

In Vivo Effects of Calcitriol on Phenotypic and Functional Properties of Dendritic Cells

Mohammad Mahdi Eftekharian¹, Amir Hassan Zarnani^{2,3}, Seyed-Mohammad Moazzeni^{1*}

¹Department of Immunology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran, ²Nanotechnology Research Center, Avicenna Research Institute, ACECR, Tehran, Iran, ³Immunology Research Center, Iran University of Medical Sciences, Tehran, Iran

ABSTRACT

Background: Dendritic cells (DCs) play a central role in the initiation and expansion of T cell mediated immune responses with potential immunotherapy application. The compounds which have the ability to induce immunomodulatory effects on DCs may be employed for the treatment of immunopathologic conditions such as autoimmune diseases. **Objective:** The aim of this study was to investigate the in vivo effects of calcitriol (active form of vitamin D3) on DCs. **Methods:** 0.1 microgram calcitriol was injected intra-peritoneally into C57BL/6 mice every other day within 3 weeks, and spleen DCs were extracted by magnetic beads. The phenotypic and functional properties of DCs were studied by flow cytometry and mixed lymphocyte reaction (MLR), respectively. **Results:** The expression of CD86 and MHC II, as maturation markers and costimulatory molecules were significantly decreased ($p=0.028$ and $p=0.047$, respectively) while CD11b expression, as a marker of mice myeloid DCs which mostly induces Th2 cytokine profile, was significantly increased ($p=0.011$). Allogeneic T cell stimulation in MLR was also significantly inhibited in comparison with the control groups ($p<0.05$). **Conclusion:** Our data indicate that in vivo calcitriol administration inhibits maturation and activation of DCs in the same manner as in vitro conditions.

Keywords: Cholecalciferol, Dendritic cells, Immunomodulation, Vitamin D3

*Corresponding author: Dr. Seyed-Mohammad Moazzeni, Department of Immunology, Faculty of Medical Sciences, Tarbiat modares University, Tehran, Iran, Tel: (+) 98 21 82883846, Fax: (+) 98 21 82883846, e-mail: Moazzeni@modares.ac.ir