Filariasis presents an intriguing relationship between host and parasite where protection and progression are causally linked to the dissimilar expansion of functionally distinct Th1 and Th2 CD4+ subsets during infection. Prominent antibody responses but antigen specific cellular hyporesponsiveness are characteristic of the systemic immune response of filarial patients. Nevertheless, the host immune response is not adequately developed to totally eradicate the parasite or prevent reinfection. In the present study therefore, attempts were made to assess the possible use of somatic filarial antigens viz. Brugia malayi adult antigen and Setaria digitata cuticular extract and recombinant antigen pRJ51 in immune response studies. The S. digitata cuticular antigens were extracted from the sheath of the worm by Tris EDTA extraction. The Wuchereria bancrofti genomic clones E.coli PR722/pGT7 and E.coli BL21 (DE3)/ pRJ51 were expressed to produce the recombinant pGT7 and pRJ51 proteins that were employed in sero-epidemiological and immune response studies respectively. With respect to humoral immune response the parasite antigen specific total IgG levels of the different clinical categories (asymptomatic microfilaremic -MF, chronic pathology -CP and endemic normals -EN) as estimated by B. malayi based ELISA was higher than that estimated by pRJ51 protein probably due to lack of phosphocholine moieties towards which most of the antibodies are directed. Further, the IgG4 levels were high in the MF as compared to CP or
though no significant differences were observed with IgG4 reactivity to recombinant protein in the different categories. This elevated parasite antigen specific IgG4 correlates inversely with the lymphocyte proliferative response observed in the MF. The monocyte secretory response in terms of the key inflammatory cytokines viz. IL-1, TNF-α and GM-CSF and also the antigen uptake by these cells of the MF, CP and EN were studied. Our findings demonstrate high levels of IL-1 in MF indicating a role in initiation of inflammatory response as is substantiated by the biological role of IL-1 viz. collagenolytic and inhibition of tissue repair mechanisms. The high TNF-α levels in CP is suggestive of a role in maintenance of late inflammatory response while spontaneous high GM-CSF levels in these patients implicate secondary bacterial infections additionally contributing to pathology. However, the recombinant induced cytokine patterns point to subtle differences in immuno-modulatory capacity. No difference however was observed in the antigen uptake by monocytes of the three categories as measured by indirect fluorescent antibody test. Nevertheless, few unstimulated monocytes of MF and CP but not EN showed the presence of antigen suggesting prior exposure and uptake of filarial antigens. Thus this study demonstrates that the monocytes of filarial patients are not deficient functionally though they do exhibit differences in the cytokine secretory profile.