FU in the treatment of colorectal carcinoma. However the exact mechanism of action in cancers especially the B cell tumor, multiple myeloma has not been completely unravelled so far. Based on the review of literature and the work carried out earlier, in the present study, effect of levamisole on human multiple myeloma cell lines, has been studied in vitro using Alkaline phosphatase activity as a “putative” target with the following approach:

- To screen human myeloma cell lines for APase activity.
- To examine the effect of levamisole on the growth, proliferation and viability of myeloma cells
- To determine the cytotoxic mechanism exerted by levamisole.
- To evaluate the fate of levamisole in cell culture by HPLC
- To examine the role of APase activity in immunoglobulin secretion.
- To study the binding of levamisole to myeloma cells in culture using $^3$H-levamisole.