عنوان مقاله:

Induction of Tolerogenic Murine Dendritic Cells by Downregulating the Co-stimulatory Molecule of CD۴۰ Using Lentivirus Vector

محل انتشار:

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خلاصه مقاله:

Induction of Tolerogenic Murine Dendritic Cells by Downregulating the Co-stimulatory Molecule of CD۴۰ Using Lentivirus Vector Mahmoodzadeh A۱, Pourfatollah AA۱, Karimi MH۲, Moazzeni SM۱ ۱Dept. of Immunology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran ۲Transplantation Research Center, Nemazee Hospital, Shiraz University of Medical Sciences, Shiraz, Iran. Correspond Author: Pourfatollah AA, Dept. of Immunology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran E-mail: Pourfa@modares.ac.ir Received: ۱۴ May ۲۰۱۴ Accepted: ۱۳ Jul ۲۰۱۴ Background and Objective: The important role of co-stimulatory molecules in immunological responses has been clearly demonstrated. With the development of new methods in molecular immunology, preventing the co-stimulatory signals in order to induce tolerance has emerged as a novel strategy. RNA interference is a new method that can specifically and effectively reduce target gene expression. Materials and Methods: In this study, we used a lentiviral system to target the expression of CD۴۰ gene in dendritic cells. ShRNA sequence is able to reduce the expression of CD۴۰ gene on murine dendritic cells. Results: Our results indicate ۶۴-fold decreased expression of CD۴۰ mRNA in the group receiving lentiviral shRNACD۴۰ as well as ۳۱% decrease in expression of CD۴۰ protein on the surface of dentridic cells (p<۰.۰۰۰۱). Also, dendritic cells cannot stimulate T cells upon contact with them. Conclusion: This study indicates that a decrease in expression of CD۴۰ molecule induces tolerogenic dendritic cells and prevents Th۱ immunological response. Prevention of Th۱ response would shift the immunological responses to Th۲ response, and this type of response can be effective in autoimmune diseases including rheumatoid arthritis and type I diabetes. References ۱- Groux H, Fournier N, Cottrez F. Role of dendritic cells in the generation of regulatory T cells. Sem in Immunol. ۲۰۰۴ ۱۶: ۹۹-۱۰۶. ۲- Kanako L, Reizis L, Reizis B. Dendritic Cells: Arbiters of Immunity and Immunological Tolerance. Cold Spring Harb Perspect Biol. ۲۰۱۲ ۴: a۰۰۷۴۰۱. Avalable from: www.cshperspectives.org. ۳- Morel PA. Dendritic cell subsets in type۱diabetes :friend or foe? Frontiers in Immunol. ۲۰۱۳ ۴. Avalable from: http://dx.doi.org/ ۱۰.۱۱۵۵/ ۲۰۱۳/۹۷۲۸۶۵. ۴- Machen J, Harnaha JO, Lakomy R, Styche A, Trucco M, Giannoukakis N. Antisense oligonucleotides down-regulating costimulation confer diabetes-preventive properties to nonobese diabetic ... mouse dendritic cells. The J Immunol. ۲۰۰۴ ۱۷۳: ۴۳۳۱-۴۱. ۵- Maldonado R, Andrian UH. How t

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