Chapter 2: Objectives of the study
The disease pathogenicity in malaria is not clearly understood despite several new findings on the host-pathogen interactions. The understanding of the immunopathology of malaria, especially with parasite-derived hemozoin seems to be prerequisite for understanding the new mechanisms of how monocytes, a front-line immune cells react to the Hz and how we can alter the pathogen caused alterations to overcome the infection and develop new immunotherapy to control the disease. Recent studies have enhanced our understanding of the importance of phenotypic changes in monocytes in modulating immune responses in several infectious diseases and highlighted their potential for development of new therapeutics. While the role of Hz is well established in immunosuppression, it’s involvement in the polarization of monocytes has not been studied. The phenotypic switching of monocytes to M1/M2 has an indirect role in the activation of TH1 and TH2 response, thereby making it an important topic in immunomodulation and pathology in malaria. To unveil the alteration of functions (cytokines, chemokine and other immunological markers) of monocytes due to its interaction with individual parasite stages as well as its component natural Hz using THP-1 cells and primary human monocytes, the following objectives were investigated.

I. To study the effect of *Plasmodium falciparum* parasites and nHz on human monocytic cell-line THP-1.

II. To investigate the phenotypic changes induced by nHz in human monocytes.

III. Identification of genes and signaling pathways in monocytes fed with nHz and synthetic β-hematin (sHz) by microarray.