REVERSIN INCREASE THE PLASTICITY OF BONE MARROW-DERIVED MESENCHYMAL STEM CELL FOR GENERATION OF CARDIOMYOCYTE IN VITRO

Abstrak:

Low efficiency of stem cell treatment is a big problem in the treatment of stem cell in Acute Myocardial Infarction. Transdifferentiation of Bone marrow-derived mesenchymal stem cells into cardiomyocyte took long time in experimental tissue culture. The purpose of the study is to speed up transdifferentiation of bone marrow-derived stem cells into cardiomyocyte in vitro by inducing dedifferentiation of bone marrow-derived mesenchymal stem cell, before induction by 5-aza-2'-deoxyctydine into cardiomyocyte. In this study two-three months old 2.5 kg weight adult male New Zealand Rabbits were anethetized with ether, thigh bones were excised, and bone marrow cells were obtained by aspiration. In our experiments after 1 week of mesenchymal stem cell cultures, 20 nM reversin was given to induce dediferentiation and after 24 hours exposure with 9 mM 5-aza-2'-deoxyctydine, early phase of cardiomyocyte differentiation was appeared as cultured cell were strongly positive for GATA-4 and weakly positive for MLC-2a, although beating cardiomyocyte has not yet been appeared at the end of experiment. In these experiment also showed a marked CD34+ and c-kit+ gene expression on RT-PCR examination. In conclusion, reversine increase plasticity of bone marrow-derived mesenchymal stem cell to generate cardiomyocyte after 5-aza-2'-deoxyctydine induction. CD34+ and c-kit+ may be a marker for cardiomyocyte progenitor cells

Keyword:

bone marrow-derived mesenchymal stem cells, cardiomyocyte, reversine, plasticity, 5-aza-2'­deoxyctydine

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