International Journal of Biomedical Science 4(1) 14-19

Original Article [FullText] [PDF]

Experimental Studies on the Differentiation of Fibroblasts into Myoblasts induced by MyoD Genes *in vitro*

Zhongmin Liu[1], Huimin Fan[1], Yang Li[1], Song Guo Zheng[2]

[1] Division of Cardiology Surgery, Shanghai East Hospital, Tongji University School of Medicine, Shanghai, P. R. China;

[2] Department of Medicine, Keck School of Medicine, University of Southern California, Los Angeles, USA

Corresponding author: [1]Zhongmin Liu, Shanghai East Hospital, Tongji University, 150 Ji Mo Road, Shanghai, 200120, China. E-mail: zhongmin_liu@sina.com; [2]Song Guo Zheng, Department of Medicine, Keck School of Medicine, University of Southern California, Los Angeles, USA. E-mail: szheng@usc.edu.

lentivirus; fibroblast; myogenesis; MyoD; Cx43

To evaluate the biological functions of myogenic regulatory factors, we have examined the effects of ectopic expression of MyoD and Cx43 genes in the fibroblasts on the differentiation of myoblast *in vitro*. The expression of MyoD and Cx43 in the transfectants was confirmed by RT-PCR and Western blot. More than 50% of fibroblasts transfected with MyoD or both MyoD and Cx43 genes displayed typical morphological features of myoblast-like cells at 20 days following gene transfection, including cell elongation, cytoplasm enrichment and granule manifold. Moreover, these myoblast-like cells also expressed both desmin and α-actin. These results demonstrate that direct exogenous expression of the myogenic regulatory factors is sufficient to induce transdifferentiation of fibroblasts into a myoblast-like lineage and provide new insights into the trauma repair after myocardial infraction.