

عنوان مقاله:

Mesenchymal Stem Cells Differentiate to Endothelial Cells Using Recombinant Vascular Endothelial Growth Factor – A

محل انتشار:

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خلاصه مقاله:

Background: Vascular endothelial growth factor-A (VEGF-A), an endothelial cell-specific mitogen produced by various cell types, plays important roles in cell differentiation and proliferation. In this study we investigated the effect of recombinant VEGF-A on differentiation of mesenchymal stem cells (MSCs) to endothelial cells (ECs). Methods: VEGF-A was expressed in E. coli BL21 (DE3) and BL21 pLysS competent cells with the pET32a expression vector. Recombinant VEGF-A protein expression was verified by SDS-PAGE and western blotting. Mesenchymal stem cell differentiation to ECs in the presence of VEGF-A was evaluated by flow cytometry and fluorescence microscopy. Results: Recombinant VEGF-A was produced in E. coli BL21 (DE3) cells at 0.8 mg/mL concentration. Expression of CD31 and CD144 was significantly greater, while expression of CD90, CD73, and CD44 was significantly less, in MSCs treated with our recombinant VEGF-A than in those treated with the commercial protein ($p < 0.05$). Conclusions: Recombinant VEGF-A expressed in a prokaryotic system can induce MSCs differentiation to ECs and can be used in research and likely therapeutic applications.

کلمات کلیدی:

Cell differentiation, Endothelial cell, Mesenchymal stem cell, Vascular Endothelial Growth Factor A

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