

论著

雌二醇通过调节上皮细胞系的旁分泌促进前列腺间质细胞增殖和分化

吴荃¹, 肖向茜¹, 刘树业², 刘宇¹, 石建党¹△, 王克明³, 张琚¹△

1 南开大学生物活性材料教育部重点实验室, 天津 300071; 天津市第三中心医院 2 泌尿外科, 3 病理科, 天津 300170

收稿日期 2006-3-15 修回日期 2006-6-6 网络版发布日期 2008-8-21 接受日期 2006-6-6

摘要 目的: 研究雌二醇通过调节上皮细胞的旁分泌对前列腺间质细胞增殖、分化和胞外基质蓄积的作用。方法: 雌二醇处理前列腺增生上皮细胞系BPH-1, 用收集的条件培养液(CM)培养人前列腺间质细胞, MTT法检测细胞的增殖; 用实时定量RT-PCR检测细胞中smoothelin、纤维黏连蛋白、IV型胶原和转化生长因子-β₁(TGF-β₁) mRNA的表达水平; 用Western blotting检测细胞平滑肌肌球蛋白重链(SM-MHC)的表达; 用放射性免疫法和ELISA分别检测IV型胶原、纤维黏连蛋白和TGF-β₁的蛋白水平。结果: 雌二醇能够上调BPH-1细胞中TGF-β₁的表达和分泌; 经雌二醇刺激的BPH-1 CM能促进间质细胞的增殖; 雌二醇刺激的BPH-1 CM对平滑肌细胞特异蛋白(smoothelin和SM-MHC)表达的促进作用较未经雌二醇刺激者更加明显; TGF-β₁中和抗体可以抑制BPH-1 CM对间质细胞中IV型胶原和SM-MHC的促表达作用。结论: BPH-1 可通过分泌TGF-β₁促进间质细胞的增殖和胞外基质的蓄积; 雌二醇可通过上调BPH-1 TGF-β₁的分泌进一步促进间质细胞的增殖; 雌二醇还可通过调节BPH-1分泌的某种活性因子促进间质细胞的增殖。

关键词 雌二醇; 前列腺; 细胞外基质; 转化生长因子β

分类号 [Q697](#)

Estradiol stimulated proliferation and differentiation of prostatic stromal cells through regulation of BPH-1 paracrine

WU Quan¹, XIAO Xiang-qian¹, LIU Shu-ye², LIU Yu¹, SHI Jian-dang¹, WANG Ke-ming³, ZHANG Ju¹

1 Bioactive Materials Key Laboratory of Ministry of Education, Nankai University, Tianjin 300071, China; 2 Department of Urology, 3 Department of Pathophysiology, The Third Central Hospital, Tianjin 300170, China. E-mail: zhangju@nankai.edu.cn

Abstract

AIM: To characterize the effect of estradiol on proliferation, differentiation and extracellular matrix (ECM) accumulation in stromal cells through regulation of BPH-1 paracrine. METHODS: BPH-1 cells were stimulated with different concentrations of estradiol. Conditioned media (CM) were harvested and their effects on stromal cell cultures were tested. Cell proliferation was determined by MTT assay. mRNA of smoothelin, fibronectin, collagen IV and transforming growth factor β₁(TGF-β₁) were analyzed by real-time RT-PCR. Western blotting was used to determine smooth muscle myosin heavy chain (SMMHC). ELISA and radioimmunoassay were respectively used to measure fibronectin, TGF-β₁ and collagen IV protein expressions. RESULTS: Estradiol stimulated the expression and secretion of TGF-β₁ in BPH-1 cells. The proliferation of stromal cells increased when they were cultured with CM harvested from estrogen treated BPH-1 cells. The mRNA levels of collagen IV and smoothelin increased in stromal cells treated with CM from BPH-1 cells. The results of radioimmunoassay also showed that the collagen IV protein level up-regulated in the supernatants and cell extracts of CM-treated stromal cells. A neutralizing antibody to TGF-β₁ inhibited the stimulation of collagen IV and SMMHC by BPH-1 CM. The expression of fibronectin was only marginally changed in stromal cells cultured in the presence of BPH-1 CM.
CONCLUSION: The BPH-1 cells increase ECM accumulation and differentiation of stromal cells through TGF-β₁. Estradiol stimulate differentiation of stromal cells by induction of

扩展功能

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TGF- β ¹ expression. Estradiol stimulate proliferation by influencing the factors secreted from prostatic epithelial cells.

Key words [Estradiol](#) [Rostate](#) [Extracellular matrix](#) [Transforming growth factor beta](#)

DOI: 1000-4718

通讯作者 石建党;张琚 zhangju@nankai.edu.cn; Shijd@nankai.edu.cn