Cytokine production from human primary and continuous cell lines induced by recombinant human soluble CD23.

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CD23 is a multifunctional receptor/ligand. As a receptor for IgE, CD23 is the low-affinity receptor for IgE, which plays a role in antigen-presentation and macrophage activation. As a surface molecule cleaved from the cell surface, soluble CD23 (sCD23) can act as an adhesion molecule and a cytokine. Perturbances of such molecular interactions may lead to various diseases such as allergies and other inflammatory diseases. sCD23 plays a co-factor role in inducing TNFα, IL-1α and IL-1β and soluble IL-1 receptor from activated human monocytes and PBMCs *in vitro*. It has been speculated that elevated levels of sCD23 may be used to bind soluble IgE, thus preventing it from binding to membrane CD23 on haematopoietic cells, preventing B cells from being activated into IgE producing cells. It is essential to investigate further cytokine functions and production implicated by recombinant forms of sCD23 for therapeutic purposes. Recombinant forms of human sCD23 were produced by PCR-cloning into a bacterial expression vector. The proteins were expressed and purified by gel filtration chromatography. To test the therapeutic potential of the recombinant molecule, a B-lymphoblastoid cell line (RPMI 8866), a pre-monocytic cell line (U937), and PBMCs from normal and hyper-allergic individuals were used. sCD23 induced IL-1β and TNFα in the B-lymphoblastoid cell line, but NFκB levels were unchanged. The pre-monocytic cells showed no change in production of cytokines or NFκB. In normal PBMCs sCD23 drastically stimulated TNFα, IL-1β and NFκB production, with further enhanced stimulation being seen in hyper-allergic PBMCs.