

DIFFERENTIATION OF MESENCHYMAL STEM CELLS DERIVED FROM AMNIOTIC MEMBRANE INTO NEURONAL CELLS AND STUDYING ITS CHARACTERISTIC

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Mesenchymal stem cells have variety of sources such as bone marrow, dental pulp, adipose tissue, umbilical cord, amniotic fluid and amniotic membrane. Mesenchymal stem cells have immunomodulatory properties. With these kind of cells, we can treatment many of diseases such as neurological diseases. Amniotic stem cells, in the transplantation not have any immunological or tumorigenic reactions and lack any blood vessels and nerve fibers and this is a reason that they are useful for treatment. In this study, we isolated mesenchymal stem cells from amniotic membrane, and then used flow cytometry for study of surface markers. These cells differentiate to osteoblasts and adipocytes. Finally, differentiate to nerve cell with bFGF and EGF and two other medium. The first medium includes indomethacin, butyric acid, ascorbic acid and the second medium was including retinoic acid and ascorbic acid. We studied the expression of *PAX2* and *NURR1* genes with real time PCR. Then used immunocytochemistry and in this way studying the presence of expression of β -tubulin III and MAPII protein. In conclusion, MCS are differentiated to the each of the two types: osteoblasts and adipocytes. Studying MCS after treatment showed that these cells morphologically differentiate to nerve cell and the level of expression of mRNA of *PAX2* and *NURR1* was higher than the cells without differentiation treatment. Results show that the second medium which includes retinoic acid was better than first medium. Protection of neurons is important in neurological diseases and expression of mRNA such as *PAX2*, *Nurr1*, β -tubulin III and MAPII play an effective role on neural differentiation.

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