

7th International Conference on

TISSUE ENGINEERING & REGENERATIVE MEDICINE

October 02-04, 2017 Barcelona, Spain

Elabela, a novel hormone, involves in angiogenesis and cardiogenesis *in vitro*

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Aim: Our previous study demonstrated that the Elabela (ELA), a recently discovered hormone, functionally activates apelin receptor (APJ) in mammalian system. However, the physiological effects of ELA in mammalian cardiovascular system remain unknown. The aim of the study was to investigate the role of ELA during human embryonic stem cells (hESCs) differentiation and proangiogenic effect *in vitro*.

Methods: The process of cardiomyocytes differentiated from human embryonic stem cells (H9) with or without ELA treatment was observed continuously. Moreover, we investigated the physiological effect of ELA on angiogenesis of human umbilical vascular endothelial cells (HUVEC) *in vitro*.

Results: ELA treatment at 1 $\mu\text{mol/L}$ significantly increased the number of beating embryoid bodies (EBs) of differentiated hESCs. Furthermore, ELA up-regulated the expression of the cardiac-restricted transcription factors Nkx2.5 and Tbx5 and factors involved in differentiated cardiac cells (αMHC , βMHC). Consistently, ELA significantly enhanced clear capillary-like tube formation of HUVEC.

Conclusions: We delineate that ELA promotes cardiomyocyte differentiation of hESCs, and is a potent proangiogenic hormone that involves in angiogenesis *in vitro*. We speculate that ELA may be helpful in regenerative medicine, especially application in treatment of ischemia heart diseases.

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