

Study on CD40L mimetic molecules on Dendritic cells

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Dendritic cells are among the most effective antigen presenting cells which are initially immature and have to mature for the induction of an efficient immune response. An important signal for initiating maturation of DCs is through the CD40-CD40L signaling pathway. Activating dendritic cell through CD40L can enhance the immune response. Herein we are introducing Ammonium benzoyl trimethylchloride (ABTC), N Benzhydrylbenzamide (NBB), 3-(Dimethylamino) propiophenone hydrochloride (3-DPH) are CD40L mimetics that was designed using LigBuilder which is a structure based drug design program. These molecules are shown to bind to its cognate receptor CD40 by computational docking.

We utilized dendritic cells from peripheral blood monocytes (PBMC) using

GM-CSF and IL-4 were treated with varying concentrations of these compounds and observed for antigen processing and presentation. Mimetics can stimulate dendritic cell and thereby lead to maturation. The antigen processing capacities of dendritic cells were observed by treating the cells with FITC- Dextran. Although these mimetic molecules are efficient, among these 3-DPH shows good antigen processing capacity in a concentration of 8 μ M. The differentiation and maturation induction capacity of these organic compounds provides scope for developing it as an alternative to the recombinant CD40L molecules which are prone to degradation.