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The Role of P53 in Transdifferentiation of EPCs into Smooth Muscle Cells Induced by Oscillatory Shear Stress

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Abstract: This study examines the effects of P53 in transdifferentiation of endothelial progenitor cells (EPCs) into smooth muscle cells induced by oscillatory shear stress. Endothelial progenitor cells (EPCs) were planted on slide and treated with 4 dyne/cm^2 oscillatory shear stress (OSS). Results showed that the expression P53 was decreased time dependent after OSS. The OSS also attenuated the endothelial cells marker vWF and CD31 expression but enhanced the marker of smooth muscle cell α-SMA and SM22 expression in EPCs. After EPCs were pretreated with P53 agonist, the changes of angiogenesis *in vitro* were detected by matrix gel, and the expressions of alpha-SMA and SM22 were detected by Western blot. The results showed that simple oscillatory shear stress could decrease but P53 agonist could improve the ability of angiogenesis on EPCs, and down-regulate the expression of α-SMA and SM22. From the above results, we speculate that P53 may play a role in the transdifferentiation of EPCs into smooth muscle cells induced by OSS.

Keywords: Endothelial progenitor cells, transdifferentiation, smooth muscle cells.

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