عنوان مقاله:

The Effect of -Adrenergic Agonist Isoproterenol on miR-۸۸۶-۳p and miR-۲۳a Expression in Human Bone Marrow Mesenchymal Stem Cells

محل انتشار:

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خلاصه مقاله:

Background and Objective: Mobilization of Hematopoietic Stem Cells (HSCs) for transplantation and the importance of -adrenergic signals in induction of this process have been well investigated. However, little is known about the role of -adrenergic signals in mobilization of HSCs and factors influenced by these signals. The Chemokine Stromal Derived Factor -۱ (SDF-۱) which is expressed by human bone marrow-derived mesenchymal stem cells (hMSCs), has a key role in mobilization of HSCs. In addition, miR-۸۸۶-۳p and miR-۲۳a can regulate the expression of SDF-۱ in hMSCs. In this study, to investigate the role of miR-۸۸۶-۳p and miR-۲۳a in mobilization process, expression of both miRNAs was evaluated in hMSCs treated by Isoproterenol (a -adrenergic agonist). Materials and Methods: hMSCs were isolated from human bone marrow and cultured. Following flowcytometric analysis, the cells were treated with ۱۰۰ M isoproterenol. Total RNA was extracted at ۱۲ and ۴۸ hours post treatment, and also from untreated hMSCs as control. Then, miR-۸۸۶-۳p and miR-۲۳a expression levels were quantified by quantitative Reverse Transcriptase PCR. Results: The expression level of miR-۸۸۶-۳p increased significantly at ۱۲ and ۴۸ hours post treatment (P<۰.۰۵). In addition, the expression level of miR-۲۳a decreased at ۱۲ hours post treatment and increased significantly at ۴۸ hours post treatment (P<۰.۰۵). Conclusion: Isoproterenol induces miR-۸۸۶-۳p in hMSCs. MiR-۲۳a is primarily decreased, and then increased due to treating with isoproterenol. So both miRNAs can contribute to mobilization process. References ۱- Horowitz MM, Gale RP, Sondel PM, et al. Graft-versus-leukemia reactions after bone marrow transplantation. Blood. ۱۹۹۰ ۷۵: ۵۵۵-۶۲. ۲- Sykes M, Nikolic B. Treatment of severe autoimmune disease by stem-cell transplantation. Nature. ۲۰۰۵ ۴۳۵: ۶۲۰-۷. ۳- Copelan EA. Hematopoietic stem-cell transplantation. N Engl J Med. ۲۰۰۶ ۳۵۴: ۱۸۱۳-۲۶. ۴- Wright DE, Wagers AJ, Gulati AP, Johnson FL, Weissman IL. Physiological migration of hematopoietic stem and progenitor cells. Science. ۲۰۰۱ ۲۹۴: ۱۹۳۳-۶. ۵- Anderlini P, Körbling M. The use of mobilized peripheral blood stem cells from normal donors for allografting. Stem cells. ۱۹۹۷ ۱۵: ۹-۱۷. ۶- Orkin SH, Zon LI. Hematopoiesis: an evolving paradigm for stem cell biology. Cell. ۲۰۰۸ ۱۳۲: ۶۳۱-۴۴. ۷- Levesque J-P, Winkler IG. Mobilization of hematopoietic stem cells: state of the art. Curr Opin Organ Transplant. ۲۰۰۸ ۱۳: ۵۳-۸. ۸- Motabi IH, DiPersio JF. ... Advances in stem cell mobilization. Blood Rev. ۲۰۱۲ ۲۶: ۲۶۷-۷۸. ۹- Siena S, Bregni M, Brando B, R

کلمات کلیدی:

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