THE EFFECTS OF TOLL-LIKE RECEPTOR LIGAND-ACTIVATED DENDRITIC CELLS ON HUMAN $CD4^+$ T CELL RESPONSES

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ABSTRACT

Dendritic cells (DCs) play an important role as a link between innate and adaptive immunity through their abilities to detect infection and to prime naïve T cells (signal 1 and 2). They not only activate naïve T cells, but also direct differentiation of $CD4^+$ T cells to induce appropriate immune responses against pathogens via cytokine production (signal 3). In this study, human monocyte-derived dendritic cells (moDCs) as a model for myeloid DCs were activated *in vitro* with an array of Toll-like receptor (TLR) ligands derived from or mimicking various pathogens, to determine their cytokine profiles, as well as the ability of these differentially TLR ligand-activated DCs to induce differentiation of naïve $CD4^+$ T cells. moDCs activated with a viral TLR ligand (TLR3 ligand) induced more heavily skewed Th1 responses, whereas bacterial TLR ligand (TLR1/2, 4 and 5 ligand)-activated moDCs induced more balanced Th1/Th2/Th17 responses in $CD4^+$ T cells. Unexpectedly, moDCs activated with another viral TLR ligand (TLR7/8 ligand) also induced more balanced Th1/Th2/Th17 $CD4^+$ T cell responses. These results provide a framework for the use of these TLR ligands in tailoring T cell responses in vaccines and other immunotherapeutic approaches.