Comparative Analysis of Expression of Chemokoine Receptors CXCR4, CXCR6, CCR1 and CX3CR in Human Adipose-Drived Mesenchymal Stem Cell with Valproic Acid

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Introduction:
Chemokine receptors are found on the surface of stem cells. There have been 19 distinct chemokine receptors described in mammals. Chemokines are major players in migration and homing. Therefore, changes in their levels or function can help us to increase the migratory potential of these cells. Valproic acid differs in structure from other drugs in common use. The way in which Valproic acid works, however, has not been fully understood. This study investigated whether treatment of MSCs with VPA would enhance the expression of chemokine receptors involved in migration and homing of mesenchymal stem cell.

Materials and Method :
In this study, we isolated MSCs from adipose tissue of healthy donors. Then, we studied their characteristic functions. MSCs were isolated from heterogeneous cell populations. After 4 passages in culture, the medium was primed with VPA 5 mM for 24, 48 and 72 h. Detailed gene expression profiles were investigated using a RNA extraction and subsequently a reverse transcription polymerase chain reaction (RT-PCR) analysis for cDNA synthesis. PCR was used to detect gene expression in MSC treated and those non-treated with VPA.

Results:
The CXCR4 expression was observed in the VPA-treated group and control group at mRNA and protein levels, but expression of the other chemokine receptors was not observed. Results showed that treatment with VPA did not promote other chemokine receptor expressions in human Adipose derived mesenchymal stem cell.

Conclusion:
In this study, we lended that VPA treatment could only increase the level of CXCR4 gene expression. Using another concentration and/or different intervals might lead to an increased expression of the other chemokine receptors. Furthermore, CXCR4 gene can increase the migratory potential of these cells for stem cell therapy.

Keywords: Chemokine receptors, Mesenchymal stem cell, Valproic acid.

Poster Presentation

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