ABSTRACT

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Study Program : Biomedicine

Title : Gene Target Validation to Improve Efficiency of Fibroblast Transdifferentiation to Cardiomyocytes.

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Transdifferentiation of cardiac fibroblast into cardiomyocytes holds great promise for regenerative therapy of myocardial infarction. However, the efficiency of this technique is still too low for clinical application. In this study, we show that a chemical compound dubbed as "compound A" can enhance the conversion efficiency of cardiac fibroblast into induced-cardiac like myocytes using a combination of Gata4, Hand2, Mef2c, and Tbx5 transcription factors. Compound A successfully promoted expression of cardiac gene marker and cardiac-specific morphology such as sarcomeric structure and spontaneous cell beating. Furthermore, we tried to elucidate the transcriptomic changes associated with the enhanced efficiency induced by compound A. Our finding showed that the enhancement mechanism of compound A towards transdifferentiation efficiency needs to be investigated further.

Keywords: Myocardial Infarction, Transdifferentiation, GHMT, Fibroblast, Cardiomyocytes,