55. CPEB3, an RNA-Binding Protein, Modulates the Behavior of Endometriosis-

Derived Stromal Cells via Regulating CXCL12

Jing Wang, Han Wu, Xiaotong Wang, Xibo Zhao, Liyuan Sun, Yan Cheng, Xinyan

Jiang, Jixin Li, Guangmei Zhang

DNA Cell Biol. 2022 Apr 22.doi: 10.1089/dna.2021.1017. Online ahead of print.

Abstract

Endometriosis is a benign gynecological disease sharing several features with malignant

tumor. Cytoplasmic polyadenylation element-binding protein 3 (CPEB3), a potential target of

miR-21-5p, is downregulated in endometriotic specimens. However, the function of CPEB3

in endometriosis is elusive. In this study, in cultured primary human endometrial stromal

cells (ESCs), the overexpression and inhibition of CPEB3 were achieved by transduction of

adenovirus-mediated CPEB3 overexpressed plasmid and shRNA, respectively. Functional

analysis uncovered that upregulated CPEB3 reduced cell viability and arrested cell cycle

entry. The expression of cyclin D1 and c-Myc was decreased after CPEB3 overexpression.

Overexpression of CPEB3 facilitated ESC apoptotic potential, accompanied by increased

Bax, cleaved-caspase 3 and cleaved-caspase 9, and reduced Bcl2. Moreover, elevated CPEB3

weakened migration and invasion abilities of ESCs. CPEB3 overexpression also reduced the

expression of fibronectin and vimentin and the activities of matrix metalloproteinase (MMP)-

9 and MMP-2. Interestingly, these effects were counteracted by CPEB3 inhibition.

Furthermore, CPEB3 controlled the protein level of CXCL12, a homeostatic chemokine.

CXCL12 elevation partially reversed the effects of CPEB3 on inhibiting ESC proliferation,

migration and invasion, and promoting apoptosis. Based on these findings, it seems possible

that CPEB3, as a critical player, attenuated the progression of endometriosis through

repressing CXCL12 expression.

Keywords: CPEB3; CXCL12; cell behavior; endometriosis.

Keywords: adenomyosis; biomarker; extracellular vesicle; mass spectrometry; proteome.