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Poster Presentation

Produce Neural Stem Cell from Neurosphere of Rat Adipose Derived Stem Cell

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Abstract

Spinal cord injury (SCI) is frequent after traffic accident in worldwide. Research performed over the last decade revealed that cells surrounding the central canal of the adult spinal cord acquire stem cell properties either in vitro or in response to injury. Adipose-derived stem cells (ADSCs) are an easily available source of Mesenchymal stem cells (MSCs). ADSCs can transdifferentiate into cells of other lineages such as neural stem cells. ADSCs have potential applications for the repair and regeneration of acute and chronically damaged tissues. In this study, ADSCs were isolated from rat adipose tissue cultured in DMEM supplement penestrep. ADSCs at passage 3 were identified by immunocytochemistry with antibodies analysis against with CD44, CD90, CD105, as well as CD34, CD45, CD106. We could induce rat ADSCs into floating neurospheres. Then neurospheres evaluated by immunocytochemistry for NF68 and nestin. Diameter and number of this neurosphere were measured. Neurosphere can be converted into neural stem cell (NSCs). NSCs were confirmed by NF68 and nestin expression using immunocytochemistry assay. The isolated ADSCs expressed CD44, CD90 and CD105 while CD34, CD45 and CD106 didn't express. Immunocytochemistry technique was used for NF68 and nestin expression in neurospheres. We observed that diameter of neurospheres increased and the number of neurosphere decreased. Our immunocytochemical assessment of nestin and NF68 in NSCs showed that these markers expressed. In the present study, we have demonstrated that MSCs can be efficiently induced into neurospheres under appropriate conditions. Moreover, these neurospheres were expanded and converted into NSCs that can be used for SCI treatment.

Keywords: Neural Stem Cell, Neurosphere, Traffic Accident.

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