

Reversine Increases the Plasticity of Long-Term Cryopreserved Fibroblasts to Multipotent Progenitor Cells through Activation of Oct4

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Abstarc :

Reversine, a purine analog, had been evidenced that it could induce dedifferentiation of differentiated cells into multipotent progenitor cells. Here, we showed that reversine could increase the plasticity of long-term cryopreserved bovine fibroblasts, and reversine-treated cells achieved the ability to differentiate into all three germ layers cells, such as osteoblasts and adipocytes from mesoblast, neurocyte from ectoderm, hepatocytes and smooth muscle cells from endoderm. Moreover, treatment of reversine caused the grow arrest of fibroblasts at G2/M and distinct cell swelling resulting in the formation of polyploid cells. In parallel, reversine treatment induced a multipotency of fibroblasts might be attributed to the activation of histone modifications, especially the degression of DNA methylation. However, molecular and cellular experiments suggested that reversine treatment enhanced selectively the expression of pluripotent marker gene Oct4 and mesenchymal marker genes CD29, CD44 and CD73, but Sox2 and Nanog were not detected. Taken together, these results clearly demonstrate the ability of reversine to dedifferentiation of long-term cryopreserved somatic cells through activation of pluripotent gene Oct4.

Key Word :

Reversine; Fibroblasts; Multipotency; Dedifferentiation; Oct4.