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Changes in related circular RNAs following ER β knockdown and the relationship to rBMSC osteogenesis

Xiaoyun Li¹, Bojia Peng¹, Xiaofeng Zhu², Panpan Wang², Yingquan Xiong³, Hengrui Liu³, Kehuan Sun³, Haixia Wang, Ling Ou, Zhidi Wu, Xiaoguang Liu, Haibin He, Shu Mo, Xunqian Peng, Ya Tian, Ronghua Zhang*, Li Yang*

Correspondence to: Professor Ronghua Zhang or Dr Li Yang, Department of Traditional Chinese Pharmacology, College of Pharmacy, Jinan University, 601 Huangpu Avenue West, Guangzhou, Guangdong 510632, P. R. China

E-mail: tzh@jnu.edu.cn

E-mail: doctormonkey@126.com

Abstract: Recently, several studies have indicated that circular RNAs (circRNAs) play significant roles in various disease; however, Little is known about the chronology of estrogen receptor beta (ER β) deficiency and altered circRNA expression, or their relationship with osteogenesis. Herein, we show through western-blot and quantitative real-time PCR assays, that when ER β is silenced, the expression of osteogenesis-related proteins and mRNAs were down-regulated. We then performed RNA-Seq to analyze differential circRNA expression between the control and ER β knockdown group. This analysis revealed that, 146 circRNAs were differentially expressed by fold-change \geq 2.0, $p\leq$ 0.05, and, among this group, 68 circRNAs were down-regulated, while 78 were up-regulated. Gene ontology (GO), Kyoto Encyclopedia of Genes and Genomes (KEGG) and PANTHER pathway analyses were performed to predict the function of these differentially expressed circRNAs. Finally, co-expressed targets gene, and circRNA-microRNA network were constructed for predicted miRNA sponges. This research suggested that ER β may through 2:27713879|27755789/2:240822115|240867796-miR-328-5p-mRNA axis to regulate osteogenic differentiation.

Key word: CircRNA; Estrogen receptor beta; Osteogenesis; RNA-Seq

1.Introduction

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